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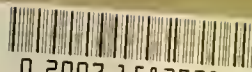
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EXTRACT

*From an Act prescribing Rules for the Government of the State Library, passed
March 8th, 1861.*

SECTION 11. The Librarian shall cause to be kept a register of all books issued and returned; and all books taken by the members of the Legislature, or its officers, shall be returned at the close of the session. If any person injure or fail to return any book taken from the Library, he shall forfeit and pay to the Librarian, for the benefit of the Library, three times the value thereof; and before the Controller shall issue his warrant in favor of any member or officer of the Legislature, or of this State, for his per diem, allowance, or salary, he shall be satisfied that such member or officer has returned all books taken out of the Library by him, and has settled all accounts for injuring such books or otherwise.

Sec. 15. Books may be taken from the Library by the members of the Legislature and its officers during the session of the same, and at any time by the Governor and the officers of the Executive Department of this State who are required to keep their offices at the seat of government, the Justices of the Supreme Court, the Attorney-General and the Trustees of the Library.



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Number 1.

Snow-Shoeing in the Sierras.

[Written for the Press by C. W. HENDEL.]

Near the summit of the Sierra Nevada Mountains, on the borders of the counties of Sierra and Plumas, are the towns of La Porte, Howland Flat, St. Louis, noted during the "flush times" of California for their enormous yield of gold dust, and still retaining

depth in these high altitudes. It falls as much as 50 to 125 feet during one season in some places; though generally there is but little in the lower valleys.

When the snow attains a considerable depth in the Sierras, locomotion can only be accomplished by means of the celebrated "Norwegian snow-shoes," or "Norway skates," without which travel would be nearly imprac-

They are nearly of uniform width from end to end—a little wider, if any, on the front—and a spring is worked in, so that without weights they rest on the heels and points; but when the rider stands on them, the weight is somewhat evenly distributed, and a concave groove is made at the bottom, beginning near the toes and running to the heels, similar to the bottom of the skates. The bottoms are highly polished,

lower at back end than in front. On top of the shoes, a little back from the center, there is about 18 inches of wood left flat, and toward the front they are shaved and planed, tapering sufficiently to leave the point springy. There is considerable wood left behind from the center to the end, which makes the proper balance—little or no spring being required on the back part—the most essential being the front. The



SNOW-SHOE RACING IN THE MOUNTAINS OF CALIFORNIA.

fixed characteristics of the typical honest miner of '49.

The climate is very salubrious; most deaths occur from great intemperance, exposure, accidents and violence. The spring, summer and autumn months will compare favorably with the climate of northern Italy. The excessive heat prevailing in the valleys lasts for a few days, and only for a few hours during each afternoon. The winter months are often very severe, but even during the prevalence of the great storms, the cold is not so severe as in the Eastern States in the same latitude at a less altitude, while the snow falls to a great

height, since it becomes almost impossible to break roads or trails, where the snow often covers buildings even two stories high, so that people can only make their exit from their houses through the upper windows. It sometimes happens that a resident has to climb out through his chimney, after punching a hole through the snow above it.

Snow-shoes for traveling are from 8 to 12 feet long, $3\frac{1}{4}$ to 4 inches wide, and $1\frac{1}{4}$ inches thick in the center. They are tapered at the top from near the middle to one-fourth of an inch in thickness at the toes, and nearly flat. The toes are turned up like sleigh runners,

and tar is burned and rubbed in until a full, mahogany-like finish is obtained, which hardens the wood, makes a smooth surface, and attracts heat when exposed to the sun—the latter being a desideratum in putting on the "dope" when traveling.

Shoes made for racing are from $10\frac{1}{2}$ to $13\frac{1}{2}$ feet in length, from $3\frac{3}{4}$ to $4\frac{1}{4}$ inches in width, wider on the front part than on the back. Where the turn commences to the heel, or back end of the shoe, there is a fluted or concave groove about $\frac{3}{4}$ of an inch deep at the heel and tapering in depth from the turn at the point. This groove is about $1\frac{1}{2}$ inch wide, nar-

rower at back end than in front. On top of the shoes, a little back from the center, there is about 18 inches of wood left flat, and toward the front they are shaved and planed, tapering sufficiently to leave the point springy. There is considerable wood left behind from the center to the end, which makes the proper balance—little or no spring being required on the back part—the most essential being the front. The object of this is, that in running over rough places, there will be no sudden jerk endangering the equilibrium of the rider, who often attains a speed of 60 to 80 miles an hour on these shoes. They have a tendency to "buck" when going over uneven snow, and the rider often finds that they are as uncertain as all other things are here below. So great have been the improvements made in racing shoes, during the past few years, from the original style, first introduced 20 years ago, that they now appear to have reached perfection.

The rider stands a little back of the center,

[Continued on Page 9.]

The Emma and Eureka Mines.

Mr. Henry Sewell writes as follows to the Salt Lake Tribune in regard to the salting of the Eureka mine and the Lawrence-Whitney arrest:

I think it is high time that some one here should come forward and publish the facts about the Eureka mine, in order that Messrs. Lawrence & Whitney may have the benefit of the truth—whatsoever that may be in this case. Not having the honor of being an American citizen, I have hesitated to meddle in a matter which belongs exclusively to citizens of this Republic; but I cannot allow any longer such delicacy to prevent me from putting in a word in behalf of the accused, when the charge of "salting" the mine is so ridiculously absurd, and can only be the work of crazy, disappointed men.

I know nothing of the business of the Eureka mining company, and I am thoroughly ignorant of the value of its stock, and I don't want to know anything about either; but I wish it to be understood that what I am about to state is first due to the accused gentlemen; and secondly, it is just to the Territory that the charge of "salting" that or any other mine should never be permitted to go before the public without being met by flat contradiction, when it can be truthfully done.

Personally, without any remuneration whatever, I reported twice on the Eureka mine, at the request of my own personal friends here in this Territory, and I feel, therefore, at perfect liberty in consequence of holding no shares, or any interest directly or indirectly, to state that the accusation of "salting" the Eureka is as false as that brought forward by the celebrated pamphleteer, Paffard, of London, the Quixotic historian of the Emma mine, who stated that this great property had been "salted" in a most cute and mammoth manner by the Yankees, (and for the occasion); his crazy imagination gave to the world the elegant designation of "plastering." I have been so fully satisfied of his folly and nonsense, that I have, within the present week, also gone into the "plastered" mine, by the purchase of sixty shares; and my agent in London can visit the meetings with a little more than one solitary share and not a la Paffard.

Let the reader think of the work necessary to be done in "salting" or "plastering" a mine like the Emma. To accomplish such a feat would require the skillful labor of at least one hundred men for a period of two years. It would be necessary to sink about 400 feet and to drive several levels, then hoist all the barren rock to the surface, and then let down two million dollars' worth of ore to "salt" and "plaster" the vacant openings. It is not a little singular that the names of the two great accusers of the "salting" of the Emma and the Eureka should sound so much alike; they are a noble pair and will doubtless be handed down to posterity, should they not shortly reach a lunatic asylum, and then in sympathy for their misfortune, they could be passed by in silence.

It has become too much the fashion to write of "salting" mines in Utah, but every professional and practical man knows that of the many hundreds of mines that have been sold in this Territory, and the hundreds of others that have been offered for sale, there is only indubitable evidence of one solitary case where the dangerous business of "salting" a mine was really done. I think that the miners of Utah can congratulate themselves in not having figured with an aristocratic gigantic "diamond salting."

I have lived in this Territory nearly three years, and have visited all the mining districts repeatedly, and I think there are too many good mines here to tempt any sane persons to ply this unprofitable trade, the detection of which is as certain as day following night.

Unhesitatingly state that there are scores of experts and practical mining men who could testify that the charge of "salting" the Eureka is the most arrant nonsense that could be uttered. And it is the general opinion of the best informed here that the arresting of Messrs. Lawrence and Whitney is a "little game" to browbeat those gentlemen, and to place them before the court in such an unenviable light that the damages claimed may be awarded to their accusers. Directors of some companies when they find out that their own mismanagement, as well as that of their incompetent pet manager, produces a collapse and no dividends, get into the habit of seddling all the blame on the quality of the mines, and then their only recourse is to go for the vendors, accusing them of selling, or anything else to get out of the scrape. Finally, let me say, that to "salt" the Eureka it would require almost as many men, and as much time, as I have already stated would have been required to "plaster" the Emma. No doubt the miners of Tintic will come forward and disprove the charge of "salting" the mine, by which the accusers have made themselves so unpopular in that district. Let us stand by the right.

SALAD OIL AN ANTIDOTE TO STRYCHNIA.—A Queensland farmer has favored a provincial paper with the discovery that salad oil is an antidote for strychnia. In support of this theory, successful experiments on dogs are cited, and the enthusiastic discoverer writes: "So confident am I of the cure by oil, that I think I am only doing my duty by letting it be known that a gill of salad oil poured down the throat, if not too late in the application, is enough for a dog, and ought to be tried on a man."

The Signal Service Report.

The Chief Signal Officer of the Army has recently submitted a very gratifying exhibit of the labors of his bureau during the past year. Thirteen new stations have been added, so that at the present time there are seventy-eight points of observation in the United States, eleven in Canada, and three in the West Indies, the latter being located at Havana, Kingston, and Santiago de Cuba. Three other stations, on the islands of Porto Rico, Guadalupe and Barbadoes, will also shortly be equipped.

Some very excellent arrangements have been completed for securing to farmers and others, in communities not reached by telegraph, information as regards probable weather earlier than would be afforded were the reports delayed by publication in newspapers. The plan adopted has been to divide the territory of the United States into districts, each district having a distributing point, at or near the center, from which two printed copies of the synopsis and probabilities are forwarded by mail to all post offices within the districts, or which can be reached by sail, steamer, or mail coach by 4 P. M. of the same day. The bulletins are then conspicuously posted in the receiving offices, and 3,982 printed copies of the weather report are thus daily distributed to 4,491 post offices; and the plan thus far has worked admirably.

There are nineteen special river stations from which reports of the depth of water in the principal rivers of the United States are daily made by telegraph, at particular seasons during which danger from freshets may be anticipated. Twenty of the regular stations also furnish river reports, which are of great value as giving constant and accurate knowledge of the condition of channels, and thus adding to the safety and convenience of our river commerce.

For the purpose of studying the phenomena of the upper portions of the atmosphere, stations have been established on Mount Washington, N. H., on Mount Mitchell, N. C., and quite recently a third one on the summit of Pike's Peak, at an elevation of 14,216 feet above sea level.

One of the most valuable additions to the system, which have been made during the past year, is the establishment of a chain of life-saving stations along the Atlantic coast. Signals visible for some distance at sea, serving to warn vessels of probable bad weather, are to be displayed from points twenty-five miles apart from Sandy Hook to Cape May, and it is intended to continue the construction of suitable telegraphic communication along the dangerous coast of Virginia and North Carolina. Without doubt, these points of observation will be of great benefit. They will serve as meteorological stations from which information of the condition of the weather at the sea level can be transmitted; as sites for lighthouses and lifeboat deposits; as videttes in time of war, to give warning of the approach of an enemy's fleet; as a means of communication with vessels cruising along the coast; and as positions of display of cautionary signals, as already noted.

With reference to international exchanges of meteorological information, General Myer refers to the proceedings of the recent Weather Congress at Vienna. The proposition was adopted, by a unanimous vote of that body, that at least one uniform observation of such character as to be suitable for the preparation of synoptic charts should be taken, and recorded daily and simultaneously at as many stations as practicable throughout the world. It is also stated that arrangements have already been made with Prussia and Turkey to commence, on January 1874, the exchange of one daily report, taken simultaneously throughout those countries and the United States; and the co-operation of other nations in the system is expected. —*Scientific American*.

A LOST POPULATION.—About a thousand years ago, a colony of Icelanders was planted on this western coast of Greenland. They were hardy people, inured to cold and meager living, and there seemed to be no reason why they should not take root in the frozen soil of their new home. They built a stone church there and stone houses to live in, of which the ruins are still to be seen. But what became of the builders is a question that has never been solved, and never will be. They vanished from the face of the earth, and that is all that is known. Whether cold or pestilence or starvation took them off, or whether wandering savages killed them, no man can tell. Their settlement is known in history as Lost Greenland. —*Ind. Age*.

ADVERTISING MINERAL LOCATIONS.—Attention has recently been called to the decision rendered some time ago by Secretary Delano, in the case of the mineral location of Sierra Cañon, Placer county, California. In that case the publication of the mineral location had not yet been made forty-seven days in the county paper—the *Stars and Stripes*. When that paper discontinued publication, the remaining thirteen days, required by law, were filled off by continuing the publication in the *Placer Herald*. It was held that such notice was insufficient, and it is now observed that when newspapers cease publication advertisers must stand from under.

Base Metal Interests of White Pine.

Through the kindness of Thomas Wren, Esq., who have been permitted to see a letter written by Professor Clarence King, in which he alludes to the base metal interest of our district. A sample of the ore from the Imperial mine is to be forwarded to him immediately for analysis, and if the result will warrant, work will be commenced on several mines of the same character in earnest. W. D. Walbridge, a gentleman well-known as a successful miner of great experience in Idaho, California and Nevada, is now engaged erecting a furnace, of a new and improved pattern, at Oakland, Cal., with a view of purchasing base ores for reduction. Mr. King writes that if the experiment is successful, of which he has no doubt, the ores can be shipped to Oakland to be worked, or a furnace built here on the same plan, by payment of a royalty. At last we can see something feasible in this plan, and we have greater confidence in the enterprise from the fact of so successful and competent a gentleman as Mr. King recommending its practicability.

All that is wanted to make White Pine the leading district in Nevada is a successful means of reducing refractory ores, and it has only been a question of time and experiment to solve the problem. We have large quantities of sulphurets of copper in our mines, containing a large percentage of silver, which never have been worked successfully by the milling process, and would readily yield to treatment by smelting. Then the blue-stone which can be saved would return a profit by selling to mills in eastern Nevada, equal to the cost of reduction of the copper and the freight thereon. Our confidence in the future of this section remains unbroken, and every day evidences are being added showing our belief to be well-founded. With such men as Walbridge, with his extensive experience and fine business qualities, assisted by Clarence King, we are assured a success can be made in our base metal mines, and are satisfied the inauguration of this enterprise will be the means of attracting the attention of other equally reliable parties to our interests here. —*White Pine News*.

Eureka Mines.

A correspondent of the *Alta*, writing from Eureka, says:—Eureka still lives and promises to continue growing in prosperity. It has not attracted near so much attention or caused such excitement as White Pine and Pioche, but it will in a few years leave both of them behind—or I am no prophet. We have great bodies of ore here, with rare facilities for reduction. Excepting Little Cottonwood, in Utah, this is now probably the richest or the most productive of all the silver-smelting districts in the world. Our ores are carbonates, oxides and sulphurets of lead, containing from \$40 to \$150 per ton of gold and silver; and three or four tons of ore are smelted to get one of "base bullion" or impure lead, which contains from \$250 to \$400 of the precious metal in a ton. The base bullion is refined in San Francisco, New Jersey, Boston or other remote places.

The yield of this district for this year will amount to about \$3,800,000. Among the mines which have considerable bodies of ore in sight are the Richmond, Ruby Consolidated, Eureka Consolidated, Hoosac, Silver West Consolidated, and K. K. But many others are either known to be valuable or are very promising; though some may not be properly developed for several years. Various tunnels and shafts to give convenient access to good claims are now in progress.

We are at great inconvenience for lack of a railroad to Palisade. A company has commenced work on a narrow-gauge road from that place to Pioche by way of Eureka, and rumor says the Richmond company has made a contract for the transportation of its bullion for one year. That may look like a small contract to outsiders, but give us an iron track and you will be astonished at the amount of metal we can turn out in a day. A car-load a day from each of half a dozen mines would scarcely exceed the general expectation. There is no end to the ore beds of Eureka. Promises are made that twenty miles of the railroad from Palisade southward shall be in running order before March. It is our interest that the promises should be kept, and of course we believe them.

CARBOLIC ACID.—Carbolic acid is now so generally employed as a disinfecting agent, that a resume of the various forms in which it is made, in the largest establishment carrying on its manufacture in England (Calvert's), may prove of interest.

1. Solid carbolic acid of three different qualities, the point of solidification of which varies from 81° to 108° Fahrenheit.
2. Liquid acid of two different qualities, constituted almost entirely of creylic acid. According to Mr. Calvert, the disinfecting properties of the latter substance are the same as those of carbolic acid.
3. Soaps in which the proportion of carbolic acid varies from five to twenty per cent. according to the uses to which they are to be applied.
4. Disinfecting powder, composed of silicic and 15 per cent. creylic acid. The silicic is obtained from alum factories, where kaolin is treated with sulphuric acid. The disinfecting acids become thoroughly incorporated with it, forming a dry and pulverulent substance. —*Scientific American*.

Southern Mining Interests.

There is scarcely a doubt but that the entire Coast Range, from Santa Cruz county to San Diego and Lower California, abounds in precious metals, and only awaits the prying eyes of our indefatigable prospectors, to yield up their hidden treasures, and enrich them and add to the wealth of the counties by their development. Three or four years ago from the date of discovery chronicled of cinnabar, near Santa Cruz, to the mine of gold discovered in San Diego county, and in essaying from thirty to forty per cent. in this county, a spirit of inquiry and a desire to know more of our mountain ranges was felt, and a thorough examination began to be made of them. That the precious metals existed in paying quantities in many places in this county, was a fact well known, for as long ago as 1861, placer mining has been remunerative in Holcomb Valley, and in that locality there has recently been put up a new quartz mill, and the mine yielding fine returns for the capital invested. On Lytle creek remunerative placer mines give employment to a large number of miners. A ditch several miles in length has been brought into those mines, which cost many thousands of dollars, and hydraulic mining there has been and is now a success. Gold and silver have been found on the head waters of Rock and Gold creeks, facing the desert; they have been found northeast of the Comcongo rancho, on the Mojave, in the Black Hawk mountains, to say nothing of our famous Ivanpah mines; and the only tin deposits yet discovered upon the American continent are those at Temascal, in this county, and several others within a radius of thirty miles of San Bernardino. Since the first day of last January there have been discovered near the Twenty-nine Palms, gold and silver bearing mines, that from their immense ledges and richness of rock are believed to surpass any mines discovered upon this coast. One or two of these mines are now being worked, and the others being thoroughly developed. There is hardly a doubt but a six or ten stamp mill will be in operation there within five months. Our county has not been half prospected yet, although it contains a greater variety of minerals than any other in the State. In addition to our mining interests, we would state, for general information, that we have thousands of acres of vacant land, as rich as any in the State, not cursed with "land grant claims," and while incidentally prospecting for the precious metals, they can take up a homestead for their old age, and, when they are ready, settle down cozily upon a piece of land of their own, even if they make of it but a "chicken ranch." —*San Bernardino Guardian*.

EL DORADO MINES.—Correspondence from El Dorado county, Cal., to the Sacramento Union, says that considerable activity is manifested among miners. The prospect of a supply of water encourages prospecting, and new developments are being made. The El Dorado Water and Deep Gravel Mining Company are doing a large amount of work in repairing ditches, and more particularly in putting the Excelsior in proper condition for working. They intend to use 1,000 inches of water in the claim this winter. A large yield of gold dust is expected. In Placerville, a ten-stamp mill, owned by Blanchard & Co., has just been completed. Brewster, Blair & Co.'s quartz mill in Oregon Ravine, runs a portion of the time on custom work; their shaft is down some 300 feet in their mine, showing a wide ledge at the bottom. Mitchell & Halliway's quartz ledge near the court-house, lately developed, is remarkably rich. The owner of the Pacific mine and quartz mill, has made arrangements for starting the work again at an early day. Robinson & Co.'s gravel mill at Prospect Flat, is running full time, crushing about 70 tons every twenty-four hours. This claim comprises 160 acres. About two feet and a half of gravel taken 105 feet from the surface is crushed. Eight tons of rock from Gross' mine, on Big Cañon, crushed week before last, yielded \$173 per ton.

MONS. QUINQUARD says, in *Les Mondes*, on the respiration of fishes, that the quantity of oxygen absorbed is in proportion to the time; that the respiratory work of fishes diminishes with their weight; that species has but very slight influence upon the respiratory activity in consuming oxygen; that carp, weighing from 500 grammes to a kilogramme, breathe from seven to nine times less oxygen in a given time, in proportion to their weight, than man, and that fishes have, to a very slight extent, a sort of cutaneous respiration, which has been noticed by Humboldt and Provencal.

WOODEN PAVEMENTS.—In St. Louis, wooden pavements are voted a complete failure. The Mayor of that city embodied in a communication the results of civic experience during twelve years' trial of this kind of pavement. He says the fact is clearly shown that wooden pavements are not suited to streets used by heavy traffic, and it is expensive under any circumstances. He says that the average wear of such a pavement is six years, and the cost of repairing is one dollar and a half per lineal foot.

MINING DITCHES.—There are in this State 780 mining ditches, having an aggregate length of 4,888 miles and supplying 220,187 inches of water per day.

SCIENTIFIC PROGRESS.

Iron in Plants and Animals.

Every one is familiar with the important part that iron plays in the work-shops of man, but few are aware of the equally important part that it takes in the operations of nature—how it answers the same purpose in the minute cells of which all animal and vegetable growth is made, as the tools in the hands of the skillful worker. For, so far as our investigations have shown, iron forms no essential part of the plant or animal, yet without it all growth and assimilation cease. If seeds are placed on a little cotton wool in a solution containing all that is essential to plant growth, with the exception of iron, they will sprout and grow until the iron contained in the seed itself is exhausted; two plants then quickly bleach and cease to grow. If a little phosphate of iron, which is almost totally insoluble, is added to the solution, and occasionally stirred up so that it may be kept in suspension and thus come in contact with the roots, the plant quickly revives and continues its growth. Iron is an essential constituent of chlorophyll, the green coloring matter of leaves. Chlorophyll may be separated into at least two distinct bodies, one green and the other blue. Professor Horsford is of the opinion that this blue substance is vivianite, or phosphate of iron, and gives the following experiment in support of this opinion: He made a mixture of phosphate of soda and protosulphate of iron, and found that this mixture was capable of reducing carbonic acid to carbonic oxide, and that crystals of vivianite were formed in the operation. He therefore considers it probable that the formation of phosphate or protoxide of iron may be a preliminary stage in the production of vegetable tissue. There is also a well-known native phosphate of iron that is colorless when first mined, but on exposure to light it becomes a beautiful blue.

The amount of iron existing in plants is extremely small. Bonssingault found that it was more abundant in the oat than any other plant examined; but this contained only 131 parts in 1,000,000, while the white part of cabbage contained but nine parts, the green containing thirty-nine. It also abounds in plants that are almost perfectly colorless; thus mushrooms contain twelve parts.

Although found in all plants, and constituting an essential part of their food, it has never been thought necessary to supply it to them artificially, all soils being supposed to contain sufficient for their wants. But no one can have failed to observe the greater luxuriance of vegetation on the strong iron soils derived from the old red sandstone than on those granite soils which are comparatively free from it.

It was long supposed that the red color of the blood was owing to the iron contained in it, but Malder and Van Guodoever found that they could extract the iron completely from the red coloring matter without destroying it. Moreover, the blood of an oyster also contains iron, although it is perfectly colorless.

The want of iron in the system constitutes a disease which is well known to physicians under the name of chlorosis, and many remedies have been proposed for it. This want must generally arise from a defective state of the organs of assimilation; therefore it will be of little benefit to administer iron alone, without adding to it some other stimulating tonic. Various preparations of this kind have from time to time been offered, and among these the various combinations of iron and quinine have long held a prominent place. These compounds should all contain more or less of the metal in the form of protoxide, as the protoxide seems to be much more readily absorbed than the higher oxide; and they should be free from the well known ink taste generally possessed by all compounds containing iron.

The dose of iron should be small, and its use continued for some time. The amount which is necessary for a healthy man, and which he obtains from his food, is from .9 to 1.5 grains per day, and it is probable that the dose should not greatly exceed this amount.—*Journal of Chemistry.*

SILICON STEEL.—Mr. Calvin Pepper, an American experimentalist, claims to produce a true silicon steel by imbedding wrought iron bars in sand and subjecting them to a very high temperature, which causes the metal to part with its carbon in the form of carbonic oxide, and to take up silicon from the sand, thus converting it into silicon steel. The *Iron Age* remarks on the subject: "This, at least, is what we understand to be his claim, and as he asserts that he has accomplished what he claims, producing a true silicon steel by this method from wrought iron, we are not disposed to quarrel with his theory until we have had opportunity of examining his process and testing the metal produced."

In 1867 M. Rabuteau announced that the poisonous power of the metals was greater as their atomic weights were higher and their specific heats were lower. This he now substantiates by additional discoveries, among them the toxic relation of potassium and calcium.

It is said that when alcohol is taken internally, the temperature of the body sinks. With small quantities this lowering of temperature is 0.5° and somewhat more; in drunkenness a lowering of 2° has been noticed.

The Behavior of Metals under Stress.

Interesting and important results have been obtained in the course of the investigations in progress at the Stevens Institute of Technology upon the behavior of metals under stress. The testing machine invented and designed by Professor Thurston, with his automatic registry, was described in our issue of April last, and its peculiar value in detecting all phenomena of stress, and in affording a reliable and permanent record, is shown by inspection of the curves giving in the plate accompanying that article. The apparatus was exhibited at the last meeting of the National Academy of Science, which was held at the Stevens Institute, and its capability of revealing the action of molecular forces under stress was illustrated. At the close of the session a test piece was left in the machine, strained far beyond its limit of elasticity, to determine, if possible, the existence or non-existence of "viscosity" in the metals. After twenty-four hours, there appearing no evidence of further yielding, the distorting force was increased, when the discovery was made that the resisting power of the specimen had actually become greater during the period of rest under strain, and the pencil, instead of descending, rose until it indicated an increase of about twenty per cent. in the strength of the sample, and it then traced a path parallel with but above that of the previous day.

Repeated experiments confirmed this remarkable and important deduction of the experimenter: That metal strained so far as to take a permanent set, and left under the stress producing it, gains in power of resistance up to a limit of time, which in those experiments was about seventy-two hours, and to a limit of increase which has a value, in the best iron, of about 20 per cent., where the applied force is eighty per cent. of the ultimate breaking force. In other words, the metal develops nearly or quite its maximum strength long before reaching the point of rupture, instead of at that point, as when broken at once by a continually increasing stress.

This discovery was announced by Professor Thurston at the annual meeting of the American Society of Civil Engineers, November 5th, and the possible bearing of the earlier experiments of the Committee of the Franklin Institute on "Thermo-Tension," and of the well-known property of the increasing portative force of magnets under strain, as illustrations of related phenomena, were alluded to. The existence of this property had already been suspected, but it is evident that it could only be conclusively proven by apparatus embodying the principles of that used in this research.—*Journal of the Franklin Institute.*

NEW METHOD OF ENGRAVING.—J. Luther Ringwalt, of Philadelphia, patented, in July, a new method of engraving typographic plates, or pictures, on zinc, which he has successfully applied to the production of book and newspaper illustrations, ornamental lettering, miscellaneous job work, show cards, etc., varying in size and fineness from small vignettes to half-sheet posters. He recently gave a detailed description of his process at a meeting of the Franklin Institute, on which occasion he had drawn and engraved, in thirty minutes, on a prepared plate, a portrait of Dr. Franklin, of nearly life size. Under his system, a zinc plate is covered with a varnish capable of resisting the action of the acid, through which a series of lines are drawn by a ruling machine at such intervals as are required by the general character of the picture to be produced, thus opening up avenues in which the acid can make the desired incisions; the shape, thickness, position and direction of these lines or scorings being readily varied to suit different classes of work. The artist then draws upon this surface the desired design, creating additional blacks by applying a protecting liquid with a pen or brush at the points where additional blacks are required, and removing the original ground, with an etching point or scraper, from the places where additional whites are necessary. This operation involves but little more labor than the production of a drawing on paper, and the character of the engraving depends upon the degree of skill with which it is performed. The plate is next subjected to the action of the dilute acid, and at this stage a variety of tints can be produced by etching some portions of the work deeper and wider than others. The process is so simple and inexpensive that it could readily be applied in any printing office which can command art assistance.—*Newspaper Reporter.*

SMOKE CONSUMING.—Some interesting experiments were lately made in Ohio, with a view to ascertaining the best method of consuming the smoke of soft coal furnaces, and, after a careful examination and test of a number of mechanical appliances designed to effect this object, the conclusion was reached that nothing was so simple and effective in preventing the escape of smoke as the introduction of sufficient oxygen into the furnace to effect complete combustion of the fuel, and thus prevent the formation of any smoke at all.

A NEW EXPLOSIVE.—Ozobenzin is the name given by MM. Houzeau and Renard to a new explosive substance. It is produced by acting upon benzine, boiling at 81° cent., with concentrated ozone; formic and acetic acid are produced, and a gelatinous precipitate formed, which, being dried *in vacuo*, becomes a white solid, which is the explosive compound named. It detonates violently when struck or when simply heated. It is unstable in the air; water decomposes and dissolves it.

MECHANICAL PROGRESS.

Small Motor Machines in Europe.

The demand for an economical and convenient small motive power is felt and appreciated throughout the civilized world. In this country we have several patented inventions in this field, utilizing steam, hot-air, gas and water, as the means of generating or conveying the force. We have also devices for storing up force where very small power is required, as for sewing-machines, some storing the power in a wound-up spring, a weight, in compressed air, or in a vacuum cylinder.

Of the principal devices for small motive power in Europe, and exhibited at the Vienna Exposition, may be mentioned the following: Messrs. Otto & Laagen, in Germany, and M. Lenoir, in France, make a machine which is driven by the explosive force of lighting gas; Mr. W. Lehman, in Germany, constructs a hot-air machine which claims to be an improvement upon the idea of our American engineer, Capt. Ericsson; while M. Hermann La Chapelle, in Paris, and others more conservative, build diminutive steam-engines.

The gas-engine of M. Lenoir in external appearance resembles a horizontal steam-engine, and indeed is nearly the same internally, having the same parts, piston, cylinder, valves, etc., but the power is obtained by exploding a mixture of gas and atmospheric air in the cylinder. During the first half of each stroke the piston sinks into the cylinder and gas in the right proportions. At the half stroke the mixture is exploded by an electric spark, which forces the piston through the remainder of the stroke.

Messrs. Otto & Langen's machine consists of an upright cylinder, open at the top, in which plays vertically a piston having a ratcheted rod, so arranged as in the down stroke to engage a cog-wheel, attached to the axle of the fly-wheel of the machine. The piston, during a small portion of its upward course, takes in the right proportioned mixture of gas and air, which is exploded at the point of the piston's course, where the mixture is shut off. Explosion of the mixture carries the piston upward until the pressure of the external atmosphere stops it. The explosion, depending upon expansion of gases by heat at the instant of combination, is immediately followed by a condensation and partial vacuum in the cylinder. The pressure of the atmosphere upon the piston forces it downward, and the ratcheted rod, engaging the cog-wheel, imparts this force to the fly-wheel. It is claimed for this machine that it is much more economical of gas than M. Lenoir's. The complications incident to the ratchet and cog-wheel arrangement are objectionable; but it is spoken of as having quite an extended use. The consumption of gas is about a cubic meter (39.31 cubic feet) per horse-power per hour. With gas at \$3.50 per thousand this would give nine-six cents per day per horse-power.

Of the small water motors, that of Mr. Schmid, in Zurich, a small oscillating water engine is well spoken of. It is on about the same principle as the oscillating steam-engine; having, of course, much larger valve-ports. It hardly need be remarked that the water-engine can only be used where a small supply of water with considerable head is at hand, as is the case in cities where the cost of water is not too great. In Zurich, where the water is supplied by a pump, worked by eighty horse power, the Schmid engine has come quite extensively into use.

The water column motor of Mayer, in Vienna, also designed for light work, is in principle like a horizontal steam-engine. The arrangement of the regulator and air-chamber, for the purpose of avoiding the hydraulic shock incident to such engines, is quite ingenious. The machine requires more space than that of Schmid's.

The small turbine wheels of Messrs. Escher & Wyss, and of Mr. Gwynne, are also designed for the utilization of power furnished by a water column on a small scale.

The hot-air machine of Lehman claims to have an advantage over the Ericsson engine in an arrangement by which the air in immediate contact with the piston is never heated above 300° Cent. (560° Fahr.), thus saving the packing and lubricating material of the piston. Beyond this advantage it is not easy to see the superiority.

Then come the small steam-engines of M. Herman La Chapelle, in Paris, which have nothing remarkable about them, except that they are small and well made. It is very questionable whether, when people come to learn that small steam-engines can be made perfectly safe, and can be run without any extraordinary skill or judgment, the advantages of all the so-called improved motors will seem so great as at present. For most cases where small motive power is needed, the small steam-engine, if well devised, and well made, is the cheapest and the best.—*Artisan.*

It is stated that the quantity of coal necessary to raise a million gallons of water 100 feet, varies in England from 17 cwt. to 114 cwt.; this is said to be due to the varying qualities of coal used, but more particularly to the construction of the pumping engines.

Two monitors are being constructed at Bremen for use on the Rhine. They are covered with a one inch plating—a sufficient protection against infantry fire, and, it is thought, against field artillery. They will draw only five feet of water.

Sand Blast Engraving.

The *British Trade Journal* seems pleased with Tilghman's contrivance for engraving on glass, by means of sand blast. It is a Philadelphia invention, lately on exhibition at the London International Exhibition. The principle of the apparatus is by a blast of air, steam, &c., to cause innumerable particles of sand to impinge where portions of glass, stone, metal, &c., are to be removed. Mr. Tilghman is thus enabled to produce not only excellent work, but with a rapidity almost incredible. For example, a square or triangular hole of half an inch in the side can be bored through a sheet of ordinary plate window glass in less than one minute. Designs of lace work—also photographs—can be "eroded" or "ground" on glass with great rapidity.

There are two machines now in operation upon glass, and one at work on stone. The small machine is to appearance a very plain painted box or stand—nothing of machinery visible. In the top of this box are two holes, about an inch and a half in diameter. If the wooden casings were removed, there might be seen below these holes a pipe, which descends, and is formed somewhat trumpet-mouthed on the outside of the bottom of the box. Below this month is a trussed wooden basin. From the upper part of the box, on the spectator's left hand, a pipe passes underneath the floor to the center of a rotating fan, near the wall of the room, and therefore by this a vacuum can be formed in the box. As the only inlet of air is past the trumpet mouthed opening, a rapid current ascends the pipe connected with it whenever the exhaust-fan is at work. From large hoppers (funnel-shaped) containing sand, a regulated quantity falls toward the turned wooden basin; in falling on the basin it is influenced by the entering air, is jetted from the pipe, and so strikes upon, say, glass covering the holes; the exposed glass is rapidly depolished. Where, however, an elastic substance as paper, India-rubber, etc., covers the glass, no action of sand takes place.

If interstices or openings be formed in this elastic substance, as a pattern, then the surface of the glass is removed in accordance with such pattern, and to a depth dependent upon the time of exposure, and the intensity of the current of air, and quality of the sand.

Next to this small "vacuum" machine is a large compressed air-blast, one capable of acting upon a sheet of glass three feet broad. A design in paper or lace being pasted on the glass, it is laid upon endless bands, by the motion of which it may be carried forward. In the middle of the compartment (which is glazed upon one side so that spectators may see the operation) provision is made, by a suitably-formed transverse opening, for a blast of air with sand. When the ordinary machinery is set in motion this blast commences, the glass is traversed at a pre-arranged velocity, and in as little time as one may require to read this account the ornamented glass is delivered at the side of the box opposite to that at which it entered.

So slightly an elastic surface as the changed character of some of the materials used in photography suffices to resist the action of the sand; hence the photographic design may be etched by sand on glass. Examples of various works done by this process are on the table near to the machine. The third machine is in a separate building. It consists of a wooden table, on which the stone is laid. This table can be traversed impulsively in one direction, by the action of a Clement's driver, on a spur wheel, and so motion is given to a rack.

Above the table provision is made for traversing the combined steam and sand jet. This is accomplished by a mangle-wheel motion, variable according to the breadth of the stone to be operated upon. By these two motions, transverse to each other, every portion of the stone may be reached. The steam and sand jet is arranged upon the plan adopted by Mr. Siemens, for exhausting the telegraph dispatch tubes—the sand being admitted by an inner small tube, surrounded by jets of steam, as from concentric rays of an argand burner. Whilst the writer was present a delicate and somewhat intricate pattern was laid upon a piece of marble. The steam in the boiler was at 55 pounds pressure. In five minutes the marble, measuring thirteen inches by six inches, was penetrated to a depth of about three-sixteenths of an inch, leaving the surface as originally polished, and with the beautiful tracery design in high relief.

CIRCULAR LITHOGRAPHIC STONE.—Mr. C. Maurice, of New York, has invented a form of lithographic stone for direct printing, which promises to effect a complete revolution in the art. He boldly discards the ordinary flat stone, and by the use of diamond stone-working machinery produces a solid cylinder, from which, of course, impressions may be taken with greater facility and rapidity.

In Paris the story goes that the old sardina boxes are gathered up by rag-pickers and sold to builders, who fill them with mortar and use them in the construction of cheap dwelling houses. Where is the economy?

WHEAT CLEANING MACHINERY.—The agriculturists of South Australia have resolved to offer a first prize of £1,200, a second of £600 and a third of £300, for the best wheat cleaning machinery.

SMITH & WESSON's establishment at Springfield turns out over 300 revolvers daily.

MINING SHAREHOLDERS' DIRECTORY.

NOTE.—In the Stock Boards an assessment is delinquent thirty days from the date of levy, exclusive of interest.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

acter of rock is taken out that was found above, "lousy" with gold. If the same character of rock is obtained for twenty feet more, we understand that a mill will be erected immediately, and work will be commenced in dead earnest. The prospective outlook for quartz mining was never so bright in this vicinity as now.

The new mine of Messrs. Brewster & Sheperd is rapidly being fully developed, and looks better and better each day. It is undoubtedly the richest quartz vein yet struck in this part of the State.

Work is progressing on the Gross and True ledges, over in Big Cañon, and both ledges continue to look encouraging. One or both of these ledges will have a mill upon them before another winter. The Gross ledge has now a large amount of rock in sight that will work from \$30 to \$50 per ton, and there is no reason to doubt that it will eventually be one of the best paying mines in the district.

INO COUNTY.

NOT AN ENTIRE SUCCESS.—*Independent*, Dec. 27: We are sorry to learn that some of the plying of the Cerro Gordo Water Works gave way under the immense pressure to which portions of it were subjected, so that the grand nomenclature of Cerro Gordo's hopes is not yet realized. As the work in all other respects is substantial success, this weakness of a few pipes is a matter of small consequence—quite different from the possible inability of the engines to raise the water such an immense height, but they send it up without the least difficulty.

MARIPOSA COUNTY.

NEW DISCOVERY.—*Gazette*, Dec. 27: From Mr. H. B. Silver, Superintendent of the Francis mine, we learn that on the lower level of the Francis mine he has discovered a very rich chute of ore, about a foot thick, which is literally lousy with gold. Men are now at work sinking on said new discovery, which is increasing in size as they sink on it.

THE FRANCIS MINE.—Last week we stated, on what we considered reliable authority, that the Francis Mining Co. had suspended work on their claim. Since then we received the following communication from the Superintendent:

"DEAR SIR: I perceive in your issue of the 16th inst. there is a statement to the effect that work has again been suspended on the Francis mine, the owner finding it unremunerative. Where you got your information from I do not know, but wish you to correct the above statement, as it may work injury, perhaps on your part unintentional, to the present owners."

NEVADA COUNTY.

ALLISON RANCHO MINE.—*Union*, Dec. 28: We learn from good authority that the Allison Rancho mine will be started up again early in the coming year. With the "Rancho" will be started the first extension south on the same ledge. The management of the new start will be prepared to find gold or the clinders down toward the center of the earth. There are several other idle mining properties in this district which should be started and which will eventually pay.

PLACER COUNTY.

LINCOLN COAL MINES.—*Herald*, Dec. 27: This mine is now pretty thoroughly opened. Hoisting works are completed. A force of men are employed in the mine, and large quantities of the useful and valuable mineral are being brought to the surface. We have before us some fine specimens of this coal; we have tried by experiment the combustible properties of the article, and find it burns readily. It certainly is valuable, but to what extent remains partly to be known. Shipments have already been made to Sacramento, and parties there, supposed to be capable of judging, after testing its properties, speak very favorably of its qualities. This discovery promises to be of no small interest to the country, as the working of these mines will give a new impetus to the lower part of the county, which will redound with good results to all.

SAN DIEGO COUNTY.

JOHAN.—Correspondence *World*, Dec. 20: I visited the Stonewall mine to-day and found it in a very flattering condition. The storm has had the effect of saving an immense amount to the proprietors from the fact of its caving in the large opening from the surface to the first level, which also has disclosed an immense amount of very rich ore. The mill is kept running constantly day and night on very good average rock. The yield is very handsome. The proprietors are in very good spirits on account of having such a large body of water in the laguna, which will last them six or eight months, even if it should happen not to rain another drop the whole season.

SIERRA COUNTY.

GOLD BLUFF.—*Messenger*, Dec. 27th: The Gold Bluff Mine was sold at Refore's sale, last Saturday, and purchased of Mr. Behm for \$7,000.

WATER SEASON.—The coming season bids fair to be one of the best for water that we have had in a long time. The large body of snow is thoroughly saturated with water, besides which the ground is full. It is years since we had such large quantities of snow in as good condition as now for making water, so early in the season.

TUOLUMNE COUNTY.

THE FIRST CLEAN UP.—*Independent*, Dec. 27: Was had at the Alpha T. M. Gravel mine on Friday last, and the result was equal to a reasonable desire. The best of gravel is widening and improving. A force of ten hands is at

present employed, and more will be added as room is made for them to work. The company will put up a mill in the spring.

The quartz mill at Spring Gulch is now running night and day, having plenty of water.

A large force of men will start for the mountains, as soon as the weather permits, to repair the flume of the Water Co. at Rocky Point.

EXCELLENT rock comes from the new 70 foot level of the New Albany mine, bearing pure gold, sulphurets and galena.

Nevada.

ELY DISTRICT.

ALPS.—*Record*, Dec. 20: The drift from the bottom of the shaft is in 530 feet.

BOWEN.—Getting ready to drift as fast as possible, and expect to start in within a few days.

CONDOR.—Still drifting for the ledge, with good indications. Small stringers or seams of ore are found in the face of the drift.

HORN AND HUNT.—Pushing the main drift ahead, and the work is being carried forward rapidly.

HAVANA.—Down 267 feet, and still sinking. Struck the pay streak mentioned on Thursday about six or seven feet from the bottom of the present shaft. The vein has increased in width until it is now 12 feet wide.

LOUISE.—Ore from this mine is being milled, and pulp assays average about \$147.

MEADOW VALLEY.—No. 3 shaft is now 92 feet below the tenth station, and it will not be long before another station will be made. The drift from the tenth station, running west, is in 50 feet. The east drift on the ninth level is in a distance of 387 feet, and is being rapidly pushed ahead. The east winze from the eighth level is down 54 feet. The east drift on the 520-foot level is still being continued, and is in 332 feet. The snout shaft is down 881 feet.

Running a cross-cut south to connect with the west drift of the eighth station, No. 7 shaft.

NEWARK.—Now working on the 600-foot level, and a marked improvement in the mine has shown itself during the week. The Newark has a ledge about 20 inches in width, with ore which it is believed will yield from \$200 to \$250 to the ton. It is thought the ledge on the 700-foot level will be cut in about 25 feet more.

PAGE AND PANACA.—Work in this mine is going on satisfactorily, with an addition recently to the force of men. Work is pushed ahead night and day. We saw yesterday some very rich ore from Page & Panaca, which was taken from the Gussie, a ledge struck less than two weeks ago, and which has since been recorded by the Superintendent for the Page & Panaca company. The ore in this ledge is increasing in quantity and improving in quality. The Page & Panaca has the great advantage of an abundant supply of water for use in the boiler, which saves an outlay of \$400 or \$500 per month. The mine looks well throughout, and is being worked vigorously and economically.

PIOCHE.—The new works, near the old Burke shaft, are about completed, nothing being left to be done but to put in the flooring. The building is a frame work, 48x75 feet in dimensions. The castings were all made at the foundry of the Nevada Central Railway, Bullionville, and are equal to any cast in San Francisco or the East. Steam started up for the first time on Friday, and it was found that the machinery worked to the entire satisfaction of all. The engine was used to draw up from the railroad track, about 200 yards below the works, the 750 feet of wire rope to be used in hoisting. The rope has been placed upon the reel, and all is now about ready to begin hoisting. The entire works are very substantial, as much so as any in the district. The engine rests upon the bed rock, and is 30 horse power, and a very superior piece of machinery. A blacksmith shop is also connected with the works. A contract has been let to sink the shaft 246 ft. further, which will make 660 feet in depth. Sinking will commence to-morrow. T. R. Butler will have charge of the Pioche during the absence of Mr. Nelson, present superintendent.

WASHOE DISTRICT.

AMERICAN FLAT.—*Gold Hill News*, Dec. 27: Driving the main southwest drift on the 400-foot level is making good progress. No cross-cutting yet.

ARIZONA, UTAH AND GLORE.—The face of the main west drift is still in quartz of a very favorable character. An ore chute for the extraction of ore through the main incline, is being erected. The prospects for the development of pay ore in the south drift, from the bottom of the incline, are good.

BELCHER.—Daily yield, 450 tons of ore. The ore breasts and stopes throughout the mine never yielded better or looked more flattering than at present. The main south drift from the Crown Point, on the 1,300-foot level is in 535 feet, still in quartz. The north drift on the 1,300-foot level, from the main incline, is in 272 feet and will make connection with the south drift from the Crown Point in about ten days more, thoroughly ventilating that level of the mine and affording the long desired opportunity of hoisting their ore through the company's own shaft. The timbers for the 1,400-foot station, in the main incline, are in, and a drift just started. The winze from the 1,200-foot level and the up-raise from the 1,300-foot level, have also made connection.

CROWN POINT.—Daily yield, 400 tons of ore, which is being extracted from the 1,200 and 1,300-foot levels. The ore stopes and breasts on both these levels are looking well and yield-

ing finely. The main south drift on the 1,400-foot level is being driven rapidly ahead, the face in rich ore. Breasting out and extracting ore from this level will be commenced as soon as the main drift has reached the Belcher level. The main south drift, on the 1,500-foot level, is making steady progress; the flow of water from the face continues strong, keeping the pumps steadily running. The vein matter, in the face of the drift, shows every indication of another rich level, when the main ledge shall have been reached and opened.

CONSOLIDATED VIRGINIA.—Daily yield of ore, 260 tons, being all that the mills now employed by the company can crush. Average yield of ore crushed by the mills during the past weeks, \$81 per ton. The north winze, on the 1,200-foot level, is down a perpendicular depth of 140 feet, the entire distance in rich ore. It was the intention to commence cross-cutting in this winze at the depth of 100 feet, but the ore steadily increasing in richness, has caused a steady prosecution of the work of sinking instead. Many of the assays for the last few feet run high into the thousands, while the average for the past week, has been over \$200 per ton. The up-raise from the 1,200-foot level is up 137 feet, also in rich ore. The main east drift, on the 1,000-foot level to connect with this raise, is making fine progress having only about 40 feet more to run to make the connection, which will then give good ventilation to the 1,200-foot level and greatly facilitate the work throughout the mine. The south winze at a depth of 80 feet, has passed through the ledge and struck the west clay wall, and at the same time tapping a heavy flow of water, which in a few minutes, drove the men out and stopped the prosecution of the work in that quarter for the present. The new station at the 1,300-foot level, is opened and a main drift started for the ledge, which is being prosecuted with all the vigor possible.

CHOLLAR-POTOSI.—Daily yield, 100 tons of ore, the assay value of which is \$30 per ton. There is but little change of importance to note in either the quality of ore extracted or the general appearance of the ore-producing sections of the mine. The main south drift at the third station has shown but little change during the week.

CALERNIA.—The principal part of the week has been spent in draining the water in the shaft between the 500 and 600-foot levels. The water is now completely drained below the 600-foot station, and some necessary repairs are being made preparatory to resuming work on the lower levels. The drain tunnel is in 300 feet, making extraordinary good progress.

GOULD ANN CURRY.—The main east drift, on the 1,500-ft. level, is being driven ahead with all possible vigor, the face still in very promising ledge matter. The main east drift on the 1,600-ft. level, is also making good progress. The rock in the face of the main east drift on the 1,700-ft. level, is getting much softer, indicating a near approach to the west wall of the ledge.

HALE & NORCROSS.—Sinking the main incline is making fair progress, the rock in the bottom blasting finely.

IMPERIAL.—All work in the mine is suspended for the present, for the purpose of putting in a new, heavy gear wheel and hoisting reel.

JULIA.—The water is drained to below the 1,000-ft. level, and the main drift on that level is being repaired preparatory to driving it ahead and opening the body of ore developed at the time the men were driven out by the water. The main south drift, on the 900-ft level, is being steadily driven ahead with excellent prospects of good ore developments soon.

OVERMAN.—There is no change of value to note in the main west drift on the 1,200-ft. level, except a steady increase in the flow of water from the face. Cross-cutting and prospecting are being prosecuted as usual on the 1,000-ft. level.

OPHIR.—The ore development in the south drift on the 1,465-ft. level continues to show a steady improvement as the work advances, and there no longer seems to be a reasonable doubt of the permanency of the new discovery. The main south drift on the 1,700-ft. level is still driven vigorously ahead with but little change to note, except a slight increase in the quality of water.

SUTRO.—The main south drift is in 197 ft. Ore constantly improving in quality. A large stream of water encountered in this drift keeps the pumps actively employed. The ledge looks finely, and the prospects as regards the permanent value of this mine are very encouraging.

SAVAGE.—Sinking the main incline is making good progress. The main east cross-out, near the north line, is still being pushed vigorously ahead.

SIERRA NEVADA.—Daily yield, 60 tons of ore, keeping the company's mill steadily running. The ore stopes and breasts are both looking and yielding well as usual. The up-raise from the main tunnel, in the old Sacramento ground, is giving promise of the development of a body of good ore, which, if it proves of sufficient extent, will soon enable the company to again start the old Sacramento mill. Sinking the new shaft is making fair headway, the rock in the bottom blasting finely.

SILVER HILL.—The water has almost entirely subsided in the shaft, and good progress is being made with the sinking. The main south drift at the second station is being pushed steadily ahead, the ore in the face showing spots and streaks of exceeding richness and promising a development of extraordinary value. The main north drift at the second station during the week made connection with the north winze

near the Justice line from the first level, giving a much needed circulation of pure air and greatly facilitating work in that part of the mine.

TYLER.—The main west drift at the 200-ft. station, is still driven ahead at the rate of 2½ ft. per day, the face of the drift in porphyry. The main east drift is in 185 ft., the indications of soon reaching the main ledge being excellent.

UTAH.—Driving the main west drift at the lower level to tap the ledge is making good progress. The last 32 ft. has been in clay which is supposed to be the east wall of the ledge. There is a light though steady flow of water from the face of the drift.

Colorado.

SAN JUAN DISTRICT.

Correspondence of *The People*, Dec. 19: Since my last writing I have made a "flying visit" to Aioimas mining district (San Juan.) I visited the famous Green Mountain, and in company with two others, took out about 800 or 900 pounds of the richest silver ore I have ever seen. We left the mine showing a vein of about five feet of mineral, with nineteen inches of gray copper, worth from \$2,500 to \$3,000 per ton. The Mountaineer, also, is similar, perhaps as rich. The Little Giant I found being vigorously worked, showing a vein of about four feet, with a streak of about eighteen inches of the same dark-looking stuff that it has carried from its first opening, and which pays several thousand per ton, in gold. The Dexter and Central, owned by Johnson, Blair, and others—original owners of the Little Giant—may also be put down as among the "first-class." I also visited the "La Plata," a ledge discovered by George W. Hartman, a day or two before I arrived in the mines. The ore in this ledge resembles some of the Georgetown mines. It shows between four and five feet of sulphurets of silver. Assays show from 242 to 900 ounces per ton, silver. I understand since my return that he has sold the mine for \$15,000 to parties in Chicago. The Dexter and Central lie within one thousand feet and cross the Little Giant; yet while the Giant is entirely a gold ledge, they are silver. The McGregor, owned by Robert McGregor, is another of the many in that district, (in fact, I may say hundreds,) which may be put as first-class.

Lower California.

JAPA.

THE MINES.—*Cor. S. D. World*, Dec. 20: The Northwestern Gravel Range is all gold, and averaged, as far as I've prospected (several miles) uniformly the same; and the best pay dirt is from ten to fifteen feet deep, the latter worked by a party from whom no tidings had been heard for some time, and whom we found prospecting the field already mentioned. In my opinion the gravel range is the gold belt. It runs wash gravel, with wash quartz, boulders, and blue dirt. Some places are covered with a cap of granite, with an underlying stratum of blue granite, and slate bed rock. There is plenty of water by digging for it.

Montana.

THE GALLATIN SILVER MINES.—*Montanian*, Dec. 20: Development is being energetically pushed, on some of the Sixteen Mile creek silver veins. They are about 45 miles north-east of Bozeman. Some of the Sixteen Mile ores are said to be fabulously rich, running up into the thousands per ton. The ledges vary in width from 2 to 35 ft. The general formation is lime, slate and quartzite.

THE MCCOOK MINING EXPEDITION.—General McCook, who was shot and killed, three or four weeks ago, in an altercation in Yankton, Dakota, was at the head of an extensive exploring expedition, organized for prospecting in the Yellowstone valley next summer. The general was in possession of several tons of very rich gold quartz, said to have been obtained in the Yellowstone valley, 250 or 300 miles above Bismarck, and an excitement had been raised at the time of his death which promised to rival the Pike's Peak excitement in 1859.

Utah.

LITTLE COTTONWOOD DISTRICT.

MINING.—*Oor. Tribune*, Dec. 24: Our mines continue to prosecute work without interruption by the storms. There are no new strikes reported. The Emma, as usual, is working the second class dumps, and is also taking out ore from the rich strike made lately in the bottom of the mines. The Flagstaff has shut down for a short time, for the purpose of squaring up its accounts, and to give the new management ample time to prepare everything to run the mine in a more economical manner. The Davenport mine still remains in the possession of the Sheriff, but it is rumored on our streets that the company will pay up some time during the week, and probably resume work. The Bay City Tunnel has completed the engine-room and are now ready to place the machinery under cover, and commence operation as soon as all the necessary machinery has arrived on the ground. The shipments during the last week were not as large as the previous week; one cause is the shutting down of the Flagstaff, and the other, that the snow has drifted in some of the roads leading to the mines that are shipping ore, which compelled their superintendents to apply the whole of last week to clear the roads, and get them in such a condition that the ore can be hauled away on sleds or raw hides. The amount of ore shipped is as follows: Emma, 70 tons; Flagstaff, 100 tons; Grizzly, 130 tons.

Alpine County Mines.

From the general mining review of the *Alpine Miner* we collate the following:—Alpine District is bounded by Silver Mountain on the south, Raymond on the west, Webster on the north and Monitor district on the east. Its water power supplied by a frontage on the East Carson river of some seven miles is unsurpassed, and the heat of timber in sufficient quantities for years to come, in connection with numerous ledges of silver-bearing ore, makes this a locality of more than ordinary interest. The rich ledges of the Scandinavian Cañon have a bearing direct for the heart of this district, and many of them have been sufficiently prospected to give them a market value in the eyes of mining experts.

The St. Helena Mine,

Supposed to be the northern extension of the Buckeye No. 2, now owned and worked by the Eschequer Co. of London, has had considerable work done upon it, developing a good quality of ore in moderate supply. The deepest working does not extend below 80 or 100 feet, at which point the ledge is large and well defined, showing unmistakable evidence of being a true fissure vein. This mine is owned by John Weis & Co., of Markleeville, and is valued at a round figure, notwithstanding the present depression in mining matters. There are several other promising ledges in the vicinity of the St. Helena, all of which will find their natural outlet at Markleeville.

Mount Bullion.

This is a mountain of large extent, literally seamed with massive ledges whose outcrop in places reaches an altitude of 46 feet above the surrounding country. The Mount Bullion Tunnel Co., an English institution, started at a point on the west bank of the Carson river at Bullions, and drove in the mountain a distance of 2,000 feet to cut a belt of ledges which cross the eastern face of the mountain. They stopped about 250 feet short of the point where the main ledge might reasonably have been expected to cut the plane of the tunnel. The company did not stop for lack of funds, like most of the companies that have undertaken the development of our mines, but stopped on the recommendation of a Superintendent who assumed a knowledge of mineralogy in advance of the expert sent out by the owners previous to the purchase of the property. When a company will accept the dictum of a person of the merest superficial knowledge of geology and mineralogy, in preference to that of such an adept as the very celebrated John Arthur Phillips of London, they are deserving of the loss entailed upon them by the abandonment of so magnificent an enterprise as this.

The Santa Eulalia Company once had a vast property in this district, consisting of a large number of ledges and about 2,000 acres of the finest timber land in the State. After expending several thousand dollars in '63 and '64, when the first reaction came after the great excitement of '60-'63, they allowed everything to go by the board. This company had a large element from Virginia, Nev.; among them we call to mind Samuel A. Chapin and Judge Leconey, and the lamented E. A. Hille, one of the pioneers of "Washoe." Mr. Chapin is probably one of the most extensive Comstock owners of the present day, having patents for several thousand feet on that famous lode, scattered along its line from Gold Hill to the lower end of Silver City. One of his locations is destined at no distant day to make its fortunate owner one of the richest men on the Pacific coast. This is the Table Mountain mine, near the Bacon mill. Prof. Raymond pronounces it unmistakably on the Comstock ledge. This leads us to the question, have we a Comstock ledge in Alpine county?

How often has this question been asked, and how variously answered, none but the pioneers of Alpine can tell. We have been favored with transient visits dating from '62 to the present writing, from such celebrities as the late Dr. Snell, of Sonora, Cal., Prof. Whitney, of the State Geological Survey, Captain James Barrett, of Cornwall, England, John Arthur Phillips, Prof. Coggia, of the Paris School of Mines, all of whom have a world wide reputation; besides such lesser lights as Prof. Kustel, Prof. W. T. Rickard, F. C. S.; Dr. Veitch, M. E., of Virginia, Nev., Prof. Lapham, of Milwaukee, Janin, brother of Louis Janin of diamond notoriety, and others less known in the mineralogical walks of life. The verdicts of such men as Phillips, Barrett and Snell, were decidedly favorable, while that of Whitney was so-so, and a majority of the balance decidedly that Alpine county must in time take high rank in the production of the precious metals. To refer back to the query as to whether we have a Comstock ledge in Alpine county, and in answer to that query, we are permitted to copy from a late report on the

Good Hope Mine.

This mine is situated on the bank of the East Carson river, about two miles from Markleeville. The report says: "The evidences are unmistakable that this is a true fissure vein. It has heavy clay walls and carries a large volume of water, and can be traced by its outcrops for a long distance, and the country upon each side for a great breadth shows evidence of extensive mineralogical metamorphism, as does the surrounding country to the Comstock. It is a fair presumption that like causes produce like results. The ore, too, is a free milling ore, identical in its combinations with the Comstock, and so like in appearance that no person but an expert can distinguish between

them." This mine was located in 1863, and was worked spasmodically up to the early part of 1867, when the company became bankrupt and it fell into the hands of creditors. A first effort was made to develop this mine by an incline shaft following the foot-wall, but at a depth of thirty-two feet the water became too strong for hand control, and work suspended. The next effort was by a tunnel running into the hill to strike the ledge at an obtuse angle, and thence by following the ledge south into the mountain. The tunnel from its mouth, in for a distance of 200 feet, penetrated a country rock of soft porphyry, when it cut a clay wall six feet thick, which drained off the water from the incline shaft above referred to, showing this clay to be the true east wall of ledge. After passing this wall for about 20 feet the vein matter consisted of a mixed porphyry and quartz showing some veins of quartz of a thickness of eight inches, which were quite rich in gold and silver. On the west wall a solid vein of quartz, three feet thick, was struck, which was thence followed in an unbroken chain southward into the mountain 400 feet. At points in this distance the ledge made to a width of 10 feet, while the average would be about five. The ore in some places is much decomposed, while in others it required a free use of powder to extract. The dip of the ledge is about 40° to the west, with a strike averaging nearly due north and south. The ore at the depth attained by this tunnel is of a low grade, averaging by mill tests \$12.75 per ton. At the time of the suspension this grade ore could not be worked to a profit. But with the facilities this mine offers for cheap extraction and the improved methods of reduction, it can now be made to yield a profit of at least \$2.60 per ton. Taking the quantity of ore in sight, with the almost certain increase in quantity and quality, as greater depth is attained, this mine offers great inducements to capitalists, and must at no distant day find an owner of sufficient means to make it a first-class property. Mines in and about Virginia and Gold Hill, with not one-tenth part the promise of this, have had from a hundred thousand to half a million of money spent on their development, without grudging, and are still being worked with vigor when the degree of promise at a thousand or fifteen hundred feet is nothing as compared with the Good Hope.

The Pantalone Survey.

The *Sonoma Democrat* gives the following concerning the contested survey of the Caslayomi grant, in which case Commissioner Drummond recently ordered a new survey: "Mr. Drummond's instructions are that the two legs of the so-called Pantalone survey shall be cut off, leaving the Geyser Springs and the quicksilver mine in the Hog's Back range on public land. This will give satisfaction to the miners and settlers on that portion of the land which will be left out of the new survey. It leaves the title to the Geysers, the Little Geysers, and all the mines with the locators and discoverers, or those who have purchased from them. The title to the Geyser Springs now lies with J. S. Polack or W. S. Chapman. The former claims under a location of school land warrants. Chapman, who is in possession, claims under a location of Sioux scrip. The contest for this great California wonder narrows down to these two parties, between whom a suit is pending. The claimants under the grant are, of course, defeated by the decision of Commissioner Drummond. The grant was made by Micheltoreno to Montenegro, an officer in the Mexican service. It called for eight leagues of land. Montenegro sold to Forbes, British Consul, his right for \$4,000. One-half the purchase money was paid down and one-half to be made on confirmation of the title by the United States.

The claim was rejected by the land Commissioners. Their decision was set aside by the United States District Court. Meanwhile Forbes died without, as Montenegro claims, having paid the balance of the purchase money. He then deeded the land to Fremont for the sum of \$80,000. Brooks and Valentine, land agents, succeeded to Fremont's title. T. J. Bell, of the house of Burron & Co., represents the Forbes heirs. At the instance of Brooks and Valentine the famous Pantalone survey was made by J. T. Stratton, deputy from the office of U. S. Surveyor-General Hardenbergh. The body of the plat lies in the direction of Cloverdale. One leg ran down Russian river, including all the land between Little Sulphur and the Muscaloon, Tzabaco and Sotoyome ranchos. The other leg ran up Big Sulphur Creek, and included the Geyser Springs and a number of mines. The survey was rejected by the Land Office in Washington, and forwarded back to take testimony regarding the boundaries. This was done in April last. The recent decision locating the land north of Little Sulphur, in a compact body, is the result of that examination. The claimants of the Caslayomi (now shorn of its monstrous proportion, its wonderful natural curiosity and its wealth of quicksilver) will have leisure undisturbed to fight over the fine sheep range which is left them south of Little Sulphur Creek."

FISH HATCHING IN CHINA.—A curious mode of fish hatching is said to be followed in China. Having collected the necessary spawn from the water's edge, the fishermen place a certain quantity in an empty hen's egg, which is sealed up with wax and put under a sitting hen. After some days they break the egg and empty the fry into water well warmed by the sun, and there nurse them until they are sufficiently strong to be turned into a lake or river.

Carbolic Acid.

The men that saw flesh and saw bones for a living are enjoying a sensation. A new invention has been given them which, though less startling than the discovery of ether or chloroform is not a whit less important. Ether abolishes the pain of operations, but the new agent in many respects abolishes the operations themselves, and restores to solid usefulness limbs which, three years ago, presented only the alternatives of amputation or death.

The name of this new king is carbolic acid, and the surgical world is all astir on the subject of his majesty's exploits.

Carbolic acid has a low origin and a smutty pedigree, for it was born in the coal mines. When coal tar is subjected to certain chemical manipulations it yields a mass of beautiful white and silky crystals, having an odor like creosote, and such a strong pungency as to be almost caustic. Diluted in water, however, it is very mild, and is borne even on raw flesh without pain.

About three years ago Prof. Lister, of Glasgow, Scotland, stumbled upon the discovery that under certain management carbolic acid would heal up most fearful injuries without the formation of any of the offensive matter heretofore considered inevitable, and with scarcely any of the usual pain and exhaustion—in fact it would close up with healthy flesh ghastly openings, which a fortnight had been wont to terminate in amputation or death. Such startling results could not remain unnoticed. The whole surgical world was aroused, and experiment followed experiment, until a wide field of fresh facts was explored, and a new surgical principle of magnificent proportions stepped into the arena.

Let us review a few of the main points of the discovery. Suppose a patient has received an injury, shattering the bones of the knee-joint and opening its cavity to the external air. What has usually been the consequence? First of all, it begins to grow red, hot and swollen; in other words, it is inflamed. Next it begins to discharge immense quantities of yellow matter, then the air which gains access causes these fluids to decompose and become horribly offensive. The decomposition generates poison in the depths of the wound of a most deadly character, which infects the surrounding flesh with erysipelas and mortification; meantime the broken bones die and rot, the patient becomes rapidly emaciated, and his haggard countenance betrays his fearful exhaustion; his veins absorb the poison from the wound and carry it to the whole system, often causing him to sink into an untimely grave; or he may barely survive, and recover, after years of suffering, with a crippled limb.

Now such cases are treated on a new plan, and the difference in the result is marvelous. The skin remains white and natural; there is no offensive odor, and scarcely any discharge or swelling; the bones do not decay; the flesh does not mortify; the blood is not poisoned. In short, the patient recovers as easily as though he had not been in the slightest danger.

What makes the difference? The microscope has revealed the mystery. It has been discovered that everywhere around us there are countless germs of living animals invisible to the naked eye. They float by millions in the very air we breathe, and penetrate to every open wound, where, alighting like an invisible dust on the moist surfaces, they develop and multiply by myriads every hour. These microscopic animals are the cause of putrefaction in all dead animal matter, and of many poisonous and putrid discharges from wounds in living flesh. So true is this that in the hottest summer weather, if a joint of butcher's meat be subjected to some process sufficient to kill all the germs upon it, and measures be taken to prevent the access of any more, it will dry up without offensiveness or decay. The same thing occurs in the pure air of the Rocky Mountain regions. In these lofty heights there is often such a destitution of organic germs in the air that dead carcasses absolutely dry up on the ground without decay. It is these pestilential animals which cause the chief part of danger and trouble in wounded knee joints and in many other surgical troubles. Hence, where filth and foul material is most abundant the germs are most numerous, and human wounds most dangerous, as, for instance, in overcrowded hospitals and in ill-ventilated houses.

Prof. Lister found that diluted carbolic acid, though innocent when applied to human flesh, was a deadly poison to all microscopic animals; and with this fact like a sword in his hand he conceived the idea of destroying all the microscopic animals in a wound by this means, and of preventing the entrance of any more, and thus evading the chief terrors and dangers.

Without going into tedious details, we may state the outline of his plan as follows: The surgeon prepares two bottles, one of which contains water holding five per cent. of carbolic acid in solution, and the other has oil holding ten per cent. of the acid. The wound is first cleared of all dirt, sticks and other dead objects which may be present, as well as all bits of bones which may be lying loose in it. It is then boldly and thoroughly washed out with the watery solution, which kills every animalcule germ within it without any serious pain to the patient. The parts are then closed up and a piece of lint or cotton batting is dipped in the oily solution and laid over the whole wound. Over this is placed tin foil or rubber

cloth, to keep out the air and retain the vapor of the carbolic acid. This process in wide wounds must be renewed every day, but in those with small orifices may be used only once a week. Of course it is varied in many ways, according to the nature of the injury and the fancy of the surgeon; but two points must be observed, viz., to kill every animalcule in this wound, and to prevent any new ones from entering. The results are astonishing.—*Mining Journal*.

More Salted Mines.

The *Detroit Free Press* says: It is pretty generally known that E. B. Ward of this city, made a big thing by investing in the Silver Islet mine in Lake Superior, which has panned out more silver dollars for the stockholders than any similar enterprise entered into since the palmy days of California mining. His success with Silver Islet made him approachable as to other mining stocks, and it has just been ascertained that he claims to have been taken in and done for fully as badly as these who invested their greenbacks in the famous Arizona diamond humbug.

History, as stated in his complaints before the police justice of Detroit, sets forth that in 1872 he was approached by John M. Whitney of Salt Lake, and Joel Lawrence of Chicago, on the subject of purchasing stock in the Eureka silver mine, located in Utah. Ward looked enviously at the rich specimens placed before him, and finally declared that if he was sure the mine was all right he might take stock. Whitney and Lawrence wanted him to be sure that it was all right—in fact, they were adverse to his taking a dollar of stock until he had perfectly satisfied himself on that point. They did not press him stronger, but held the bait ready for him and were content to wait. Ward sent an "expert" to Utah with instructions to examine the mine, and satisfy himself that it was as represented.

During the agent's absence the two men disposed of considerable stock to residents of Detroit. Several small capitalists had silver mine on the brain, and hearing that Ward was going in heavily they went for the stock like rats for a grain of gold. It is said that about \$50,000 cash was paid over to Whitney and Lawrence by Detroiters besides what was obtained from Ward. When Ward's agent came back he told such a tale of richness that the Captain could hardly take it all in at once. The mine just glistened with silver, and all that was needed was capital to mine it and send it away to be coined. The agent brought back a number of specimens to back up his assertions, and when these were emptied out Ward could doubt no longer. Whitney and Lawrence called around after a day or two, and there was no delay in closing the bargain for stock. The complaint avers that Ward agreed to and did take \$200,000 worth of stock, giving in return the following property:

Three promissory notes, each of the value of \$10,000, payable in one year from October 7, 1872, with interest at eight per cent.

The deed of a tract of land in Oakland county, described as the southwest quarter of section 33' north, of range 11' east, containing 160 79-100 acres and valued at \$16,000.

Twelve hundred shares of Silver Islet (Lake Superior) mining stock, valued at \$60,000.

Thirteen hundred shares of the stock of Wyandotte Rolling Mill Company, worth \$65,000. Lots 101, 102 and 103, section 8 of the governor and judges' plan of the city of Detroit (the old Mansion House Property on the corner of Griswold and Atwater streets), valued at \$95,000.

Whitney and Lawrence had obtained what they came for, and soon after the bargain was consummated they left for parts unknown. It was not long before Ward smelt a rat. The silver ore remained in the ground and the mine was not being worked as far as he could ascertain. He waited awhile, and when his letters of inquiry was sent back, and he could not learn the whereabouts of the men who had "stocked" him, he sent another "expert" to Utah to see what the matter was and to make a new inspection. About this time Lawrence came back here and made a glowing report of what the mine was doing, stating that thirty tons of ore were awaiting shipment and more ore was being got out every day. Ward did not give any intimation that he had dispatched a second agent, and his man arrived at the mine, made an inspection for himself, and soon found that the whole thing was not worth the powder to blow it up. The first agent had been badly duped by men who knew how much depended on his making a favorable report, but they were not prepared for the second visit, and the real state of affairs came to light.

When the agent returned Lawrence was not to be found, and on the 7th inst. Ward filed his complaints here and obtained warrants for the arrest of both. It was ascertained that Lawrence was in New York and Whitney in Salt Lake City. Detective Stadler was sent East and Sergeant Britton, West, and, as the telegraph has already stated, both have secured their men. The prisoners will be arraigned here, and when the whole case is laid bare it is expected that something rich in everything beside silver will be unearthed. Lawrence and Whitney are said to be worth \$40,000 apiece, and they will no doubt make the liveliest kind of a fight. The other Detroit stockholders are, it is stated, also prepared to make complaints against them.

USEFUL INFORMATION.

Preservation of Wood from Decay.

Mr. Herman Hanpt, O. E., has made the subject of the preservation of wood a special study, with results which cannot fail to be of great practical benefit to all wood-consuming interests. The immense quantities of timber employed in the construction and equipment of railroads, and for various other purposes where it is exposed to conditions peculiarly favorable to decay, has long made some cheap and effective process for preserving it a much needed preliminary to its use. To meet this want numerous processes have been devised, all of which are more or less defective either in efficiency or economy, or both. These attempts have taken various shapes, but in most of them the aim has been to introduce some sort of preservative material into all parts of the woody mass. The first requisite of any successful process in the material, which must not only possess the necessary antiseptic properties, but also be capable of taking a fluid or vaporous form, in order that it may readily enter the pores of the wood; and while solution of corrosive sublimate, sulphate of copper, or chloride of zinc seem to answer the purpose very well, Mr. Hanpt considers that dead oil, a product of the distillation of coal tar, is, all things considered, best adapted to meet the requirements of the case.

The next and most difficult point to be attained is the introduction of the preservative liquid into the interior of the wood; but an absolute essential preliminary to this is the removal of the air and the moisture which the wood already contains, as neither fluids nor vapors can enter its interstices in anything like the required quantity when they are already occupied. In practice it is found necessary to extract the air and water, and replace them with the antiseptic materials by a single operation, as dividing the two involves exposure of the timber to the air, which would again rush in and fill the place of that before withdrawn. In the Bethel process dead oil is used, and the operation is conducted in a single tank made of boiler iron. At the bottom and sides of this tank are numerous pipes for heating by steam. "The timber is placed on an iron car and run into the tank. The tank is filled with dead oil, which is then heated by the steam coils. A pressure of one hundred pounds per square inch is applied by means of a hand-pump. A thermometer is used to note the temperature. The duration of the process is twelve hours. Timber twelve inches square is fully impregnated, as is proved by boring holes. An air-pump is also used in connection with the operation, no doubt to remove the escaping air and steam, and relieve the pressure while the wood is being heated in the oil."

This is the most effective process for preserving timber from decay that is now known; but it is liable to strong objections, which have thus far prevented its coming into general use in this country. The wood takes up about its own weight of oil, or somewhere between three and four gallons per cubic foot, which is believed by Mr. Hanpt to be about one hundred times as much as is needed to prevent decay, and which, of course, involves enormous cost as well as enormous waste. Then wood thus saturated is exceedingly inflammable, a condition which makes it highly unfit for railroad or ship-building purposes. Regarding the theory of the process as correct, the dead oil as far superior to anything else as a preservative, the author proposes to get rid of these objections by introducing a smaller quantity of oil. To accomplish this he suggests the use of an apparatus consisting of two tanks, instead of one; "one a receiver corresponding to a retort, in which the material can be placed and subjected to the action of heat, the other a condenser, in which all escaping vapors can be condensed and a vacuum maintained during the process in both vessels." Suitable means for establishing and maintaining a vacuum being provided, the next step is the application of heat in the receiver by means of steam pipes.

The water in the pores of the wood is thus vaporized, and together with the air that is present, escapes, the water being got rid of by means of the condenser; and should the vacuum become vitiated by the escape of air from the cells, it may be improved by the use of an air-pump. "When sufficient time has been allowed for the wood to dry thoroughly, cocks must be opened connecting the bottom of the receiver with a tank of dead oil at a lower level. As a vacuum exists in the receiver, the atmospheric pressure will force up the oil, and the timber will be immersed in the fluid. When the immersion has continued a sufficient length of time, which also must be determined by careful experiment, cocks may be opened at the top of the receiver to admit air. The oil not absorbed will immediately flow back to the tank from which it was taken; the air, pressing upon the exterior of the cells which are partially filled with oil, while a vacuum exists in the interior, will force the oil before it, and thus coat in its progress the interior of the cells. It is probable that in this way a sufficient amount of dead oil may be introduced into the cells to prevent fermentation and decomposition while still far below the point of saturation, and the process may prove rapid and economical."—*Paint and Oil Trade.*

WATERPROOF PASTEBOARD.—One of the cheapest and most effectual coverings to render wood perfectly water-proof, and increase its durability, and which will impart to pasteboard the appearance and strength of wood, is that employed in many ways by the Chinese, according to tests made with a sample sent from Pekin by Dr. Scherzer. It may be prepared as a slightly viscous fluid, fit for immediate use, by stirring into three parts of fresh serum of blood (or defibrinated blood) four parts of dry slacked lime and some alum. It should be laid on twice, or at most three times, in order to render articles perfectly water-proof.

The following is given as a soap soluble in sea water: Oil or fat, 40 parts; resin, 10; fish glue, 40; soda or potassa, 1; oxalate of potassa, 1. The oil and resin are saponified as usual, but with an excess of alkali; the glue previously rendered gelatinous by solution in oxalate of potassa, is then added, and the whole heated with constant stirring to 50 degrees or sixty degrees C.

BLACK BRONZE FOR BRASS.—Dip the article bright in aquafortis; rinse the acid off with clean water, and place in following mixture till it turns black: Hydrochloric acid, 12 lbs.; sulphate of iron, 1 lb.; pure white arsenic, 1 lb. Take out, rinse in clean water, dry in sawdust, polish with black lead, and then lacquer with green lacquer.

SOLDER.—A correspondent of the *English Mechanic* writes: "Solder of excellent quality is to be obtained from the joints of old sardine tins or meat tins. I believe it is almost pure tin. I have not analyzed any of it, but from the way it preserves its luster, it must be very much richer in tin than ordinary solder."

DETECTION OF WATER IN ETHERIAL OILS.—Oils distilled with water from plants contain water, although they may appear perfectly clear. On mixing such oils with an excess of so-called benzene, a cloudy effect is produced by the precipitated drops of water.—*American Chemist.*

TO ASSIST THE SIGHT.—Persons of defective sight, when threading a needle, should hold it over something white, by which the sight will be assisted.

GOOD HEALTH.

Health and Comfort in House Building

Dr. John Hayward, Vice-President of the Liverpool Architectural and Archaeological Society, lately read a paper on Health and Comfort in House Building, before the Royal Institute of British Architects, which merits attention. It will be noticed that Dr. Hayward refers throughout to the climate of England. Though we do not have the same degree of cold here in California, we make up for it in dampness, and hence the conditions are similar.

Dr. Hayward lays down eighteen conditions in house building as absolutely necessary in a sanitary and medical point of view, some of the more important of which are due exposure to fresh air and sunlight, positive freedom from damp, a large cubic space for air, and abundant means for the escape of the foul and the admission of fresh air. He also shows that it is essential that the air should be warmed previous to admission. Indeed, he maintains that ventilation is the great and main necessity of house building; that whatever be left undone that should be especially attended to; and as in this country, owing to the nature of the climate, doors and windows can rarely be left open in the day and never by night with safety to health, it is necessary to provide specially for ventilation. And first as to the temperature of the admitted air. No contrivance that communicates directly with out-of-doors air, he considers, can possibly answer in a country like ours. This is especially the case as respects bedrooms, which are often very improperly constructed and arranged, so that the sick occupant has to be in winter in a current of air passing between the doorway and the fireplace, from 28° to 35° in temperature, while the temperature of his body is 98° or 99°. To this, in ninety-nine cases out of a hundred, patients in this country are exposed, and the evils intensified when the bed has to stand between the fire and window, and the beating draught is with the out-door air.

To these unpropitious bedrooms Dr. Hayward holds may be traced very many cases of consumption, bronchitis and asthma. In fever cases much fresh air is required, and sometimes endeavor is made to obtain it even by opening the doors and windows, so that many typhus fever patients die of pneumonia, and many rheumatic fever cases are prolonged and complicated; and with all their knowledge and care medical men cannot prevent these evils, because of the defective construction of bed-

rooms and ever of hospital wards. And it is not only patients in acute diseases who suffer from these imperfect architectural arrangements. Most persons occasionally take cold, and in the majority of instances the cold falls on the respiratory organs, as influenza, sore throat, or bronchitis, when the temperature of the air breathed affects very materially the progress of the case, whether it shall be mild or severe, whether it shall be curable or fatal. In acute bronchitis the temperature of the air breathed should never be lower than 65°; but how is it possible to obtain this temperature in ordinary bedrooms in winter, when bronchitis is most prevalent? And even when it is obtained by well-fitting windows and doors and large fires, matters are not much better, for the very means taken to obtain warmth exclude fresh air, and subject the patient and his attendants to the evils of foul air. And draughts are equally pernicious in sitting rooms, where persons may be roasted on one side and frozen on the other, resulting in neuralgia, rheumatism, colds, coughs, asthma, consumption, and a long train of cognate human ills, and the chilly lobby contributes materially to these evil results.

The dangers of the water-closet system are forcibly expounded, the author showing that in many cases the supply of fresh air to a house is obtained principally through the water-closet. "This is one of the evils that our improved architecture and building have increased, if not absolutely provided for us. The water-closet opens into the lobby; the front door is made to fit as tightly as possible to prevent cold draughts, and this prevents fresh air coming in from the front; whilst, with well-fitting intermediate doors to shut off kitchen smells, the admission of fresh air from the back of the house is prevented. These arrangements make the lobby into a chamber, with the termination of the main drain opening into it through the water-closet." In winter time the fires in the living rooms suck in the poisonous gases and disease germs through the closet-pen out of the drains.

After a passing reference to a partial remedy for such an untoward state of matters, Dr. Hayward proceeds to unfold his general and complete remedy for the evils enumerated, which is concisely defined as "Ventilation with warm air by self-acting suction power." His first requirement, which he holds to be an absolutely fundamental condition of a healthy and comfortable house, is an ample supply of fresh and agreeably warm air in the lobbies, corridors, or other central spaces out of which the rooms of the house open or draw their supply; this is provided for by a tubular pipe at the entrance opening, or somewhere in the lobby. The next thing is the admission of this air into the rooms, for which special outlets are provided, controlled by valves to accommodate the supply to the partial occupation of the room. The abstraction of the vitiated air is managed by a separate flue from the ceiling of every room and water-closet, and from every gaselier in the house, terminating in a common chamber permanently heated, and communicating with a shaft, which may be let into the kitchen flue, and must be so proportioned to the size of the house as to empty it of air three times every hour, and as often will the whole house be replenished with fresh air. This plan has been tried, proved completely successful, and very cheap. A few details snappered, Dr. Hayward concludes: "Finally, I am sure it is the warmest house in winter and the coolest in summer; the most airy and fresh, and at the same time the house that is freest from cold draughts in this country, if not in the world; and from personal experience of the comfort and advantage of living in a house built to live in, and of the discomfort of living in houses built for gain, I do not hesitate, in reference to ordinary houses, to vary the well-known epigram, and say that 'Knaves build houses, and fools live in them.'"

Floriculture and Hygiene.

A writer in the *Rural Carolinian* gives the following facts in confirmation of the sanitary value of flowers: "In August, 1866, I bought a small house in the upper part of Charleston, in a locality where fevers were of frequent occurrence; I at once set to work, drained as much as possible the lands around the house, and laid out the grounds for a flower garden. My friends warned me, and predicted that before the end of the year I would leave the locality on account of the prevailing fever. I did not mind them, but kept steadily improving my property. During the winter I had planted a great many rose bushes, oleanders, shrubs, etc., as also a few fig and peach trees. In the spring I planted a great many summer flowers, as well as lavender, mint, etc., and wherever a small space was left I planted sunflowers. The consequence was, that although several of my neighbors were down with fever, I escaped with my family entirely, and have not had a fever to this day. Several of my neighbors have followed my plan, and the locality is now almost entirely healthy."

It is not improbable in this instance that the draining of the ground should be credited with a part of the good results; but there is no doubt that the odorous emanations of plants and flowers, or the ozone generated thereby, will do much to neutralize or destroy the miasmata of malarious districts. The cultivation of flowers in such localities, will therefore be found a valuable auxiliary to other hygienic measures.

DOMESTIC ECONOMY.

Improved Buckwheat Pancake.

Buckwheat pancake is an article largely used; but as generally prepared, it is not fit to serve up at any table. It is heavy and distressing to the stomach. Though the batter may be light, yet when it gets on the griddle it is apt to fall and become the heavy and indigestible thing we find it. Not infrequently it is sour.

Now, all this may be obviated, and a light, palatable cake made, with a little care, by the addition of Graham flour mixed with the buckwheat, the proportion of Graham being a little over a quarter. Mix the flour to keep on hand ready for baking. When wanted to be used, bring to a batter with buttermilk. Other sour milk will not do; it must be milk from the churn, and it wants to be quite sour. Raise with soda, and bake at once. The first baking will in general not be satisfactory; it will lack lightness. Still it will be better than the usual pancake. Now, leave what batter remains in a warm room. This will somewhat raise it; and the cake the next morning will be improved. Another twenty-four hours' exposure to the warmth, say of seventy or eighty degrees, and there is still further improvement. After that there will be little difficulty.

It is best to have the batter, when it reaches the stove, as cold as possible without freezing. The soda will then have little or no effect till the heat of the griddle sets it in motion, baking the paste as it rises. It wants a hot fire, so as to bake rapidly. The cake then will be brown, and as light as a sponge, and very tender, almost melting in the mouth. It causes no distress whatever, but digests readily and is healthful—medicinal somewhat, which results from the coarse Graham flour mixed with it. It is highly relished, and may be eaten two or three times a day, and the year through, though it will be less light in summer than in winter, yet palatable and agreeing well. It is our own mode, invented by us after long tedious experiment. The object was to get a light palatable cake, and at the same time combine the medicinal virtue of the bran. Care must be exercised at first. Dissolve the soda in water, mix with the paste and bake at once. We have used this cake for many years, and use no other. Try it; but be patient at first.—*Country Gentleman.*

ARTICLE OF FOOD FROM CIDER.—Among the notices of recent patents we find the following, granted to Mr. Mahan, of Vermont: In making the said composition this inventor takes five gallons, for instance, of cider, as it comes from the press, and put the same into a suitable boiler, after which he mixes it with two table-spoonsful of flour and the whites and yolks of two to four eggs, first thoroughly compounding the flour and the yolks and whites of the eggs. Next, the temperature of the mixture of cider, flour, and the fluid matters of the eggs should be raised to a boiling heat, or about such, after which ten to twenty-five pounds of sugar are to be added, and the whole agitated or stirred up until thorough dissolution of the sugar may have taken place. Next, the solution is to be raised to a boiling temperature and skimmed, the boiling and skimming being continued until a sufficient evaporation may have taken place to reduce the liquid to the requisite density. After this the liquid should be strained and put into bottles or suitable vessels for preservation, use or sale. If desirable, the product thus obtained may be flavored with any proper essence, essential oil, or matter, the whole when completed, answering for various purposes in cookery, as well as being eaten on bread, or of being used as a sauce for puddings.

PEPPERS.—Seed the peppers from the top; make a brine strong enough to bear an egg, pour it boiling hot on the peppers, and let them stand until they are yellow. Take them out and put them in cold water for 24 hours. Then boil your vinegar, adding to each gallon one ounce of alum; throw your peppers into the boiling vinegar, and take it immediately off, and let them stand ten or fifteen minutes, and put into jars; when cold tie them up. No spices necessary.

CHEESE TOAST.—Take a slice of good, rich, old cheese, cut it up into small pieces, put it in a tin or iron stew-pan, and to one cup of milk add three eggs; beat eggs and milk together and pour on the cheese; set it on the stove, and when it begins to simmer, stir briskly until it forms a thick curdle, then pour over the toast and carry to table.

TO REMOVE GREASE STAINS FROM WOOD.—Spread some starch powder over the grease spots, and then go over it with a hot flat-iron till you draw the grease; then scrape with glass or a proper scraper, and repeat the starch powder and hot iron. Ammonia liquid may be used as a finish, if the starch does not take all the grease out.

GOOD CORN MEAL PUDDING.—Stir the meal into scalding skim milk, till it is thick as gruel, and, when cool, add ginger, cinnamon, nutmeg, salt, and sweetening to suit the taste, and a little fine cut suet, and some raisins or dried peaches, and a fine cut apple. It should bake an hour or more according to size.

MINING SCIENTIFIC PRESS

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San Francisco:

Saturday Morning, Jan. 3, 1874.

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Ourselves.

The MINING AND SCIENTIFIC PRESS enters upon its 28th volume at an important period in the history of our Coast. The mining interests have never been more prosperous than during 1873; nor have we ever had a brighter outlook than is before us for the New Year. The dividends from mining incorporations on the lists of the Boards for 1873, have amounted to the sum of \$13,356,000, as compared with \$6,731,100 in 1872. The large profits from numberless other mines not known to Stock Brokers, swell these figures immensely, and 1874 is expected to eclipse its predecessor.

The number of persons engaged in mining is increasing, and our subscription list increases also, as we represent that class of people. We shall still continue to gather information from all reliable sources, such as will be interesting to our readers, and endeavor to make our paper as practically useful to the mining community as possible. All the new and improved processes for the reduction and amalgamation of ores receive special attention. We maintain the most comprehensive review of the mines of the Coast in our weekly mining summary that it is possible to procure, which in itself is worth more than the price of the paper. Our increasing list of practical correspondents who write on mining matters, is a source of gratification to us and of benefit to our readers.

The coming 12 months promise greater development in the mineral progress of the Coast than has been experienced in any past year, and no one can afford to do without a journal which represents so great and growing an industry. The beginning of the year is a good time to subscribe, and the \$4 paid for a year's subscription of the MINING AND SCIENTIFIC PRESS may save to the subscriber many dollars in other directions from the hints he receives from its columns. We shall do our utmost to make the Press acceptable and valuable to its readers by collating all the varied information possible on subjects connected with the mining industry and scientific progress.

Antimony Reduction.

Although antimony ores have been found in several places in Nevada and the reduction of this metal has been tried at different times in that State and in this city, it has not seemed to have been carried on successfully; at all events operations have been discontinued. The use of antimony is very extensive, its principal value being as an alloy with tin, lead, copper or bismuth for shaft boxes, type, queen's metal, etc., and also in combination with oxygen, sulphur and other substances as medicines, of which there are some ten or twelve different preparations.

The principal ore is gray antimony or sulphuret of antimony, which occurs so often in veins with silver ores in Nevada, Idaho, etc. This ore yields nearly all the antimony of commerce. The mineral sometimes contains \$150 per ton in silver. The white antimony and antimonial blende occur less frequently. The assays of sulphuret of antimony, if made by fire, are not reliable unless melted at a low heat, and prepared

in the following way: Five parts of antimony ore are mixed with ten parts of prussiate of potassa and covered with two and a half parts of cyanide of potassium. This method of assaying, if the ore is melted at a cherry red heat, gives 72 per cent. of the antimony; while all the other ways give less.

There are two processes of reducing antimony ores, either by the process of liquefaction or by direct smelting for metallic antimony. The liquefaction is of course only practicable with sulphureted ores. It is a separation of the sulphurets from the gangue by heat, and yields crude antimony, which is used for several technical purposes, but principally to make metallic antimony.

This process has in some places the advantage that no flux is required, and it is easily performed near the mine, especially where there is no water to enable them to concentrate.

The process of liquefaction always involves a loss of from 10 to 12 per cent. in antimony, but it is nevertheless practiced in many places in Europe. This process is carried on either in earthen pots, or crucibles or in liquefaction furnaces similar to roasting furnaces. In some parts of Germany and Hungary earthen pots are in use (especially for the richer ores) similar in shape to the French assay crucibles, except that the lower part is somewhat extended so as to fit in another pot below. The bottom of the crucible is perforated and the lower pot is surrounded by ashes. It requires a low heat to melt the antimony, which flows into the pot below the crucible. In other instances the pots are placed in furnaces of very different construction, but always so that a number of the pots, from 12 to 15, are placed in a circle so that one fire may heat them all.

The most practical furnace of this kind for a larger production, is that used in France, an engraving of which is shown on this page in vertical sections. The furnace has three fire places, *e, f, g*, the grates being 4 feet 5 inches long, by 10½ inches wide. The flame enters the chambers, *b*, through several openings, *o, p, q*, and also the space, *y*, and escapes through *d* with the chimney, *l*. Iron doors, *s*, are placed on both sides. Each chamber, *b*, contains two

cast iron pots, *a*, twelve inches high and nine inches wide, resting on cars. The chambers are covered with plates, provided with circular hollows for the reception of the earthen cylinders, *c, c*, with a hole in the center of the hollows, through which the sulphide of antimony flows into the pot, *a*, underneath. The cylinders are over three feet high and are provided with an opening, *n*, (Fig. 2) for the purpose of removing the residue, which openings are closed during the operation. The cylinders go through the arch, *m*, and are shut up by a cover.

The cylinders, *c*, are charged through the door, *i*, (after the furnace has been brought to a light red heat), with antimony ore the size of a hen's egg, and then covered. The sulphide of antimony soon begins to flow into the receiver, *a*, with a blue color if the heat has been properly regulated; but if the color appears red, it shows that there is too much heat, and a loss of antimony is the result. The openings, *o, p, q*, are shut up tight as soon as the pots, *a*, appear hot enough. After all the sulphuret of antimony runs out, the shutters, *n*, of the cylinders are removed and the residue drawn out.

The pots, *a*, when filled about two-thirds, are replaced by others. The operation continues for about 20 days and the cylinders are charged every three hours. Each cylinder takes about 490 pounds of ore at a charge.

LARGE INDUCTION COIL APPARATUS.

The Scientific Department of the St. Ignatius College in this city has recently had added to its apparatus, an electrical coil apparatus which was lately manufactured expressly for this College, by the inventors, E. S. Ritchie & Sons, of Boston, Mass. It contains 156 feet of thick silk-insulated copper wire in the Primary Coil, and 151,056 feet of fine-silk covered wire in the Secondary, (amounting to over 28½ miles,) round an electro-magnetic core of 12 lbs. of small soft iron bars, carefully annealed, with 350 square feet of metallic foil, insulated by oiled silk, in its condenser. It is capable of giving torrents of electricity of high tension, and throwing thick sparks, over 18 inches long, in air. The apparatus can be worked by hand, or automatically at will. It possesses arrangements to commutate the poles of the battery, to connect or disconnect various portions of the condenser, to introduce different interrupters or break-pieces, for the production of various effects, and is altogether the very best ever made by its renowned inventors, and one of the most powerful now in existence either in America or Europe.

Ore Production.—The Belcher mine is yielding 450 tons of ore per day; the Crown Point is yielding 400 tons; the Consolidated Virginia 260 tons, yielding on an average \$81 per ton; Chollar Potosi, 100 tons per day, assaying \$30 per ton; Sierra Nevada, 60 tons per day. Last week of the Utah mines, the Emma shipped 70 tons, Flagstaff 100 tons, and Grizzly 130 tons from Little Cottonwood. The enormous yield of the Comstock mines is scarcely appreciated unless compared with those in other localities, where ten tons a day is a big yield.

QUICKSILVER is very firm at \$130 in gold in New York, and sells at £20 sterling in London.

The Pacific Mail Company.

The Pacific Mail Steamship Company have lately been making extensive changes in their affairs and reducing their expenses considerably. The rates of freight and passage have been reduced between this city and New York. Dispatches to the *Call* from New York, dated Dec. 30th, state that the company has refused to renew its combination contract with the Union Pacific Railroad Company, whereby freight rates between that place and San Francisco have been enhanced. Appearances indicate, however, that the steamers are only fighting for better terms, and will renew the combination if the railroad concedes to their demand. It looks like a lively competition for a while, in which the steamers will have the advantage because they control the entire route; while the Union Pacific Company must accede to other companies this side of Omaha. The managers of the steamer company announce their intention to dispatch a vessel weekly from New York, and to take freight through to San Francisco for 1½ cents per pound. They also say the China line will be through from Hongkong to Panama, via Yokohama and San Francisco, without change; thus connecting with the Atlantic steamers via the Isthmus. Four of their new iron steamers are in commission; two more will be ready within a fortnight, and in the course of four months they expect to place two large iron ships on the China line, making eight in all, and furnishing unequalled facilities for the transaction for all business offered.

It is also said that the Pacific railroad will join with the English service about to be inaugurated, and an opposition in the trade will be the result, which must be a benefit to this city. The company say that the schedule time from New York to Yokohama will be 60 days. The fleet of vessels of the Pacific Mail Co. will soon be a large one. The iron screw steamers now in service are as follows:

"Acapulco," 3,000 tons; length 280 feet; beam 40; depth 30½; length over all 300 feet; cost \$550,000.

"Granada," 3,000 tons; length of keel 280; over all 300; beam 40; depth 30½; cost \$550,000.

"Colima," 3,500 tons; length of keel 292; over all 312; beam 40; depth 30½; cost \$600,000. This steamer sailed October 2d for San Francisco.

"Colon," 3,000 tons; length of keel 280; over all 300; beam 40; depth 30½; cost \$550,000.

The "Acapulco," "Granada" and "Colon" can accommodate 190 cabin and 300 steerage passengers. The "Colima"—210 cabin and 400 steerage.

The iron screw steamers now being built are as follows:

"City of Peking," 6,000 tons; length 421 feet; beam 47½; depth 36. Cost, \$1,127,000. By terms of contract, the "City of Peking" was to have been completed and delivered November 1st, 1873. Contract is not yet fulfilled.

"City of Yeddo," 6,000 tons. Dimensions and cost same as above. The contractors expect to be able to deliver one of the above ships in February, and one in April next.

"City of Panama," 1,700 tons; length of keel 242 feet; beam 36, depth 20. Contract price, \$300,000.

"City of Callao," 1,700 tons; dimensions and cost same as above. By terms of contract ships should have been completed and delivered September 1st, 1873. Contract not yet fulfilled.

WHITE PINE BULLION PRODUCT.—The bullion shipped from White Pine during the first three quarters of this year, was as follows, according to the *News*: Quarter ending March 31st, 1851 tons of ore produced, \$33,425; quarter ending June 30th, 4,904 tons produced, \$178,832; quarter ending Sept. 30th, 5,384 tons produced, \$165,737. During the past three months the Eberhardt mill has been producing large quantities of bullion, so that an increase of yield may be expected.

NEW AGENT.—Chas. M. Daly will visit Stockton and vicinity in the interest of the Press. Formerly a resident of that city, he has since had experience in newspaper business. Our readers may expect soon to hear something from him concerning the local industries of that place.

THE Placer Herald, of the 27th of December, speaks well of the Lincoln coal mine, which is now opened. The hoisting works are completed and a large force of men are at work.

(Continued from Page 1.)

his feet being held by toe-straps of strong sole leather or india-rubber belting, fastened to either side of the shoe, and laced, where they meet over the foot. The toe of the foot is put into the straps back to the ball, and in the hollow of the foot there is a small block inserted crosswise to prevent the foot slipping back; but this does not prevent the foot, when the heel is raised, from being slipped out of the straps. The bottom of the shoe resembles a skate with a groove, but instead of being convex, it is concave. This is necessary to balance the weight of the rider as equally as possible from end to end. They are constructed on the principle of skates, and to some extent the same evolutions are practicable, such as allowing the points and curves to describe a circle. Of course they cannot be turned so easily or quickly as skates, but still they are easily managed by experts.

The *sine qua non* of snow-shoe racing is "dope." This is the material used to lubricate the bottom of the shoe and cause them to glide swiftly over the snow, as an axle is lubricated, to cause the wheel to revolve easily, the object being to counteract friction as near as practicable. To such a perfection has the manufacture of this article attained that friction has to a great extent been overcome.

The temperature of the snow is as variable as that of the atmosphere, and for every temperature of snow a different kind of dope is required. Every racer has at least half a dozen recipes for compounding the "dope," sometimes termed "greased lightning"—one for cold snow and one for warm (?) or damp snow, as it is called by experts, as when the snow is heated by the rays of the sun; one for dry snow and one for wet, one for hard and one for soft; one for forenoon and one for afternoon; for extreme cold or frozen snow; and for new dry snow there is still another kind required. Some go so far as to have a different kind for every hour of the day. For moist snow the dope is soft, and is made harder for increase of temperature, up to the frozen, when a hard dope is required. The manufacturer requires considerable skill and ingenuity. A great deal depends upon the boiling of the dope; some requires but a light simmer, enough to melt the parts together, while another requires a good deal of boiling—gum, beeswax, rosin, sperm candle, and some other materials make an inferior quality of dope, only used for traveling purposes, but modern "lightning dope" is manufactured from spermaceti, Burgundy pitch, Canada pitch, balsam of fir, spruce, cedar, Venice turpentine, oil of cedar, pine, hemlock, fir, spruce and tar, glycerine, Barbary tallow, camphor and castor oil and many costly drugs known only to those who make it a specialty, and its manufacture a secret. Oil, grease and such material one might naturally suppose would cause a shoe to slip easily over the snow;—varnish or any other polished material is useless—nothing but the scientific preparation will do. It may seem that a "snow-shoerist," who enters the arena for a hard contested race, to meet all the changes of snow must have a commissary and necessary varieties of dope, for it is a common saying amongst snow-shoers, that "Dope is King."

The dope, in order to be good, must possess two qualities: First, it must be sticky, so that it will adhere to the shoe; Second, aliphary, so that it will glide over the snow. And, strange as it may seem, they have attained such a degree of perfection in making this compound, that a snow shoe prepared with it and placed by the side of one with the bottom finished with polished steel, would so far outrun it as to make it no race at all. In riding for the first time down a steep hill on shoes so prepared, the great requisite is confidence. Timidity is fatal, and for one, on starting down a hill to be afraid of falling, will never do; he might with as much success try to stem the current of the Niagara river as to keep from falling when he thinks he may, or has not confidence in himself. In racing it is advisable to ride very low upon the shoes, in what is called the "squatting" position, and to hold the pole in the right hand, and in going over any obstruction, occasioned at times by a tree lying across the track under the snow, or by the wind drifting and forming a depression and elevation, which will, when a snow-shoer is going down very fast, make a considerable lift; both shoes and rider, and sometimes the shoes go on their course alone, while the rider is making a strange gyratory motion in the air, a thing not uncommon with beginners upon these quick and uncertain carriers.

Snow Shoe Races.

As soon as it is decided by a snow-shoe club to have races, it is announced in all the local papers, and by placarding large, flaming posters in all conspicuous places in Sierra and adjoining counties, offering large sums as purses to be run for, aggregating often many thousand dollars, besides which, large sums are often bet on the results. When the day arrives for the races, and the first day thereafter, all roads and trails to such a place from the surrounding country are lively with all sorts of people from the neighboring towns and mining camps of Plumas and Sierra counties; ladies, miners, merchants, hotel and saloon keepers, all other professional men, ministers of the gospel, gamblers, and editors as reporters of the local pa-

pers, and a numerous retinue of young devils—all excellent judges of snow shoes and dope, are on the road. On one occasion the famous Thompson, from Silver City, in Alpine County, the famous snow shoe mail carrier, from Carson City in the state of Nevada to Placerville in California, before the iron horse was snorting over the Sierra Mountains, (and who beat the railroad train he was traveling on last winter, when in the snow blockade over the mountains, by leaving the same and traveling on snow shoes at the rate of 40 miles per day,) came over 200 miles, traveling from his home on snow-shoes to Lake Tahoe, there is a skiff across the Lake, continued on snow-shoes to Truckee on the railroad, where he took the cars for Colfax, then by stage and sleigh via Nevada city, Grass Valley to Camptonville, and the remainder of the route on snow-shoes over mountains and cañons until he reached La Porte, to participate at the annual races of the Alturas snow-shoe club, and if possible to carry away the several thousand dollars offered as prizes for the fastest in each race. But when he came to run down on his old fashioned, but very practical Norwegian snow-shoes, without dope for traveling he found himself far behind the slowest.

Racing.

The racing track, clear of trees, shrubs and other obstructions covered with many feet of snow, the more the better, is chosen on steep

for a few seconds. Sometimes one or several fall on the start by striking their shoes in poling. Now they are running 40 miles an hour—now 60, and in a second or two they are going at the rate of 70 or 80; here one runs over a rough place and loses his balance—his shoes fly in the air and touch one another—away he goes and throws another, and heads, legs, arms, poles, and perhaps broken shoes are turning in 20 to 50 feet summersaults, amid a cloud of snow, raised by the current of air produced by their fall and velocity, and if the shoes are not broken, they shoot off in the air like an arrow, or like a riderless war-horse in battle, over the snow field, and leap often several feet high in the air, until they run against a tree or into a ravine, where they get stuck on the other side, if they do not go again over the next hill, in the snow bank.

The suspense is over, the crowd breathe again, the friends of the winner close around him, and cheer follows cheer, especially when ladies are racing. Nobody hant, everybody feels well. Go it, again! Another squad is formed, and all is repeated again.

These races are of an all-absorbing interest, so that often the reporters, in the excitement, forget to take notes or memoranda of any sort, forgetting that there are types and printing presses in existence—or that the "devil" was watching them, leaving his duties to some old snow-shoerist to perform, who is also for-



JOSEPH ARCH.

side hills and is about 1,000 to 2,000 feet long with an angle of depression of 15° to 35°, being always in a direct line and as even as possible. The winning poles are set on the lower end, on comparatively even ground, in order to give the racers a chance to brake up, after passing through; which is done by dragging their poles behind the shoes and bearing heavily on them in a sitting posture.

When the entries are made, which are one dollar for each day's racing, the races are divided into squads of 4, 6 or 8 men, generally representing different towns, and the winners of such squads make up other squads in like manner, until they saw off for the deciding race, of which the last winner takes the purse. There are generally each day 3 or 4 purses run for.

Say for instance the first squad is on the top of the track, and the process of "doping up" is going on. We will watch them; the dope is of about the consistency of shoemaker's wax, and is applied by rubbing on little dabs, then spreading it evenly by hard rubbing with the palm of the hand until a fine coating is evenly put on, not too thick, and a polish, that will reflect one's face, is obtained. Time being called, the racers take their places, side by side, all their boot fronts in one line, and they holding themselves back with their poles, on the bottom of which a flat round button of wood is fastened.

The instructions are then given, to wit: "The first man through the winning poles, on his shoes or on one shoe, wins. Anyone starting before the tap of the drum cannot win." The drum is then tapped out of their sight; at the same time a red flag is dropped to inform the time keepers and judges on the lower end that the racers have started, (time kept with stop watches,) and they shove off with their poles, poling for dear life and giving as many strokes as they can to accelerate their speed. When the highest attainable speed is reached, they squat low on their shoes to prevent retarding speed and to offer as little front as possible to the resistance of air, and to retain their balance in going over uneven places.

There is a breathless silence, from the start,

getful, being interested himself; and the opulent banker, fearfully bloated with bonds, county scrip, railroad and mining stock, for the space of several long hours, also forgets, perhaps the first time in years to think, in the excitement, that there is such a thing as big stone house, with safes full of twenty dollar pieces, gold dust and collaterals.

Even ladies fully attest, by their performance, that they, too, have a lively interest in the sport. Prizes are offered, for which they contend, on snow-shoes, among themselves. Most of them are quite experts on the shoes, and are very competent judges in all matters pertaining to the science.

The occasion closes generally with a free and easy dance in the evening, when the winners of the day are lionized, and the conversation turns of course on nothing but the state of the snow, dope, shoes, pretty riding, gymnastic performances, time made on other occasions, etc.

The following fast time has been made at different races, as per authentic record, kept by the different snow-shoe clubs:

At La Porte, Plumas county—"Alturas Snowshoe Club"—1,400 feet in 21 seconds, or one mile in 1 minute 19.2 seconds; 1,200 feet in 15 seconds, or one mile in 1 minute 6 seconds; 1,230 feet in 14 seconds, or a mile in 1 minute .09 second. This last distance, of 1,230 feet, was also made by a young Miss of 14 summers in 21 seconds, or a mile in 1 minute 30.14 seconds.

At Port Wine, Sierra county—"Port Wine Snowshoe Club"—1,030 feet in 12 seconds, or a mile in 1 minute 1.51 seconds; 1,025 feet in 12 seconds, or a mile in 1 minute 1.75 seconds.

At Howland Flat, Sierra county—"Table Rock Snowshoe Club"—1,400 feet in 22 seconds, or a mile in 1 minute 22.97 seconds; 1,250 feet in 21 seconds, or a mile in 1 minute 23.71 seconds; 1,265 feet in 25 seconds, or a mile in 1 minute 41.34 seconds; 1,135 feet in 20 seconds, or a mile in 1 minute 33.04 seconds; 1,380 feet in 19 seconds, or a mile in 1 minute 12.69 seconds; 1,185 feet in 20 seconds, or a mile in 1 minute 29.11 seconds.

At St. Louis, Sierra county, a 9-year old

girl went over snow drifts and holes, 300 feet distance, in 7 seconds, making her mile in 2 minutes 3.2 seconds.

Great steadiness is required in riding, and very perfect control over the shoes; but still with all the best riders some times, plough the snow and bound in the air at a fearful rate. Serious injury is seldom sustained from falling. The greatest danger lies in other riders coming in contact with one falling. I will venture the assertion that in no place but in California can so many men meet, contesting for prizes and the reputation of so many towns, and part in the utmost friendship.

Ekating is healthy, graceful and delightful snow-shoeing is equally so, and viewed in a gymnastic light it has everything to recommend it, especially in those portions where our long and tedious winters are met with, which are thereby made seasons of jollity and sport. Within a few years even our horses and mules have had to learn to travel on snow-shoes. The mail contractor on the mail route from La Porte invented some kind of a snow-shoe, by which his animals are enabled to travel over deep and soft snows, which they hardly could do before. It is made of heavy India rubber belting about three-fourths of an inch thick, flat, and in the shape of an octagon, about 6 to 9 inches in diameter and fastened with screws by means of iron bands made to fit over their hoops.

Joseph Arch, the Labor Reformer.

We present this week a sketch of Mr. Joseph Arch, the great labor reformer, who came to this country to tell us what the agricultural class in England endures, what it demands, what it has accomplished within the past two years in the effort to rid itself of tyranny, and what it means yet to do.

Mr. Arch shows that the condition of the agricultural class in England to-day is worse than twenty-five years ago.

The Agricultural Laborers' Strike in England.

"He who makes, waits," is an old Turkish proverb. We do not know that Mr. Arch ever heard of it. Perhaps not. But he acted upon the idea that it conveys. In his native village of Barford, in Warwickshire, alone he taught himself to read while working in the field; he married at the age of twenty-five, and when two children had been born to him, went struck him. He was receiving pay for his farm labor at the rate of eighteen pence a day—equivalent to thirty-six cents in American money, or \$2.16 a week. Or, to follow out the calculation, his wages gave exactly fifty-four cents per head for the support of a family of four during seven days. Out of this pitiful earning, each member of the Arch family had to be lodged, fed, warmed, lighted, and clothed—or, at least, English custom had decreed that it should be so, but what wonder that Joseph Arch struck? He struck for freedom for himself, for comforts for his wife and his children, and, above all, for the emancipation of his class. His "strike" was destined to be the spark to fire the train.

He went to seek for work, and like all men of simple purpose and willing hand, found what he sought. He became an itinerant hedge-planter; did odd jobs whenever a chance was offered to turn an honest penny; wandered for years from farm to farm, and from county to county, doing piece-work by day and often sleeping under hedge-rows or in old barns at night—carrying with him a bit of candle and his Bible and the newspaper. There must be in this man a spice of the covenant. He has drawn the sinews of his mind to their finest tension, and braced them with the Scripture. "He has gone out to do battle with the mighty, and the mighty have already bowed down before him."

Born to be a leader, it was not strange that the single-handed "strike" of Joseph Arch soon placed him in command of a vast army. Affected by an irresistible impulse he began to preach to the poor among whom he earned his bread. His faith was the simple faith of the Primitive Methodist—his learning, the wisdom of his Bible—his eloquence, the burning lava distilled in this human volcano by Nature. Crowds flocked to hear him. They hung upon his words as men who would learn their fate. His popularity grew apace.

In that month three laborers consulted together at Barford. Two of them had come from Wellesborne; the third was Mr. Arch. They devised a plan for the establishment of an

Agricultural Laborers' Union.

Similar to that which had been adopted by the Artisans' Trade Union in England. There was but a single step from the conception of this idea to its crystallization in practice. The conference of the three laborers at Mr. Arch's home was followed by a visit of Mr. Arch to Wellesborne. A day or two afterward, as though by spontaneous impulse, a thousand farm laborers assembled beneath a great chestnut-tree, which still stands in the center of Barford Village, and there listened to Arch while he unfolded his plans to the association. This was the beginning of the great strike. That spreading chestnut-tree is to the English laborer to-day as sacred as the Royal Oak was sacred in the eyes of the old cavalier, the Liberty tree to the Massachusetts colonists, or the relics of the Charter Oak to the men of Connecticut, and it goes into historic tradition like the famous apple tree at Appamattox Court House.

Pea-vine District, Nevada.

A correspondent of the *Bulletin* writes as follows from Poe City, Washoe county, Nev.

The district is about six miles in a direct line, or by the Antelope and Long Valley Wagon Road, about nine miles northwesterly from Reno. It lies along the eastern slope of the Pea-vine mountain. The district has every facility for ingress and egress of freights, etc., being connected by a good natural road with the main wagon road before mentioned, which traverses the valley along the foot of the range about two and a half miles east of town. Mr. Laka, of Poe City, runs a daily line of stages between this place and Reno, and Hammond & Wilson of Reno run a line of splendid six-horse Concord coaches daily between the two points; and the fact that their vehicles arrive here loaded down with passengers, indicates a prosperous outlook for this locality, as well as an exceedingly healthy business for the proprietors of the lines. The fare charged is only \$1.25.

The present population of Poe City will not vary much from 200. It contains a thrifty country store, which drives a large trade with the miners and residents of the surrounding district. I have met with no saloons here, have seen no case of drunkenness, no rowdiness nor flourish of the dagger or pistol, so characteristic of the new mining camp. These circumstances impressed me as a marvel in our pioneer annals. The people here simply mean business, and hope, anxiety and business vitality are everywhere manifest in a degree to mark the community.

The Geology of the District.

There is a striking resemblance between this and the Comstock district in the matter of geological age, formation, etc. Clarence King has already so well described the geology of the latter district that I can almost entirely save my labor. The range of mountains on the easterly slope of which the district lies, is a spur of the Sierras, some three or four miles nearer the parent chain than Virginia.

The Mines.

Several cañons here have for seven or eight years been more or less worked during the spring freshets for placer gold. In fact, it was the discovery of free gold in these cañons that first attracted attention to the district. Judge Webster and others have for a number of years had men engaged in some of these cañons during the prevalence of the spring freshets, sluicing the surface dirt for its free gold, and they have realized several thousand dollars for each season's work. Experienced placer miners give it as their opinion that with the use of an ordinary gold rocker, good wages can be made at washing the surface dirt in many of the cañons and gulches of the district as long as water can be obtained for the purpose. It is generally believed—and the opinion is very strongly supported by the fact of the existence of this rough looking placer gold—that one or more gold-bearing ledges of great strength and extent trend in a north-west and south-east course through the district below the base of Pea-vine mountain. According to this theory, the friable quartz forming the ledges' outcrop, having become disintegrated by atmospheric and aqueous agencies, has washed away, and the immediate track of the ledge becomes overspread by the adjacent elevations, thus leaving what the miners term "blind" ledges. Two or three tunnels, projected in unconflicting portions of the district by companies having ample capital to prosecute the work a distance of two or three thousand feet if necessary, could scarcely fail to yield enormous profits on the investment. The results of the prospecting thus far done would seem to indicate a ledge belt having a width of from five to seven miles, and including a limited series of fissures. A very large number of locations have been and are being made here, many of which are doubtless valueless, and many more but destined to be absorbed by what shall finally prove to be the true vein lodes of the district. A long catalogue of locations remain, however, whose assays and general characteristics stamp them as very valuable, and as indicating still more abundant productions upon further development. The Carr Tunneling Company are energetically developing the south extension of the great Paymaster ledge. Mr. Carr is a miner of great experience, and he feels warranted by present indications in expressing the opinion that he will cut the Evans ledge at an early day. The stock of this company is divided into 30,000 shares.

Poe Consolidated Mining and Milling Company's Works.

I visited the Poe Consolidated Mining Company's Works and found a gang of miners busily putting into place various sets of systematically dressed square timbers, and still further along to where other gangs were braasting out from the Paymaster ledge the black sulphureted silver ore of a mine which is destined ere long to rank among the famous silver mines of Nevada. Mr. Pierce, the foreman, explained to me how the Paymaster main tunnel, after cutting the heavy clay saam of the foot wall, braasts off through the ore in the neighborhood of a hundred feet both to the north and south on the course of the ledge whence the ore now being deposited at the mill for reduction is derived. A drift has been carried across the ledge about fifty feet—far enough to show that it would pay to continue it to the opposite roof wall of the ledge. The work was suspended about thirty feet short of that point, but will be resumed presently. A considerable portion of

the west wall of the vein yields low grade, but perhaps something more than expense-paying ore; but the almost boundless supply of rich ore in the twenty or thirty-foot streak near the east wall, now being mined, will probably content the company to leave the low grade ore to be got out by their possible successors, a decade or so hence. During the last thirteen years I have been brought into contact with most of the prominent miners of the State; but I cannot now recall any widely-known mine with which to institute comparison by way of a condensed description of the saneable features of the Paymaster mine, which serves that purpose with so much fidelity as the old Ophir claim as it was in the early days of the Comstock. Like that claim, the heavy body of argentiferous ore exposed in a raise for purposes of ventilation which is being carried upward from the north level or breast of the Paymaster, has a yellowish red appearance. Like that claim, again, the ore in and below the horizontal levels of the Paymaster drips with moisture, and prevents the white, flowing appearance and substantial characteristics of the Comstock. A large number of assays have been made from this mine, those made at the United States Branch Mint at Carson showing a minimum of \$30 per ton, and from that upward through almost every describable valuation to the maximum of \$1,080 per ton. Twelve men constitute the entire force of hands employed in and about the mine, including those who execute the timbering, those who mine out the ore, and those who run out the same upon cars, and deposit it in the battery room of the mill. This force is found more than sufficient to keep the Company's mill steadily supplied, although the amount being crushed will probably not fall short of, and may exceed 25 tons per day of twenty-four hours. As upon the Comstock, so here, a considerable amount of sulphur—in the form familiarly known as the sulphuret of iron—is found with the ore, and also a small percentage of argentiferous glens. The presence of these minerals, some mill-men are inclined to believe, will render impossible the amalgamation of the precious metal by the usual simple methods. Mr. Toombs, I learn, however, is prepared for any such contingency, having shaped his improvements thus far with due reference to its possibility. The evil thus anticipated by some, in fact, foreshadows upon further development, rather an advantage to all. In the event, in question, roasting and chloridizing furnaces may be conveniently attached to the Company's present reduction works, at an expense of from \$5,000 to \$7,000. Such furnaces are guaranteed by responsible parties to save 90 per cent, and upwards of the assay value of the ores. The cost of reducing the ore by this method would, owing to its simple metallurgical constituents, and the consequent high percentage of its value obtainable, be much more than compensated by the increased savings. Prospectors are incessantly grappling with the secrets of mother earth here, and this energy and activity cannot fail to make more remarkable the contrast between the present condition of mining developments in this region and their condition a month hence, than is that which the past month's work has made so plain.

The Pos Mine.

Another mine purchased by this same company, and merged into the Poe Consolidation, is the Pos mine. The Pos, like the Paymaster, contains 15,110 feet, and lies in a general parallel course with, and about three-quarters of a mile east of or below, that mine. More space than is at my disposal would be required for an adequate description of this valuable mine, and I shall leave its more important details to be discussed in a future article. It should be noted here, however, that the width of this ledge, now exceeding seven feet, abows progressively greater as the depth is increased. The ore occurs in small, finely-divided blocks, having a light red color. No refractory bases whatever are encountered in this ore. A number of thorough mill tests of it have already been made. The milling results have ranged from \$24 to \$30 per ton. Large quantities of the ore are corded upon the dumps. The present works of the mine, it is estimated, would easily yield sixty tons per twenty-four hours at an expense for mining, including timbering, etc., of not to exceed \$3 per ton. The advantage of location, water and wood, will doubtless render the erection of another suitable mill at this mine the first business of the company upon the approach of the early months of the summer. This company's mill, with its ponderous and extensive machinery for crushing the ore and separating the precious metals therefrom, has probably cost not less than \$25,000. The capacity of the mill is twenty-five to thirty tons per day. The machinery throughout comprises only the A No. 1 improved patterns. The completeness presented in all its material appointments, makes a worthy monument to the mechanical genius of the skillful millwright, W. L. Hsley, its builder. The mill is located on the northwesterly adga of the town, and stands just at the mouth of the Paymaster tunnel, the track of the latter connecting with the battery of the mill. It is expected that the present mill will treat the Paymaster ores successfully, but should there be too much waste, teams will be put on, and the mill kept supplied with ore from the Poe mine until the improvements and additions which I have before referred to, can be completed and placed in readiness for work.

Bright Prospects.

In the line of laboring men, mechanics and

artisans the demands of business are well supplied for the present. But if the winter snows should be sufficiently heavy to give an abundance of water in the streams in the early spring, a hundred or more men having a few hundred dollars each to procure proper and effective appliances, could make, I have no doubt, satisfactory wages at sluicing the surface dirt of many of the cañons and gulches for free gold. In the light of my long experience in connection with mining industries, I am strongly impressed that there is here a golden opportunity awaiting heavy capitalists and companies organized with sufficient capital to prosecute developments to success.

Calaveras Gravel Mines.

The *Calaveras Chronicle* has the following: Work in this various gravel mines in this immediate vicinity was never before so vigorously prosecuted as at present, nor were the results ever more favorable. The late rains have increased the supply of water to an abundance, and as ample preparations have been made to utilize it the presumption is fair that the yield of the mines this season will exceed that of any previous year. The fact that operations, generally, are conducted upon a much more extensive scale than formerly will also have a tendency to enlarge the aggregate result of the winter's washing, and stimulate more active development in the future.

In the Duryes hydraulic, in Chili Gulch, washing has lately been resumed and will have continued without intermission until water fails next fall. The yield of the claim during the past season was immense, and as the mine is now in better condition for working advantageously than formerly, increased remuneration for labor performed is confidently expected. In imitation of the plan that has been so successfully adopted in the northern mining districts, the proprietor intends shattering the bank by a series of heavy blasts, and the work of running the necessary tunnels for that purpose will be immediately commenced. It is expected that the adoption of that mode of operations will greatly facilitate the working of the claim and add materially to its yield.

Brackett & Co., who for some time past have been engaged in running a new tunnel into their claim in Tunnel ridge, have reached the channel and are preparing to take out gravel. A drift is being run, lengthwise of the claim, up the ridge, and when completed a large force of hands will be set at work "breasting out." The gravel prospects finely, but it is so hard it does not wash freely. A battery has been purchased and will be put up in the spring and the gravel pulverized before run through the sluices. The mine has paid well for years and the indications are that as yet it is scarcely opened.

Veith & Co.'s hydraulic is in full blast, a large number of workmen being employed. Extensive improvements were made in the working machinery of the mine during the dry season that greatly facilitated washing. Double the quantity of gravel washed last season will be put through the sluices this year, and at a less expense. The only drawback to the rapid working of the claim is the great number of rocks that have to be removed. If some expeditious method of getting rid of them could be hit upon the mine would be one of the best paying in the district.

Moser & Co., owners of the sluicing claim in Spring Gulch, continue operations with unabated energy. At present they are engaged in washing new ground, high up on the sides of the gulch, as well as sluicing down the tailings that have accumulated in it for years. An immense head of water is used, at least two thousand inches. The bottom of the gulch has been uncovered for a long distance, and a clean-up will shortly be had. Ten thousand dollars, clear of all expenses, is the lowest estimate set upon the yield of the claim for the next few months.

Cook & Co., who lately purchased the ground at the head of Spring Gulch, are busily at work hydraulicizing. At present they are washing surface, preparatory to commencing operations in the hill. The claim, so far, has paid splendidly. A good deal of coarse gold is found. Pieces weighing from six dollars to an ounce were shown us, and the gravel is also rich in fine gold. Cook & Co. are experienced miners, and are getting their claim in condition to work to advantage. When it is fairly opened, we believe it will prove one of the best in this vicinity.

COST OF THE HOOSAC TUNNEL.—When the bore was started for the Hoosac tunnel, in 1857, the estimated cost for all the work was \$3,350,000. The tunnel is five miles long, and has already cost \$12,300,800, and will cost \$800,000 more to prepare it for a double-track railway. Taking Hoosac as a guide, the estimate for tunneling the Alleghany Mountains, to extend from the James river and Kanawha canal to the west, may be made, as the distance is about double, a thirty years of time and \$25,000,000 cost. But this would be less than the cost of irrigating five hundred miles of the eastern slope of the Rocky Mountains, as suggested by General Grant. This is a great country, but can't do everything "in all creation."—*N. Y. Express.*

You can't eat enough in one week to last you a whole year, and you can't advertise on that plan either.

Fatal Mining Accident.

The *Virginia Enterprise* of the 10th gives the following details of an accident which occurred in the Consolidated Virginia mine on the 13th inst., at 11 p. m.:

It appears that the shifts were being changed at the hour mentioned. Deceased and eight or ten other miners got upon the cage at the 1,200-foot level and came up to the surface. They were hoisted through the middle compartment of the shaft. When the cage reached the surface all of those on board stepped off in front, or on the east side, except Killen, who stepped off the rear or west side. After getting off the cage he started around by the north compartment to go to the office of the time-keeper, which is on the south side of the shaft. There was probably a considerable quantity of steam ascending from the shaft, which may have prevented his seeing clearly where he was going, as G. B. McCloskey, a miner, who was waiting to go down into the mine, states that he saw him step into the open shaft with his right foot, when he toppled over and took

The Fatal Plunge.

The fearful nature of the fall may be imagined when we say that that it was a sheer, uninterrupted, perpendicular plunge of 1,166 feet, though for convenience the shaft is generally spoken of as being 1,200 feet in depth. The force of such a fall is about the same as though a man was thrown a distance of 400 yards from the mouth of a cannon. In this north compartment, into which the unfortunate man was precipitated, a cage was at the bottom, and men were getting aboard of it preparatory to coming to the surface.

The Concussion Below.

When Killen's body struck the iron roof or bonnet of the cage, was tremendous. John Burns, a miner who was on the cage at the time, says he first heard the cable shaking, as though some one above had hold of it and was shaking it purposely. A man was about to ring the bell to hoist, when the body struck upon the bonnet of the cage. One of the feet of the deceased struck Mr. Burns across the shoulders as the mangled body rolled from the bonnet and fell out of the station. As the men were getting off the cage, Killen's dinner pail came down and struck upon the top of the cage. Dragging the body out, they found it so

Horribly Mangled.

As to be almost beyond recognition. The head was torn off and almost every bone in the body shattered to splinters and the limbs terribly lacerated. In order to get the remains to the surface it was necessary to sand up for blankets in which to envelop them. The sight was terribly shocking and sickening, and one such as but few except miners, often see. The remains were hoisted to the surface and then taken to the undertaking establishment of Mr. Andrews, on South C street, to be prepared for interment. In regard to

Who was to Blame.

For the shocking affair. We may here say that nearly every man who was examined before Coroner Holmes at the inquest held yesterday afternoon, testified that to get off the cage on the west side was against a strict standing order. The men had been informed that any one of them seen getting off on that side the cage would be discharged. They were to get off at the front or east side of the cage, when they could walk directly to the office of the time-keeper and give in their names. It seems there were no safety covers to the several compartments of the shaft. Had there been the accident could not occur, as all testified. The carpenters were making the necessary covers, but they had not yet been put in place. One had been made and put in place, but it had broken and was taken off. The new ones had been painted but were not yet dry. One of the witnesses gave it as his opinion, and it looks probable, that Killen got off the cage under the impression that he had come up through the north instead of the middle compartment of the shaft, and that he thus walked into the shaft while thinking there was nothing before him but the solid floor of the works. Deceased was a native of county Sligo, Ireland; was 33 years of age and unmarried. He had long worked on the Comstock lode, and was a man highly esteemed. He leaves a mother in Wisconsin and a sister in Scranton, Pennsylvania. His funeral will take place this afternoon at 2 o'clock, from No. 81 South C street.

JAPA MINES.—The *San Diego Union* has reliable intelligence from the new diggings in Lower California—the Japa mines: Mr. Kemerton worked in the prospect shaft on the main creek; and he reports that after six days' hard labor—day and night—the party engaged in sinking succeeded in reaching the bed-rock at a depth of thirty-one feet. The first prospect struck showed from two to five cents to the pan. The dirt was taken at a depth of from eleven to thirteen feet from the surface, the pay streak extending down to the bed-rock. This shows from eighteen to twenty feet of pay dirt in the shaft. When the bed-rock was reached the party struck it rich, but on account of the rapidity with which the water came into the shaft, they could only "coyote" around. They obtained from one "bit" to one dollar to the pan. There were in all about fourteen men engaged in working the shaft, all old miners, and well known here and in Julian City. The creek, for about two miles in length, has been taken up and located by the party and their friends, and they comprise nearly all the American miners now at work here.

The Japa Mines.

Southern California.

The San Diego Union of the 21st ult. has the following intelligence from the Japa mines:

These mines are supposed to be in the summit of the range of mountains extending southeast from Julian, in this county, into Lower California, and the altitude of the camp is estimated to be about 5,000 feet above the level of the sea. Japa is distant about 100 miles from San Diego, a little south of east. The road diverges from the Yuma Stage road, about sixty miles from this city, and from that point there is a continuous ascent into the mountains. The first diggings were struck at the point known as "Japa," but better placers were found at "Tres Pinos," three miles distant, and the entire population is now concentrated at the latter point. There is a small running stream at Japa, and dirt has been hauled thither to be washed, but the expense of hauling takes the bulk of the profits. These mines are as near to Julian City as to San Diego. They are forty miles southeast of Milquiatay, and forty miles north of San Rafael, in Lower California. A large gulch runs through the mining section, and into this débouché several smaller gulches. In these latter the gold is found. In the big gulch wells have been sunk to obtain water for washing in the rockers. The gold-bearing soil is red sand and granite gravel. The whole face of the country is covered with decomposed quartz, but no good bearing quartz has yet been found. Preparations are being made for a more extended exploration of the country. There are two men in the camp who were with a surviving expedition into the section inhabited by the Cocopah Indians. One of the Cocopah chiefs was lately in camp and said there was plenty of good quartz in his country, but that the white men must keep out of there. The Governor of the frontier, Villagana, was at the mines recently and said that the troops would soon be sent into the Cocopah country to remove the Indians, (who number about five hundred), when prospecting could go forward without danger.

Mr. Nichols thinks that for the next two years, industrious men can earn fair wages at these placers. All the washing must be done by rockers, as there is not water enough to run sluices or toms. The water is hoisted from wells. Two men are required for each rocker, one to hoist water and one to rock and feed dirt. The Mexicans are making from one dollar to a dollar and a half a day by their process of working. The Americans have made reservoirs on the small gulches, and are now waiting for more rain to give water for washing. It costs \$1.50 per load to haul dirt two or three miles to water.

The best diggings in the whole of that section have been found on the mesa three or four miles above the gulches. Four men have taken up claims there, and have a bed of red sand four feet in depth to operate upon. They have sunk a well, and have obtained four feet of water at a depth of fourteen feet; this gives them all they want to wash. A prospect shaft was sunk at Tres Pinos to the red rock, which was reached in twenty-two feet, when large boulders were struck on the bed rock a prospect of two or three cents to the pan was obtained. The water came in so fast that operations were abandoned. In the small gulches when the bed rock is reached, small crevices are found full of a very tenacious grayish-colored clay, and these crevices are always rich—real "pockets." Beyond these "pockets," the average of the diggings would be from one to three dollars a day to the man.

The country is well wooded, pine predominating. Game is plenty, deer being abundant and venison cheap. Beef is also very cheap, selling at eight cents a pound. There are three stores at the camp, and another is going up.

Louis Bronson came into camp on Tuesday night from Julian, which place he left on Monday last, 15th inst. He passed through three feet of snow in some places. He reported that several mines had caved badly. There are now about twenty Americans and one hundred Mexicans at the mines. The weather is very cold. The late storm continued in that section during ten days. On one day over three inches of snow fell. It freezes every night to the depth of half an inch to an inch in large bodies of water and from one to two inches in thickness in a bucket. The people live in brush huts.

NEW FACTORY.—Einstein Bros., boot and shoe manufacturers, of Battery street, purpose opening the largest factory in their trade on this coast. They have acquired a lot on Hayes street, between Polk and Van Ness, 136x155, and on a portion of this, 60x120, they are about to erect a three-story building, substantially finished and equipped with modern improvements and appliances. Detached from the main building will be a small structure for an engine, which is to supply power for the machinery. The total cost will be about \$40,000. The firm anticipates that it will employ from five hundred to seven hundred persons, of whom a large number will be white men, women and children. About four hundred persons are now employed on the upper floors of the Niantic Building, Clay street, and of these one hundred and fifty are Chinese. Einstein Bros. use the McKay sewing machine, and they have a patent in operation which materially lessens the consumption of material in the cutting of uppers for ladies' boots.

Panamint Mines.

So little is known respecting the Panamint mines, their location, mode of reaching them, or their immense extent and richness, that the writer, one of the discoverers of the district, offers the following to interest your readers. Panamint district is situated nearly due east from Lagunita P. O. and stage station on the Owens River road from Havilah—distant from Lagunita 60 miles, and from Los Angeles 215 miles; from Independence, the county seat, say 100 miles. It was formerly known as the Telescope district, in 1861 and 1862, and is a lofty, bold range of mountains, lying between Panamint and Death Valleys—the main peak called "Chimbe," in the native vernacular, rises to the probable altitude of 12,000 feet. The point of export and import for the mines will be Los Angeles, until the Southern Pacific Railroad has climbed Teahatopeha range and crossed the present Owens River road. Inside of sixty days there will be a good wagon road diverging from the main Owens River road at Desert Springs, and thence by the old Slate Range road, it will pass west of the large horax deposits, and crossing the low divide at the head of the valley by a recently discovered pass, it will reach within three miles of the mines, when more formidable difficulties will be met with in Surprise Canon. This will soon be surmounted, however, by a toll road, the company for which is now in course of formation, and the Panamint mines will have a good wagon road by the opening of spring, and the horax companies at Slate Range and Desert Spring marshes, a good means of export for their horax.

But little work has been accomplished during the summer just past, except a vigorous prospect of the district, the result of which has been the discovery and location of over 160 claims, and building by the miners of suitable winter quarters and roads to the mines. Now however vigorous work has been commenced by the owners, on the "Stewart's Wonder" claim, and on the Wyoming Company, by tunnel mining on the lodes.

Both the lodes mentioned above are considered first class, the ores assaying from \$200 to \$1,500 per ton, and averaging from 5 to 15 feet wide. A 15 foot shaft has been sunk on the Esperanza, and developed a very rich stratum of ore about 18 inches wide, which probably will pay \$600 or \$700 per ton.

The "Stewart's Wonder" claim changed hands a few days ago at the figure of \$20,000, without a pick having penetrated it six inches. Mr. A. P. Raines and partner, of San Francisco, are the purchasers, being men who mean business now, and a mill in the spring.

Nature has, in the Panamint District, saved the great expense and labor of prospecting by the usual slow and toilsome process of sinking shafts and running tunnels; a deep cañon from 400 to 600 feet in depth with an almost perpendicular wall, bisecting at right angles these wonderful silver leads for many miles. The miner can stand at the bottom of the cañon and see his mine as well and clearly defined, as well as its body of carrying ore, for 500 feet in depth (from the top where it is cut by the cañon) as he could if he had a shaft to that depth on his mine.

No mining expert has yet visited this mining district (and there have been many sent by mining speculators) who has not expressed wonder and astonishment at the immense amount of silver ore in sight; and several who have mined for years in the State of Nevada, have expressed the opinion that Panamint is certain in a few years, to eclipse, in the amount of silver yield per annum the famous Comstock lode of that State.—Cor. Havilah Miner.

Depth of Lake Tahoe.

The *Gold Hill News* says:—As many items have been published and exaggerated stories told relative to the depth of Lake Tahoe, we are pleased to be able to lay before our readers the following series of soundings made on the lake by John McKinney, so well known as an experienced navigator of those romantic waters, and resident of the western shore of the lake:

Locality.	Feet Deep.
Emerald Bay, five miles east, and—	
Yank's station, six miles north-east.....	900
Emerald Bay, one-fourth mile north-east.....	780
Rubicon Rocks, five miles east, and—	
Emerald Bay, five miles northeast.....	1,385
Rubicon Rocks, two hundred yards east.....	850
Rubicon Rocks, six miles northeast, and—	
Sugar Pine Point, five miles east by south.....	1,500
Sugar Pine Point, one mile south, near shore.....	760
Sugar Pine Point, three miles east by north.....	1,506
Sugar Pine Point, five miles northeast.....	1,540
Blackwood, five miles east.....	1,504
Blackwood, one-fourth mile east.....	700
Tahoe City, four miles east by south.....	1,350
Saxons' Mill, one-half mile east.....	772
Tahoe City, six miles east by north.....	1,524
Tahoe City, seven miles east by north.....	1,600
Observatory Point, five miles east.....	1,600
Observatory Point, four miles east by north.....	1,640
Hot Springs Point, four miles due south.....	1,645

From this point southward ten miles along the east side of the lake, three miles from shore, the depth averages from 1,200 to 1,400 feet. Along the western side of the lake, half a mile from shore, is a precipitous offset, almost like a perpendicular wall, from 700 to 800 feet in depth. It will thus be seen that the deepest place McKinney found was 1,645 feet; and at the northerly part of the lake, toward the Hot Springs section, he obtained his deepest soundings. At the middle of the lake he finds the depth about 1,500 feet. The above sub-aqueous statistics will be of great interest to the thousands of visitors who yearly resort to the finest of all mountain lakes in this section of the world.

HINTS FOR INVENTORS. We will send on receipt of stamp for postage, FREE, our 52-page Circulars containing 112 Illustrated Mechanical Movements; a digest of PATENT LAWS; information how to obtain patents, and about the rights and privileges of inventors and patentees; list of Government fees, practical hints, etc., etc. Address DEWEY & CO., Publishers and Patent Agents, San Francisco.

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12v27-3m

FOR HARENS please say advertised in Scientific Press.

Alaska Mines.

"A shareholder" writes us as follows from Portland, Oregon, under date of Dec. 22: In your issue of the 13th inst. is an article, copied from the *Alta*, relating to the recent gold discoveries at Sitka, Alaska, to which I beg to make a few corrections. The specimens were not assayed at San Francisco, but at Portland, Oregon, with the following results: \$100.45 and \$276.15 to the ton, and other specimens were estimated—not assayed—by experts in Portland, to run as high as \$7,500 to the ton. The ledge lies on Cedar creek, near the head of Silver bay, about twelve miles south-east of Sitka. The association is styled the Alaska Gold—not quartz—Mining Company.

With these exceptions, the article is, in the main, correct; the ledge is no doubt rich, and only requires capital to work it. All the other circumstances for its development are unusually and peculiarly advantageous; plenty of timber and water, and what is of the most importance, easily "get-at-able," having deep water and good shelter for any number of vessels of any draught. Its climatic advantages are far superior to Montana, Idaho, Utah, Frazer River, or the newly discovered fields on the Stakkeen; as work can be prosecuted all the year round; this no doubt seems strange, considering its latitude, but it is nevertheless true, as any who have ever lived at Sitka will verify. Taking it altogether, it has natural facilities and advantages for the employment of capital, and its profitable development, seldom found connected with quartz mining.

Borax.

During the past year quite an excitement sprung up in this State and Nevada about borax mining, and numbers of men quit gold mining and went prospecting for borax. The excitement seemed to die away a couple of months ago and we have seen little about borax in the interior press until we came across the following suggestive item in the *Inyo Independent*, of the 27th ult:

A gentleman recently returned from a trip around the country gives rather a gloomy account for the immediate prospects of Columbias. There is nothing being done in borax, chiefly we suppose, for the reason that the market for that article is overstocked, and it does not pay to produce borax for nine cents per pound, all that it will now bring in San Francisco. But one mill, Sweetapple & Hazelton's five-stopper, is now running. A heavy Chicago company, it is currently reported and believed, design to soon enter largely into borax manufacture, market or no market. As the mines are very good, and the other mill only temporarily shut down, it is hoped that with this times will soon improve. Benton is as lively as usual and is steadily progressing, though but one mill was then running. The snow fall was a mere trifle in both localities, though the weather was very rough.

Advice from New York state that the borax market is firmer there with a diminishing stock; prices closed at 16 cts. About 1,000 cases of California were sold.

MINE SWINDLERS.—Dispatches from Sal Lake, dated Dec. 27th, state that two more parties were arrested and taken east that morning, on a charge of fraud in the sale of Utah mines. Officers are there from Kentucky and Ohio after others, but those accused have suddenly disappeared.

EXPLOSION AT A COAL MINE.—A serious accident occurred in one of the coal mines at Nortonville, on Saturday afternoon. The dust arising from the coal dumped at the bottom of the three hundred-foot chute ignited from a lamp and exploded instantaneously. Nine men in all were burned: D. Ferguson, dangerously; Ed. Williams, James Landrum, Demartine and others.

A HEAVY BLAST of 20,000 lbs. of Santa Cruz powder was exploded in the Smartsville Hydraulic mine, at Snicker Flat, on the 26th ult. The powder was placed on drifts under a bank of gravel over 200 feet high. It was a splendid sight to witness, and was a great success.

A BILL has been introduced into Congress, by Luttrell, appropriating \$100,000 to be expended under direction of the Secretary of War in "opening and improving the channels of the Sacramento and Feather rivers."

THE WATSON CO.'S MILL, at Mineral City, Robinson district, Nev., has shut down temporarily, on account of the severity of the weather.

THE artesian well, at the Benicia Arsenal, which has now been a year or more in progress, with the aid of the best machinery and appliances, has reached a depth of 600 feet.

SLUICING has been commenced by miners in Trinity county, though the supply of water is limited, in consequence of the cold nights keeping it back.

THE gold from the Japa mines, Lower California, is of a high standard.

NEW STEAMSHIP COMPANY.—It is announced that arrangements are in progress for the establishment of an American Transatlantic Steamship Company in New York. The names of the projectors have not yet been made public. It is proposed to construct a fleet of forty-five first-class iron steamers, built entirely of American material, each steamer having a capacity of 4,000 tons, and an average speed of fourteen knots an hour, with accommodations for 100 cabin and 1,000 stowage passengers. The company's bonds are to be made payable in twenty years, bearing interest at the rate of six per cent., payable semi-annually. It is said that the Government will be asked to guarantee the bonds and pay the interest to secure a good lien given on the vessels. The newspapers which publish the prospectus say the company propose to carry the foreign mails for twenty years, regular vessels being dispatched daily. It is also supposed that the vessels are to sail from New York, Boston, Philadelphia and Baltimore.

NEW STEAMERS.—The White Star line is building two immense vessels, the *Britanic* and *Germanic*, at Belfast, Ireland, which are believed to be the most powerful passenger steamers in the world, their tonnage being 4,750 tons each. The hull is made secure by eight water-tight compartments, extending from the keel to the upper deck. The arrangements for ventilation are novel. Besides the ordinary ventilator, an immense fan is used, by which hot or cold air can at will be driven through tubes to any part of the vessel.

The *Atlantic Monthly*, under the new management, is certainly an improvement on the issues of the past few months. The present number contains articles from the pens of some old *Atlantic* contributors, and one or two new ones. A strong paper, written by Prof. Agassiz, is one of the chief attractions, and perhaps as important as any furnished by that great man.

The *Quincy National* says the storms of the past three weeks have been the most severe of any that have occurred in that section for years, and there is not less than eight feet of solid, settled snow on the higher mountains. This insures a good water season for the placer miners, who are rejoicing over the prospects.

The International mill at White Pine is working successfully and turning out bullion.

KIND WORDS.

The Associated Reformed Presbyterian says—For years Perry Davis' Pain-Killer has been known as a most useful family medicine. For pains and aches we know nothing so good as the Pain-Killer. For many internal diseases it is equally good. We speak from experience, and testify to what we know. No family ought to be without a bottle of Davis' Pain-Killer.

Messrs. PERRY DAVIS & SON, Prov., R. I.—

Gents.—Although a stranger to you I am not to your invaluable medicine, Pain-Killer. I formed its acquaintance in 1847, and I am on most intimate terms with it still; my experience in its use confirms my belief that there is no medicine equal to Pain-Killer for the quick and sure cure of Summer Complaints, Sore Throat, Croup, Bruises and Cuts. I have used it in all and found a speedy cure in every case.

Yours Truly, T. J. GARDINER, M. D.

Judging by my own experience whoever once makes a trial of Perry Davis' Pain-Killer, will not fail to recommend it widely as an unequalled liniment, and valuable internal remedy for colds and various other complaints.—Every Month.

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The *Saturday Evening Gazette* of Boston, says: It is impossible to find a place on this broad land where Perry Davis' Pain-Killer is not known as a most valuable remedy for physical pain. In the country, miles from physician or apothecary, the Pain-Killer is cherished as the exclusive panacea, and it never deceives.

"PERRY DAVIS' PAIN-KILLER is really a valuable medicine, and, unlike most of the articles of the day, is used by many physicians. It is particularly desirable in locations where physicians are not near, and, by keeping out at midnight for a doctor, a bottle should be kept in every house."—Boston Traveller.

"We have tested the PAIN-KILLER, and assure our readers that it not only possesses all the virtues claimed for it, but in many instances surpasses any other remedy we have ever known."—Herald of Gospel Liberty.

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New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's office, San Francisco.

GENEVA CONSOLIDATED SILVER MINE CO.—Dec. 25. Location: Cherry Creek Mining District and Egan Canon, in White Pine county, Nevada. Directors: Robert B. Gray, S. P. Kimball, George F. Gages, Charles Campbell and E. Hindman. Capital stock, \$5,000,000. The certificate states that the amount of capital stock actually subscribed is 26,000 shares, representing a par value of \$2,600,000.

HUMBOLDT M. CO.—Dec. 24. Location: Gold Hill, Nev. Directors: C. S. Neal, S. A. Chapin, E. R. Warr, H. O. Kibbe and D. L. Thomas. Capital stock, \$4,000,000.

FLORIDA S. M. CO.—Dec. 29. Location: Nevada, Capital stock, \$5,000,000. Directors: A. J. Monlder, E. W. Leonard, C. J. Pillsbury, Jesse Holladay and Oliver Eldridge.

INCREASE OF CAPITAL STOCK.—The Dayton Gold and Silver Mining Company filed a certificate of increase of capital stock on the 26th ult. The capital stock has been increased from \$3,000,000 to \$10,000,000. The debts and liabilities of the Company consist of the ordinary current expenses, and amount to \$25,000, the payment of which is secured by the property, earnings and income of the Company.

Meetings and Elections.

GOLD AND CURE S. M. CO.—Dec. 22. Trustees: J. O. Flood, Robert Sherwood, William S. Lyle, George Congdon, L. S. Rose, James G. Fair and Edward Barron. Andes S. M. Co.—Dec. 22. Officers: Edward Barron, President; James G. Fair, Superintendent, and Edward Landers, Secretary. This mine is situated in Virginia City, Nevada, and located on the Old Virginia or Burnside-Moscow Ledge, title, U. S. patent. The claim is situated directly west of the Ophir Central and Consolidated Virginia claims, and work will be immediately commenced to develop the property.

SUTRO S. M. CO.—President, Solomon Heydenfeldt; Trustees, Messrs. G. W. Grayson, E. M. Hall, George J. Ives and Wm. E. Miller.

HACKBURN GOLD AND SILVER M. CO.—Dec. 23. Trustees: F. Smith, Sargent Mathew, L. Chapeau, C. Guellimin, J. Verdier. Mr. F. Smith was elected President, and Paul J. Robert, Secretary. The office of the Company is transferred to No. 621 Clay street.

PITTS CONSOLIDATED M. CO.—OF PITCH.—President, M. J. Wilson; Vice-Presidents, H. Rosekrans, Thos. Devine, C. H. E. Smalley and H. R. West; A. F. Benjamin (re-elected) Secretary; O. H. B. Smalley, Superintendent.

GOLD MOUNTAIN M. CO.—President, E. J. Baldwin; J. B. Cavalier, Secretary.

MONITOR-BELMONT M. CO.—Trustees, Charles Mayne, Oliver Eldridge (President), J. D. Fry, J. W. Gashwiler, and J. B. Haggins; W. W. Hopkins, Secretary. The Company paid three dividends during the year, aggregating \$75,000—\$25,000 each.

SANDERSON GOLD M. CO.—Dec. 26. Trustees: H. Kozminsky, Wallace Everson, Homer Evans, H. B. Berryman and George Frier. Secretary, William Stuart.

HOW THE RICH MAY DO GOOD.—Thousands of the poor are suffering from coughs and colds caused by exposure. Send to each of these one bottle of *Hale's Honey of Horchmond and Tar*. Thus countless lives may be saved at a trifling cost. The remedy is admitted to be infallible. Crittenton's, 76th Avenue. For sale by all Druggists.

Pike's Toothache Drops cure in 1 minute.

Mining and Other Companies.

On account of the time necessary to mail the present large edition of the *M. & S. Press*, we are obliged to go forward on Thursday evening—which is the very latest hour we can receive advertisements.

BUNKER HILL QUARTZ MINING COMPANY.—Location of works, Amador County, California. Location of principal place of business, No. 19 First street, San Francisco, California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 12), levied on the 12th day of November, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Wales L. Palmer.....	138	5	\$50 00
Wales L. Palmer.....	123	5	200 00
Wales L. Palmer.....	140	100	1,000 00
Wales L. Palmer.....	137	100	1,000 00
Wales L. Palmer.....	114	20	200 00

And in accordance with law, and an order of the Board of Directors, made on the 12th day of November, 1873, so many shares of each parcel of said stock as may be necessary, will be held at public auction, at the office of the Company, No. 19 First street, San Francisco, Cal., on Monday, the twelfth (12th) day of January, 1874, at the hour of 12 o'clock M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

W. L. PALMER, Secretary.
Office, No. 19 First street, San Francisco, California.
de27

Black Mountain Coal Mining Company.—Location of principal place of business, City and County of San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the 8th day of October, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Case, Iham.....	24	100	\$2 50
Cropper, (not issued).....	29	100	2 50
Flanigan, Thomas.....	28	100	2 50
Hurston, John.....	27	100	2 50
Hughes, John (not issued).....	40	2754	69 00

And in accordance with law, and an order of the Board of Directors, made on the Eighty-fourth of October, 1873, so many shares of each parcel of said stock as may be necessary, will be held at public auction, at the office of the said Company, No. 602 Montgomery street, Room No. 23, San Francisco, on the 29th day of December, 1873, at the hour of 12 o'clock M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

W. H. PARSHLEY, Secretary.
Office—No. 402 Montgomery street, Room No. 23, San Francisco, Cal.
de13

Mina Rica Silver Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Amador county, California.

NOTICE is hereby given, that at a meeting of the Board of Directors, held on the twenty-third day of December, 1873, at the hour of 12 o'clock M. of said day, was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, No. 329 California street, room No. 5, San Francisco, the sum of \$25,000.

Any stock upon which this assessment shall remain unpaid on the twenty-third day of January, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the sixth day of February, 1874, to pay the delinquent assessment together with costs of advertising and expenses of sale. By order of the Board of Directors.

GEO. R. SPINNEY, Secretary.
Office, No. 329 California street, room No. 5, San Francisco, Cal.
de27

Commercial Coal Mining Company, of San Francisco. Principal place of business, City and County of San Francisco, State of California. Location of works, Santa Cruz County, California.

NOTICE is hereby given, that at a meeting of the Board of Directors, held on the 16th day of December, 1873, an assessment of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at his office, No. 402 Montgomery street, room No. 23, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 24th day of January, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 24th day of February, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

S. B. HANSON, Secretary.
Office, No. 402 Montgomery street, room No. 23, San Francisco, California.
de20

Cupel and Tiger Silver Mining Company. Principal place of business, San Francisco, Cal. Location of works, Wallapai Mining District, Mohave County, Arizona Territory.

NOTICE.—There are delinquent upon the following assessed stock, on account of assessment levied on the 25th day of October, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J. P. Ridgeway.....	86	1000	\$200 00
J. P. Ridgeway.....	87	1000	200 00
J. P. Ridgeway.....	88	1000	200 00
J. P. Ridgeway.....	89	1000	200 00
J. P. Ridgeway.....	90	1000	200 00
J. P. Ridgeway.....	91	100	20 00
J. P. Ridgeway.....	92	100	20 00
J. P. Ridgeway.....	93	100	20 00
J. P. Ridgeway.....	94	100	20 00
J. P. Ridgeway.....	95	100	20 00
J. P. Ridgeway.....	96	100	20 00
J. P. Ridgeway.....	97	100	20 00
J. P. Ridgeway.....	98	100	20 00
J. P. Ridgeway.....	99	100	20 00
J. P. Ridgeway.....	100	100	20 00
William Miller.....	49	500	100 00
William Miller.....	50	500	100 00
William Miller.....	51	500	100 00
William Miller.....	52	500	100 00
William Miller.....	53	500	100 00
William Miller.....	54	500	100 00
William Miller.....	55	500	100 00
William Miller.....	56	500	100 00
William Miller.....	57	500	100 00
William Miller.....	58	500	100 00
William Miller.....	59	500	100 00
William Miller.....	60	100	20 00
William Miller.....	61	100	20 00
William Miller.....	62	100	20 00
William Miller.....	63	100	20 00
William Miller.....	64	100	20 00
William Miller.....	65	100	20 00
William Miller.....	66	100	20 00
William Miller.....	67	100	20 00
William Miller.....	68	100	20 00
William Miller.....	69	100	20 00
William Miller.....	70	100	20 00
William Miller.....	71	100	20 00
William Miller.....	72	100	20 00
William Miller.....	73	100	20 00
William Miller.....	74	100	20 00
William Miller.....	75	100	20 00
William Miller.....	76	100	20 00
William Miller.....	77	100	20 00
William Miller.....	78	100	20 00
William Miller.....	79	100	20 00
William Miller.....	80	100	20 00
William Miller.....	81	100	20 00
William Miller.....	82	100	20 00
William Miller.....	83	100	20 00
William Miller.....	84	100	20 00
William Miller.....	85	100	20 00
William Miller.....	86	100	20 00
William Miller.....	87	100	20 00
William Miller.....	88	100	20 00
William Miller.....	89	100	20 00
William Miller.....	90	100	20 00
William Miller.....	91	100	20 00
William Miller.....	92	100	20 00
William Miller.....	93	100	20 00
William Miller.....	94	100	20 00
William Miller.....	95	100	20 00
William Miller.....	96	100	20 00
William Miller.....	97	100	20 00
William Miller.....	98	100	20 00
William Miller.....	99	100	20 00
William Miller.....	100	100	20 00
W. H. Smith.....	24	25	5 00
W. H. Smith.....	25	25	5 00
W. H. Smith.....	26	25	5 00
W. H. Smith.....	27	25	5 00
W. H. Smith.....	28	25	5 00
W. H. Smith.....	29	25	5 00
W. H. Smith.....	30	25	5 00
W. H. Smith.....	31	25	5 00
W. H. Smith.....	32	25	5 00
W. H. Smith.....	33	25	5 00
W. H. Smith.....	34	25	5 00
W. H. Smith.....	35	25	5 00
W. H. Smith.....	36	25	5 00
W. H. Smith.....	37	25	5 00
W. H. Smith.....	38	25	5 00
W. H. Smith.....	39	25	5 00
W. H. Smith.....	40	25	5 00
W. H. Smith.....	41	25	5 00
W. H. Smith.....	42	25	5 00
W. H. Smith.....	43	25	5 00
W. H. Smith.....	44	25	5 00
W. H. Smith.....	45	25	5 00
W. H. Smith.....	46	25	5 00
W. H. Smith.....	47	25	5 00
W. H. Smith.....	48	25	5 00
W. H. Smith.....	49	25	5 00
W. H. Smith.....	50	25	5 00
W. H. Smith.....	51	25	5 00
W. H. Smith.....	52	25	5 00
W. H. Smith.....	53	25	5 00
W. H. Smith.....	54	25	5 00
W. H. Smith.....	55	25	5 00
W. H. Smith.....	56	25	5 00
W. H. Smith.....	57	25	5 00
W. H. Smith.....	58	25	5 00
W. H. Smith.....			

an assessment of 50 cents per share was levied, upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary, at his office, No. 402 Montgomery street, Room No. 23, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 15th day of January, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 20th day of January, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

CHARLES E. BOGART, Secretary.
Office—No. 402 Montgomery street, Room No. 23, San Francisco, Cal. d613-w

Great Blue Gravel Range Company—

Location of principal place of business, San Francisco, Cal. State of California. Location of works, Placer County, California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No. 4) levied on the 20th day of November, 1873, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Alexander, W. T.	100	100	\$100
Alexander, W. T.	101	100	100
Babcock, J. T.	147	25	25
Babcock, J. T.	148	100	100
Babcock, J. T.	149	100	100
Babcock, J. T.	150	100	100
Bowers, D. L.	283	50	50
Bowers, D. L.	284	50	50
Bowers, D. L.	285	50	50
Bowers, D. L.	286	50	50
Bowers, D. L.	287	50	50
Bowers, D. L.	288	50	50
Bowers, D. L.	289	50	50
Bowers, D. L.	290	50	50
Bowers, D. L.	291	50	50
Bowers, D. L.	292	50	50
Bowers, D. L.	293	50	50
Bowers, D. L.	294	50	50
Bowers, D. L.	295	50	50
Bowers, D. L.	296	50	50
Bowers, D. L.	297	50	50
Bowers, D. L.	298	50	50
Bowers, D. L.	299	50	50
Bowers, D. L.	300	50	50
Bowers, D. L.	301	50	50
Bowers, D. L.	302	50	50
Hunt, C. A.	303	100	100
Hunt, C. A.	304	100	100
Hunt, C. A.	305	100	100
Hunt, C. A.	306	100	100
Hunt, C. A.	307	100	100
Hunt, C. A.	308	100	100
Hunt, C. A.	309	100	100
Hunt, C. A.	310	100	100
Hunt, C. A.	311	100	100
Hunt, C. A.	312	100	100
Hunt, C. A.	313	100	100
Hunt, C. A.	314	100	100
Hunt, C. A.	315	100	100
Hunt, C. A.	316	100	100
Hunt, C. A.	317	100	100
Hunt, C. A.	318	100	100
Hunt, C. A.	319	100	100
Hunt, C. A.	320	100	100
Hunt, C. A.	321	100	100
Hunt, C. A.	322	100	100
Hunt, C. A.	323	100	100
Hunt, C. A.	324	100	100
Hunt, C. A.	325	100	100
Hunt, C. A.	326	100	100
Hunt, C. A.	327	100	100
Hunt, C. A.	328	100	100
Hunt, C. A.	329	100	100
Hunt, C. A.	330	100	100
Hunt, C. A.	331	100	100
Hunt, C. A.	332	100	100
Hunt, C. A.	333	100	100
Hunt, C. A.	334	100	100
Hunt, C. A.	335	100	100
Hunt, C. A.	336	100	100
Hunt, C. A.	337	100	100
Hunt, C. A.	338	100	100
Hunt, C. A.	339	100	100
Hunt, C. A.	340	100	100
Hunt, C. A.	341	100	100
Hunt, C. A.	342	100	100
Hunt, C. A.	343	100	100
Hunt, C. A.	344	100	100
Hunt, C. A.	345	100	100
Hunt, C. A.	346	100	100
Hunt, C. A.	347	100	100
Hunt, C. A.	348	100	100
Hunt, C. A.	349	100	100
Hunt, C. A.	350	100	100
Hunt, C. A.	351	100	100
Hunt, C. A.	352	100	100
Hunt, C. A.	353	100	100
Hunt, C. A.	354	100	100
Hunt, C. A.	355	100	100
Hunt, C. A.	356	100	100
Hunt, C. A.	357	100	100
Hunt, C. A.	358	100	100
Hunt, C. A.	359	100	100
Hunt, C. A.	360	100	100
Hunt, C. A.	361	100	100
Hunt, C. A.	362	100	100
Hunt, C. A.	363	100	100
Hunt, C. A.	364	100	100
Hunt, C. A.	365	100	100
Hunt, C. A.	366	100	100
Hunt, C. A.	367	100	100
Hunt, C. A.	368	100	100
Hunt, C. A.	369	100	100
Hunt, C. A.	370	100	100
Hunt, C. A.	371	100	100
Hunt, C. A.	372	100	100
Hunt, C. A.	373	100	100
Hunt, C. A.	374	100	100
Hunt, C. A.	375	100	100
Hunt, C. A.	376	100	100
Hunt, C. A.	377	100	100
Hunt, C. A.	378	100	100
Hunt, C. A.	379	100	100
Hunt, C. A.	380	100	100
Hunt, C. A.	381	100	100
Hunt, C. A.	382	100	100
Hunt, C. A.	383	100	100
Hunt, C. A.	384	100	100
Hunt, C. A.	385	100	100
Hunt, C. A.	386	100	100
Hunt, C. A.	387	100	100
Hunt, C. A.	388	100	100
Hunt, C. A.	389	100	100
Hunt, C. A.	390	100	100
Hunt, C. A.	391	100	100
Hunt, C. A.	392	100	100
Hunt, C. A.	393	100	100
Hunt, C. A.	394	100	100
Hunt, C. A.	395	100	100
Hunt, C. A.	396	100	100
Hunt, C. A.	397	100	100
Hunt, C. A.	398	100	100
Hunt, C. A.	399	100	100
Hunt, C. A.	400	100	100

Gold Mountain Mining Company—Location

of principal place of business, San Francisco, Cal.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 31st day of October, 1873, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
W A Knapp, Trustee.	13	500	\$125 00
W A Knapp, Trustee.	15	300	75 00
W A Knapp, Trustee.	16	100	25 00
W A Knapp, Trustee.	18	100	25 00
W A Knapp, Trustee.	19	100	25 00
W A Knapp, Trustee.	25	100	25 00
D M Hoarner, Trustee.	40	400	100 00
D M Hoarner, Trustee.	64	83	8 25
Thomas Bonnett.	9	2500	625 00
G D Roberts.	29	2400	500 00

And in accordance with law, and an order of the Board of Directors, made on the 31st day of October, 1873, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the company's office, No. 116 Leidesdorff street, San Francisco, California, on the 5th day of January, 1874, at the hour of one o'clock p. m., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

Office—116 Leidesdorff St., cor. of Hall's, San Francisco, Cal. d620

Hayden Hill Mining Company—Location

of principal place of business, San Francisco, Cal.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 29th day of September, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Geo M Pinney, Trustee.	10	500	\$75 00
Geo M Pinney, Trustee.	12	500	75 00
Geo M Pinney, Trustee.	13	500	75 00
Geo M Pinney, Trustee.	15	500	75 00
Geo M Pinney, Trustee.	17	500	75 00
Geo M Pinney, Trustee.	18	500	75 00

Names.	No. Certificate.	No. Shares.	Amount.
Geo M Pinney, Trustee.	3	100	15 00
Geo M Pinney, Trustee.	4	100	15 00
Geo M Pinney, Trustee.	129	40	6 00
S A Raymond, Trustee.	1	100	15 00
H S Johnson, Trustee.	19	500	75 00
W H Gawley, Trustee.	20	500	75 00
A W Blair, Trustee.	38	50	7 50
A W Blair, Trustee.	44	50	7 50
A W Blair, Trustee.	46	100	15 00
A W Blair, Trustee.	47	100	15 00
A W Blair, Trustee.	48	100	15 00
A W Blair, Trustee.	49	100	15 00
A W Blair, Trustee.	51	500	75 00
A W Blair, Trustee.	52	500	75 00
A W Blair, Trustee.	54	500	75 00
A W Blair, Trustee.	55	500	75 00
A W Blair, Trustee.	56	500	75 00
A W Blair, Trustee.	57	500	75 00
A W Blair, Trustee.	58	100	15 00
A W Blair, Trustee.	59	100	15 00
S A Raymond, Trustee.	77	250	37 50
S A Raymond, Trustee.	78	250	37 50
S A Raymond, Trustee.	79	250	37 50
S A Raymond, Trustee.	80	250	37 50
S A Raymond, Trustee.	81	100	15 00
S A Raymond, Trustee.	82	100	15 00
S A Raymond, Trustee.	83	100	15 00
S A Raymond, Trustee.	84	100	15 00
S A Raymond, Trustee.	85	100	15 00
S A Raymond, Trustee.	86	100	15 00
S A Raymond, Trustee.	87	100	15 00
S A Raymond, Trustee.	88	100	15 00
S A Raymond, Trustee.	89	100	15 00
S A Raymond, Trustee.	91	3000	450 00
S A Raymond, Trustee.	93	50	7 50
S A Raymond, Trustee.	99	600	90 00
Louis R. Lull, Trustee.	73	100	15 00
W F Dorrance, Trustee.	132	50	7 50
W H Knight, Trustee.	75	100	15 00
A F Brown, Trustee.	102	100	15 00
A F Brown, Trustee.	103	100	15 00
A F Brown, Trustee.	104	100	15 00
A F Brown, Trustee.	105	100	15 00
A F Brown, Trustee.	106	100	15 00
A F Brown, Trustee.	107	100	15 00
A F Brown, Trustee.	108	100	15 00
A F Brown, Trustee.	109	100	15 00
A F Brown, Trustee.	110	100	15 00
A F Brown, Trustee.	111	100	15 00
A F Brown, Trustee.	112	100	15 00
A F Brown, Trustee.	113	100	15 00
A F Brown, Trustee.	114	100	15 00
A F Brown, Trustee.	115	100	15 00
A F Brown, Trustee.	116	100	15 00
A F Brown, Trustee.	117	100	15 00
A F Brown, Trustee.	118	100	15 00
A F Brown, Trustee.	119	100	15 00
A F Brown, Trustee.	120	100	15 00
A F Brown, Trustee.	121	600	90 00
A F Brown, Trustee.	122	600	90 00
A F Brown, Trustee.	123	600	90 00
A F Brown, Trustee.	124	500	75 00
A F Brown, Trustee.	125	500	75 00
A F Brown, Trustee.	126	600	90 00
A F Brown, Trustee.	127	200	30 00
A F Brown, Trustee.	128	60	9 00
Jas A Pritchard, Trustee.	130	6250	937 50
W H Knight, Trustee.	131	24920	3735 00

And in accordance with law, and an order of the Board of Directors, made on the 29th day of September, 1873, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the Secretary, No. 331 Montgomery street, Room 18, San Francisco, Cal., on the 15th day of December, 1873, at the hour of 2 o'clock p. m., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

WM. H. KNIGHT, Secretary.
Office—331 Montgomery street, San Francisco, California. d620-w

Ida and Rhoda Lewis Consolidated Mining Company—

Principal place of business, San Francisco, Cal. Location of works, Placer County, California. Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 1st day of January, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Eugene Fardini.	292	20	\$2 00
E D Dement.	303	25	2 50
E D Dement.	304	25	2 50
E D Dement.	305	25	2 50
E D Dement.	306	25	2 50
E D Dement.	307	25	2 50
E D Dement.	308	25	2 50
E D Dement.	309	25	2 50
E D Dement.	310	25	2 50
E D Dement.	311	25	2 50
E D Dement.	312	25	2 50
E D Dement.	313	25	2 50
E D Dement.	314	25	2 50
E D Dement.	315	25	2 50
E D Dement.	316	25	2 50
E D Dement.	317	25	2 50
E D Dement.	318	25	2 50
E D Dement.	319	25	2 50
E D Dement.	320	25	2 50
E D Dement.	321	25	2 50
E D Dement.	322	25	2 50
E D Dement.	323	25	2 50
E D Dement.	324	25	2 50
E D Dement.	325	25	2 50
E D Dement.	326	25	2 50
E D Dement.	327	25	2 50
E D Dement.	328	25	2 50
E D Dement.	329	25	2 50
E D Dement.	330	25	2 50
E D Dement.	331	25	2 50
E D Dement.	332	25	2 50
E D Dement.	333	25	2 50
E D Dement.	334	25	2 50
E D Dement.	335	25	2 50
E D Dement.	336	25	2 50
E D Dement.	337	25	2 50
E D Dement.	338	25	2 50
E D Dement.	339	25	2 50
E D Dement.	340	25	2 50
E D Dement.	341	25	2 50
E D Dement.	342	25	2 50
E D Dement.	343	25	2 50
E D Dement.	344	25	2 50
E D Dement.	345	25	2 50
E D Dement.	346	25	2 50
E D Dement.	347	25	2 50
E D Dement.	348	25	2 50
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E D Dement.	354	25	2 50
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E D Dement.	356	25	2 50
E D Dement.	357	25	2 50
E D Dement.	358	25	2 50
E D Dement.	359	25	2 50
E D Dement.	360	25	2 50
E D Dement.	361	25	2 50
E D Dement.	362	25	2 50

Machine Builders.

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GEO. W. FOGG, Superintendent.

Steam Engines and Boilers,

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And all other classes of work generally done at first-class establishments, manufactured by us at the lowest prices, and of the best quality.

Particular attention paid to Jobbing Work and Repairs.
N. B.—Sole Agents for sale of HUNTOON'S CELEBRATED PATENT GOVERNOR.
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HINCKLEY & CO.,

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TEAM ENGINES,

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also Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

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CAPITAL.....\$1,000,000.LOCATION OF WORKS:
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Joseph Moore, Wm. H. Taylor, J. B. Haggins,
Wm. Norris, James D. Walker.WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS E. MEAD.....Secretary
24v17-47

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ROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

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And all kinds of Mining Machinery.

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Every Variety of Shafting,

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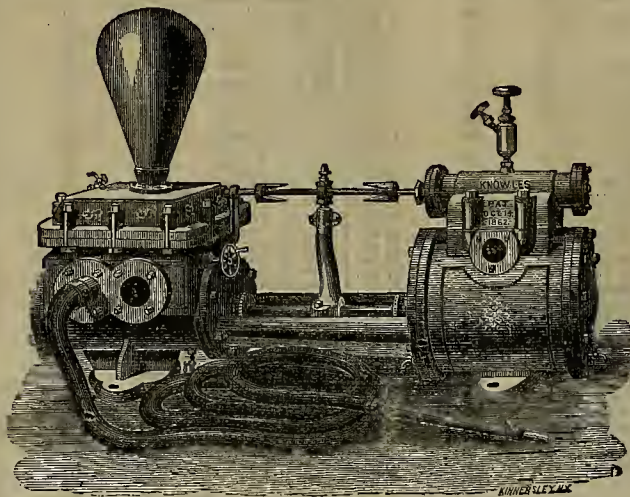
Miners' Foundry and Machine Works,

CO-OPERATIVE,

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Machinery and Castings of all kinds.

KNOWLES' PATENT STEAM PUMP.



It has no Cranks or Fly-Wheel, and has no dead points where it will stop, consequently it is always ready to start without using a starting-bar, and does not require hand-work to get it past the center. Will always start when the steam cylinder is filled with cold water of condensation.

CENTRAL PACIFIC R. R., OFFICE OF THE GEN'L MASTER MECHANIC,

SACRAMENTO, Cal., January 14, 1874.

A. L. FISH, Esq., Agent of the Knowles Steam Pump, San Francisco—Dear Sir: In reply to your inquiry as to the merits of the Knowles Steam Pump, in use upon this road, I will say that it gives me great pleasure to report that they have performed their work well whenever called upon. In no instance have they failed. We have now over 30 of them in use on this road as fire engines, and pumping water for shop and station use. I consider the Knowles Steam Pump the best in use, and prefer it to any other.

Yours truly,

A. J. STEVENS, General Master Mechanic.

A. L. FISH, Agent Knowles' Steam Pump—Dear Sir: In answer to your inquiries, we state that the highest award for Steam Pumps at the Eighth or last Mechanics Fair in San Francisco, was a First Premium and Diploma, awarded to the Knowles Patent Steam Pump, as published in the Official List September 22d, 1871.

A. S. HALLADIE, President Board of Managers.

W. H. WILLIAMS, Sec'y Board of Managers Eighth Industrial Exhibition, M. I.

WE BUILD AND HAVE CONSTANTLY ON HAND

The Largest Stock of Pumps in the World,

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SAN FRANCISCO.

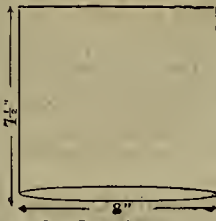
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An improvement greatly needed—being Stronger, more Durable and Economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as bar steel.

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OF ALL KINDS, A SPECIALTY.



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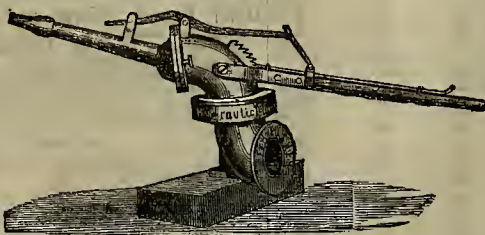
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HYDRAULIC MINERS, TAKE NOTICE—I hereby caution Miners and Manufacturers against making, buying, selling or using a Hydraulic Machine or Joint known as the Little Giant, manufactured and sold by R. R. & J. Craig and Richard Hoskin, as the same is an infringement upon the invention of the machine known as FISHER'S HYDRAULIC CHIEF, secured by Letters Patent, No. 110,222, dated Dec. 20, 1870. All parties participating in such infringements will be rigorously prosecuted. Nevada, Jan. 13th.

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Steam Engines—all Kinds of Mining Machinery.

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IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hespburn Rolling Pan and Callahan Grates Bars, suitable for Burning Screenings.

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LIGHT AND HEAVY CASTINGS,

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Machinery.

TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Fifty Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

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All persons infringing on either of these patents

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I am sole LICENSEE to sell Machines manufactured under Craig's, Rice's, Macey's and Hoskin's patents.

I Guarantee Full Indemnity to all my Customers.

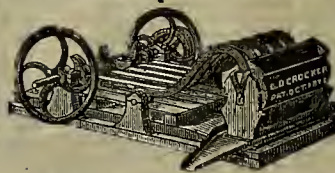
Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an Improved LITTLE GIANT.

For further particulars apply to

R. HOSKIN, Dutch Flat,
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Or WILLIAMSON & CORY, Marysville.
Dutch Flat, August 1, 1873. 6v27-2m

CROCKER'S PATENT TRIP HAMMER QUARTZ BATTERY.



This machine, complete, weighs 1,500 lbs. Has an iron frame, five steel arms with stamps weighing 17 lbs. each, which strike 25.0 blows per minute, in a mortar, provided with screens on both sides, and crushes FINE 60 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$500.

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BUY BARBER'S BIT BRACE.



The New Wilson SEWING MACHINE

Has points of superiority over all others. A reliable warranty is given with each machine for

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It is unequalled for light and heavy work. Examine and compare it with the highest priced machine in the market.

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Repairing done on very Reasonable Terms and in the best manner. No. 32 Fremont street, S. F. 19v23-3m

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Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.

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7v25-4f JOHN TAYLOR & CO.

Varney's Patent Amalgamator.

These Machines Stand Unrivaled.

For rapidly pulverizing and amalgamating ores, they have no equal. No effort has been, or will be spared to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits. They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows.

The pan being filled, the motion of the muller forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular flow between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.

Sellers made on the same principle as all other. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed.

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Nevada Metallurgical Works,

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Ores worked by any process. Ores sampled. Assaying in all its branches. Analysis of Ores, Minerals, Waters, etc. Plans furnished for the most suitable process for working Ores. Special attention paid to the Mining and Metallurgy of Quicksilver.

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SAN FRANCISCO CAL.

7v21-3m

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A. C. PUTNAM.

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Metallurgical Works,

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ADVANCES MADE

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Sampler and Crusher of Ores,

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ORE BAGS FOR SALE

IN QUANTITIES TO SUIT.

Apply to

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Vessels, Apparatus, Sheet, Wire, Etc., Etc.

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Platinum Scrap and Native Platinum purchased.

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Risdon Iron and Locomotive Works

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Are prepared to make SHEET IRON and ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

All kinds of Machinery made and repaired.

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JOSEPH MOORE, Superintendent.

SAN FRANCISCO

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PHELPS BROTHERS, Proprietors

MANUFACTURERS OF ALL KINDS OF

Machine Bolts, Bridge Bolts, and Ship or Band Bolts.

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SPORTING,

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And BLASTING

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Of SUPERIOR QUALITY, FRESH FROM THE MILLS. It being constantly received and transported into the interior, is delivered to the consumer within a few days of the time of its manufacture, and is in every way superior to any other Powder in Market. We have been awarded successively

Three Gold Medals

By the MECHANICS' INSTITUTE and the STATE AGRICULTURAL SOCIETY for the superiority of our products over all others.

We also call attention to our

HERCULES POWDER.

Which combines all the force of other strong explosives now in use, and the lifting force of the BEST BLASTING POWDER, thus making it vastly superior to any other compound now in use.

A circular containing a full description of this Powder can be obtained on application to our Office.

16v20-3m

JOHN F. LOHSE, Secretary.

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TRADE MARK.

G. & H. BARNETT,

Manufacturers of Files of every Description,

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Sold by all the principal hardware stores on the Pacific Coast.

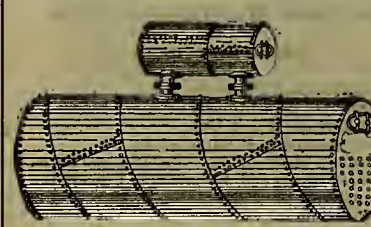
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123 and 125 Beale Street.....SAN FRANCISCO

F. I. CURRY,

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High and Low Pressure Boilers of all

Descriptions.

SOLE MANUFACTURERS OF THE CELEBRATED

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SHEET IRON WORK of every description done at the Shortest Notice.

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Steam Boiler Manufactory

—OF—

JAMES H. SHANLEY, Successor to D. McDonald,

Oregon street, below Front, San Francisco.

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Also, all kinds of Sheet Iron Work done promptly,

and at prices to suit the times. 1v27

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BOILER MAKERS

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Special attention given to the development of this important interest in California.

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Best of References.

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Solder Babbit Metal and Type Metal,

Which they can supply, in quantities to suit, at a MUCH LOWER PRICE than any wholesale house in this city.

F. O. BELDEN & CO.

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Handsomely engraved on stone, colored in counties, and mounted on cloth, showing the Counties, Towns, Rivers, Lakes, Railroads, Mines and Mining Districts throughout the Territory, and all GOVERNMENT SURVEYS made to date. Price, mounted, \$8; Pocket form, \$5.

—ALSO—

New Mining Map of Utah,

Showing the boundaries of the principal mining districts, some 30 in number, adjacent to Salt Lake City. Price, pocket form, \$2.50.

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Froiseth's New Map of Little Cottonwood

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Showing the location of some 400 mines and tunnel sites, together with the mines surveyed by U. S. Patent. Price \$3. For sale and mailed to any part of the globe, on receipt of price, by A. L. BANCROFT & CO., A. ROMAN & CO., and LECOUNT BROS. & MANSUR, San Francisco.

10v26-4f

COAL MINE.

We have a partially developed coal mine within a half mile of the C. P. R. R. in the State of Nevada, for sale, or would dispose of an interest to a party who would assist in the further development of the mine.

Specimens can be seen at the office of the "Scientific Press." Address,

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Care of A. J. HAZEN,

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This Hotel has been newly furnished, and is situated in a central and healthy

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and Progressive Industry.

BY DEWEY & CO.,
Patent Solicitors.

SAN FRANCISCO, SATURDAY, JANUARY 10, 1874.

VOLUME XXVIII
Number 2.

Antimony Reduction—No. 2.

In our last issue we made some remarks on the treatment of antimony and we now proceed to consider the extraction of metallic antimony direct from ores and also from the crude antimony. At present the greatest proportion of antimony is still obtained from crude antimony. For this operation there are two principal methods in use; that is, it is effected either by precipitation with iron while smelting, or by a combined oxidation and reduction process. The treatment with iron gives good results, but the antimony takes up some iron and requires subsequent refining. Besides the iron, sulphate of sodium (Glauber salt), is taken as a flux and some pulverized charcoal also added. Antimony and sulphide of iron are formed, which unite with the resulting sulphide of sodium. This salt forms a liquid cover over the metal and prevents its volatilization to a great extent. Soda in place of Glauber salt gives a less liquid flux and is, besides, more expensive.

The furnace used is similar to that shown in Figures 1 and 2 of our engravings. The concave bottom or crucible is beaten hard and made of a mixture of sand and clay, being provided with a tap hole. In this 100 parts of crude antimony are mixed with 42 parts of iron filings, and 10 parts of calcined Glauber salt, with an addition of 3 parts of pulverized charcoal, or with 50 parts of soda and 10 of charcoal. In eight or ten hours about 330 pounds of the antimony is melted in.

The smelting of ore for metallic antimony direct, suffers less loss than for crude antimony. Poorer ores, from 30 to 40 per cent., are smelted in shaft furnaces with three tynes. The furnace is 11 feet high from the tynes, 3 feet deep and 2½ feet wide. The ore is pulverized and roasted in a reverberatory furnace, one ton in six hours, and smelted with coke in the above shaft furnace. With poor ore the smelting in a shaft furnace is more economical than in a crucible furnace. For the purpose of smelting the ore in a reverberatory furnace, if no iron is used for precipitation, a careful roasting is required. This is best performed in a reverberatory roasting furnace, like that shown in Fig. 3, and the pulverized ore is introduced through the arch and stirred at a low heat until all the sulphur is driven out. The loss in roasting is, of course, very variable, but, with a careful roasting and proper ore, only from 1½ to 2 per cent. volatilizes. The roasted ore is then mixed with unroasted, oxidized ore, if such is obtained from the mine, and the whole mixed with from 22 to 30 per cent. flux (salt, Glauber salt and soda), and 15 or 20 per cent. of powdered charcoal, besides some slag from the former charge. The roasting furnace, as well as the smelting furnace, is provided with dust-chambers, where a part of the volatile antimony is deposited, which is also added to the ore mixture.

The furnace shown in Figs. 1 and 2 represents the smelting furnace. The crucible is lined with fire clay and when red hot the ore is charged up to 650 pounds, the door is closed for a short time and the fire immediately started. Much stirring is required for four or five hours and the scum is occasionally drawn out. After six hours the smelted mass is tapped and metal and slag run into a small hearth in front

of the furnace. When cold, the regulus is taken out, the slag separated and the antimony metal broken into pieces for further refining. The loss of antimony by this process is about 15 per cent. The refining process is mostly carried on in crucibles with a proper flux, which is the same as used for the smelting of ore, consisting of sulphate and carbonate of soda and salt. If there is arsenic in the metal, it is well to introduce from time to time a piece of saltpeter into the crucible and stir the mass with a clay stirrer. Mr. A. F. Wendt, in Canada, uses a large reverberatory furnace, 40 feet long and 9 feet wide. According to the

reduced metal and fluxes the gangue. In about four hours the furnace is at a bright red heat approaching whiteness, the whole mass is in fusion and active ebullition, and the carbonic acid penetrates the layer of slag as a blue flame. The charge is now repeatedly stirred until quite fused. The fire is then let down and the doors opened until the slag becomes thick and pasty, whereupon it is drawn out. As soon as it is removed, 25 pounds of salt-cake and 10 pounds of charcoal are thrown on the metal, and the fire again raised. In one hour and a half the slag is in a state of fusion as liquid as water. The metal is ladled into

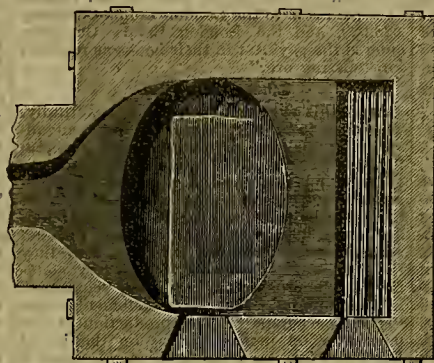


Fig. 1

$\frac{11}{4} = 1'$

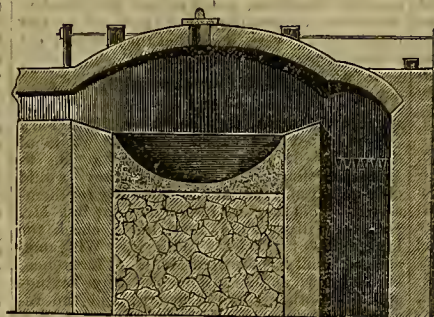


Fig. 2



Fig. 3

$\frac{11}{8} = 1'$

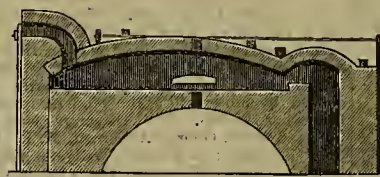


Fig. 4

FURNACES FOR REDUCING ANTIMONY.

Engineering and Mining Journal, which describes Mr. Wendt's furnace, it has ten working doors and holds five charges, three of 600 pounds of wet ore (concentrated) being introduced and drawn every 24 hours, so that the ore remains 40 hours in the furnace. Every five or ten minutes the ore has to be stirred to prevent agglomeration. The loss by roasting is 7½ per cent. Consumption of fuel, three-quarters of a cord of wood in 24 hours.

Mr. Wendt combines smelting and refining in one operation, which is a great improvement in reducing antimony ores. The crucible furnace is five feet in diameter and 18 inches deep. The flux used in smelting is a crude sulphate of soda in the form of salt-cakes and a charge usually consists of 500 pounds of roasted ore, 100 pounds of salt-cake and 75 pounds of hardwood charcoal, all in coarse powder. About one half of a cord of wood is burned at each charge. The ore is mixed with the charcoal and spread evenly in the retort furnace being covered with a mixture of salt-cake and charcoal. The fire is immediately increased and a fused layer is formed which protects the

dishes holding 25 pounds each, care being taken to dip enough slag, to cover the metal; when cold the slag is broken off and the metal is perfectly fine.

SAVING MONEY.—The report of O. C. Hewitt, Superintendent of the Keystone Consolidated mine, in Amador county, is to the effect that they have saved about \$5,000 per month by the abandonment of blankets and bundles and the use of Hendy's concentrators. The concentrators have been in use there about five months and of course give great satisfaction, as they have performed their work so well.

THE OROVILLE MINES.—The "Lava Bed" mines, near Oroville, continue to pan out to the Chinamen, by whom they are worked. The Chinese town near by is growing rapidly, and numbers of celestials are swarming thither.

The Gould and Curry, Hale and Norcross, and Imperial mines, are all down to the Sutro tunnel level, and exploring at that point. The Yellow Jacket is considerably below it, and the Crown Point has penetrated 200 feet below it.

A Startling Discovery.

Through the kindness of a gentleman of scientific tastes, residing in this city, we were permitted to see recent numbers of the *Monitor Belge*, which contain references to the reported discovery, by a Belgian peasant, of a fact which, if more substantially verified, is destined to cause a complete revolution in the preparation and use of fuel, and furnish a partial solution, at least, of the difficult problem which has so long confronted British economists. The statement is that it has been found that a mixture of coal slack, or waste screenings and dust, with clay, mud or other argillaceous matter, and sal-soda, may be made, which will cost one-half as much, and burn better, than ordinary coal. The ingredients are thoroughly incorporated, and taken in the following proportions: coal slack, twenty-five parts; earthy matter, seventy-five parts, and sal-soda, one per cent. The whole virtue of the preparation rests, it is said, on the action of the sal-soda. How this substance is capable of so assisting combustion as to consume such a dead weight of wholly inert matter, is another thing, and will puzzle our chemists to explain. A mixture, among the thousands constantly being patented, especially in England, consists of seventy-five parts of coal dust, and twenty-five parts of clay. This manages to burn itself, somewhat in the manner of peat, but is not so valuable as a heat-producer as the common coal, and is of questionable economy, inasmuch as the coal dust alone, or mixed with only enough water having clay in suspension to render the whole consistent, in the form of bricks, is much more effective. The trouble of weighing and incorporating so small a percentage is hardly compensated for by the trifling saving in material. But in the new composition, only one-fourth of the entire mass is coal. It would even pay to expressly crush block coal on this system, if all that is claimed be true. The discoverer, or inventor, has not patented his improvement, and its benefits are free to the world. It is further stated that manufacturers and other large fuel users in Belgium are making trial of the compound with satisfactory results. We await further and more detailed information before commenting at length upon this last sensation.

Rich Ore.

We have just been shown a sample of about seventy pounds of exceedingly rich ore containing free gold in abundance, taken from the Patterson mine at Tuttle town, in Tuolumne county. This mine belongs to Mr. J. J. Corrigan, (now on his way to London, England). He is the principal resident director here in San Francisco of the celebrated Richmond mine, at Enns, Nevada.

Mr. Corrigan deserves to be congratulated on his success in developing the Patterson, as he took hold of it in an undeveloped state and by sinking to a proper depth, and providing the necessary means and appliances, has made it an unbounded success. There is a 20-stamp mill erected on the ground and every thing bids fair for a large and steady yield of gold.

Mr. D. T. Hughes, the Superintendent, deserves great credit for the able and efficient manner in which he has opened this mine and brought it, within the period of one year, from obscurity to the position of one of the most promising mines in the state.

History of the Emma Mine.

The following article on the history of the famous Emma mine, from the New York Nation, will be read with interest by mining men on this Coast:

In the Little Cottonwood cañon, in the Territory of Utah, on the Wasatch range of mountains, and about sixteen miles from a station called Sandy, on a branch of the Union Pacific Railroad, is a little spot of ground whose fame, though the growth of only a few years, has already spread far and wide over the surface of the earth, and promises to be handed down to future generations, if not in song, at least in the records of financial and political ethics, as one of the most remarkable places on the surface of the habitable globe. In 1868, two prospecting miners, of the names of Woodman and Chisholm, wandering about through the cañon, suddenly became aware that on the side of one of the hills there were evidences of silver ore, and being, like most prospecting miners, though rough in manners and appearance, of an imaginative turn, they determined to consider their discovery a mine, and to name it after a lady with whom one or possibly both of them had been illicitly consorting in San Francisco, and whose Christian name was Emma. This they did, but, having no capital to work their discovery, it seemed at first that the christening of the mine might be all that would ever happen to it; when very fortunately, one fine day there appeared on the scene a certain James E. Lyon, whose business was that of a mining speculator, who agreed to join Woodman and Chisholm, and advanced them money, he receiving a one-third share in the mine as an equivalent.

How the Lode Ran.

During 1868 and 1869 one hundred tons of ore were got out, and Mr. Lyon, not being much pleased with the prospect of his enterprise, first, however, having satisfied himself that the lode ran in a northwesterly direction—a fact which we must beg the reader of this article to remember; for though the direction of a lode seems to be one of those things which would not be apt to escape the memory of any one interested in it, it will be observed throughout this strange tale that the business of silver-mining, at least in the Wasatch range, seems to impair the mnemonic almost as much as it improves the inventive faculties of the mind. To New York, then, went Lyon, having first made up his mind that the lode ran in a northwesterly direction; and, singular as it may seem, no sooner had he disappeared than the Emma became suddenly productive, a large body of ore was struck, and Messrs. Woodman and Chisholm, not caring so much for the niceties of partnership law as for silver, took in some new partners, and came at the same time to the conclusion that it was necessary to consult Mr. Lyon, on the ground that the vein now opened out was running in a different direction from what it was when the original shaft was sunk. Into the Emma Silver Mine of Utah these gentlemen had now organized themselves, and between Lyon and the Emma Silver Mine a suit-raged for three days in the District Court of Utah, in which were engaged no less than seventeen lawyers, and among them, as Lyon's principal attorney, the Hon. W. M. Stewart, Senator from Nevada. What Lyon desired was an inspection of the mine, in order that the defective memories of his former partners might be refreshed as to the direction of the lode. He gained his suit; on the inspection it proved that Lyon was right, and the direction of the lode was northwesterly. His suit was thereupon compromised; but, to understand the nature of the compromise, it is necessary to turn to other scenes and introduce new characters.

An Old Californian to the Front.

Vermont of late years has been the cradle of great men. From Vermont came Fisk; from Vermont came the gentlemen who have lately organized the Vermont Central Railroad; from Vermont, too, came Trenor W. Park; originally a country lawyer in that State, he came early to the conclusion that the confined life of New England was too narrow for a man of his metal, and he went to practice in San Francisco. Like most of the gentlemen who have begun their careers as country lawyers in Vermont and then emigrated to develop wider spheres of usefulness elsewhere, Mr. Park first really obtained distinction as a Receiver. It was the celebrated Mariposa estate which he received, and so well did he perform his duties that he is said to have acquired the name, among his friends and admirers, of the "Great Exhausting Receiver." It may be inferred from this that Mr. Park had acquired no small knowledge of mining law; and when we say that about March, 1871, he and one General Baxter made a careful inspection of the Emma, it is tantamount to saying that they came at once to the conclusion that the mine had been badly managed. To improve the property they purchased one-half of the mine, and when Mr. Lyon's compromise came to be arranged it was found that such had been their energy in developing its resources that they had already spent \$1,500,000 upon it, with no return. In any comprehensive scheme of improvement it was necessary that this money should be restored to them, and as neither Mr. Lyon, nor Messrs. Woodward and Chisholm had that amount of money on the spot, development could never be complete without a sale of the mine.

Difficulties of Making a Market for Emma.

But to place the mine on the Little Cottonwood cañon market was difficult, for the same reason that in the old English song the gentleman who put a rope round his wife's neck and took her for sale to the market town found it difficult to dispose of her. In the little Cottonwood Cañon the population were "all of them sellers." There were a dozen mines within easy reach, but there were no quotations in the Cañon. To people who were really interested in a comprehensive scheme of development, there was but one thing to do. The mine must be sold where money was plenty and the nature of cañons unfamiliar. The mine must be sold in London. The name was changed to the "Emma Silver Mining Company of New York," and Mr. Lyon was compromised with on the understanding that he should receive one-eighth of what the mine sold for, less the \$1,500,000 (which Messrs. Park and Baxter had theoretically expended in their first attempt at development), in consideration of his (Lyon's) holding over his claim till the 15th of November following, while a United States patent was being got out.

Dressing Emma Up for Inspection.

There must be an inspection and report upon the value of the mine by an expert, and in order that this report should be all that it ought to be, there must be some preparation of the mine. Mr. Silas Williams, it seems, is admitted by Mr. Park to be about the best man in his acquaintance to prepare a mine, and Mr. Williams was sent for. In the month of September the number of men working on the mine was reduced from a hundred to a dozen. No one was allowed to go into the mine without a written order, and armed men were stationed as guards at the entrances, while Mr. Williams occupied himself in plastering and engraving silver ore on to the limestone rock. The mine was now nearly worked out; there were 1,500 tons of ore raised and on hand, and the value of the mine was, in Mr. Park's opinion, at that time expressed, about \$250,000. The details of the preparation being arranged, Mr. Park and Senator Stewart sailed for England. Professor Silliman of Yale College had been through the mine, had seen the plastered walls, and made a very interesting and instructive report, for which he is said to have been promised \$5,000, and a second sum of \$45,000 if the sale in England was accomplished.

Mr. Park's Genius Developed.

The scene now changed to England, where we find Mr. Park and Senator Stewart, armed with Professor Silliman's report, trying, at first without success, to float their scheme. To investors, silver mines seem a little speculative, and the history of investments in Erie had not tended to strengthen public confidence in new and unknown American securities, promoted by old and well-known American speculators, even when reported upon by the "Sir Roderick Murchison of the United States." If Mr. Park had not been a man of real genius, the scheme might never have been floated to this day. But Mr. Park was a man of genius, and it occurred to him that if the new English company were headed by General Schenck, the American Minister in London, it would probably acquire a reputation at once. General Schenck having little or no money, it was arranged that money should be provided him, and that he should thus enter the company as a *bona fide* investor. This was no less important than the preparation of the mine by Silas Williams.

Emma's Appearance in London.

On the 9th of November, 1871, the prospectus of the Emma Silver Mining Company, limited, appeared, announcing the formation of a new company, with a capital of £1,000,000, in 50,000 shares, of which 25,000 shares were offered by subscription, the vendors retaining the other 25,000. The Directors were announced to be: George Anderson, M. P., London, Chairman; E. Brydges Williams, M. P., London; Deputy Chairman, Percy Doyle, C. B., London; E. Leigh, Pemberton, M. P., London; Hon. J. C. Stanley, London; Major-General Schenck, United States Minister, London; General Henry Baxter, ex-President N. Y. C. Railroad, New York; Trenor W. Park, President National Bank, Vermont; Hon. W. M. Stewart, United States Senator, Nevada. The Trustees were to be George Anderson, Major-General Robert Schenck, and J. H. Puleston (of Jay Cook, McCulloch & Co., American bankers), London. These gentlemen were to act as Trustees for the shareholders until the property purchased was duly transferred; and until that was done no part of the purchase money was to be paid.

Emma's Glowing Prospects.

The property meanwhile had greatly increased in value. There was, in the first place, cash, being the balance of accrued profits receivable from consignments of ore by the vendors to London and Liverpool, amounting to £46,300. There were 2,800 tons of first-class ore being forwarded to England, of the estimated net value of £70,000. There were 3,000 tons second-class ore, piled up at mine for smelting there, of the estimated net value £64,000. There were 13,250 tons first-class ore, already developed in various parts of the mine, of the estimated net value of £357,750. And there were also 2,600 tons first-class ore from mine to London expected to arrive during January and February, and to produce, net, £65,000. It was stated, also, that the ore previously sent to England had realized an average

of £37 19s. 3d. per ton. The cost of extracting the ore ready for shipment or sale had hitherto been under 15s. per ton, or only about 2 per cent. of its value—a fact unprecedented in the annals of mining. Judging by the profits of the preceding four months' working, the estimated net yield of the mine would be at the rate of £700,000 per annum; or, if smelting works were erected, as the proper business way to do, then the total profit would amount to the enormous figure of £800,000 per annum. Furthermore, with a view to equalize and insure the steady and continuous payments of dividends, the divisions of profits were to be restricted to 18 per cent. per annum, until £180,000, equal to twelve months' dividends, were in hand in London, after which time the whole of the earnings were to be divided among the shareholders.

The Game that was Played.

Mr. Park received £500,000 in cash, settled with Mr. Albert Grant (an English speculator, as expert in rigging the market as Mr. Silas Williams had shown himself in preparing, plastering and engraving) for £100,000, and a further prospective sum of £60,000 or £70,000 more, which he seems to have got afterwards, while with Mr. Jas. E. Lyon, entitled to one-eighth of the purchase, less \$1,500,000, a compromise was effected by which he got £30,000 for his whole claim. Mr. Park very kindly letting him know that a peculiar arrangement had been entered into, by which the whole of the London shares were locked up and inaccessible, in the hands of Mr. Grant, for nine months or more, and that before the expiration of that period, in all human probability, the "game would be played out" and the mine "bust up." Mr. Lyon being thus got rid of, the other old claimants renounced all their rights in favor of Mr. Park upon the payment of fifty dollars a share, and in consideration of an undertaking on the part of Mr. Park to make up to the new London company for any discrepancy between the actual amount of first-class ore and the 2,800 tons mentioned in the prospectus. It is hardly necessary to say that as there were only 1,800 tons of this ore in existence, Mr. Park at once paid over to the London Emma Company £28,000, and the London Emma Company entered the payment in their books as received for "missing ore."

Schenck Draws Out.

After this everything went on beautifully. There was to be sure, here and there an adverse rumor in circulation; and General Schenck was obliged to resign his position as Director; but this was only a matter of diplomatic etiquette, and had nothing to do with the merits of the mine; and the 18 per cent. dividends now began to be paid, together with an announcement from the Directors that they had "taken great pains to verify every statement in the prospectus," and were "convinced in their opinion" that such statements were "strictly accurate." The production at the mine went on increasing, for on the 1st of February, with the monthly dividend, came a statement of "ore sold at Utah, 1,000 tons—£28,000," which was the same quantity short from the 2,800 tons which is referred to in the prospectus as "now at railway station, en route to London." On the 7th of March a meeting of the company was held, at which G. Anderson, the Chairman, stated to the shareholders that silver was coming out of the mine so fast that it seemed very likely that they would get "30 or 40 per cent. instead of 18."

How Reports were Cooked Up.

Meantime, to dispel the rumors which had sprung up about the company, Mr. Park offered to pay the expenses of the whole of the Board if they would only go out to Little Cottonwood Cañon—if they would only go out and examine the property for themselves. This they did not care to do; but Mr. Brydges Williams did, receiving a check for his trouble of £5,000. With Mr. Williams, as a personal friend, went Mr. G. A. Lawrence, better known as the author of "Guy Livingston" and other works of fiction; and the result of his connection with the enterprise is a very agreeable instance of how much any development of the resources of nature benefits not merely those directly interested, but all classes of the community. Mr. Lawrence, a literary man, and not skilled in mining, was much struck with what he saw in Utah, and on his return wrote a book called "Silverland," containing a chapter devoted to the Emma mine, for which he received a thousand guineas from his publishers, while his expenses were paid by his friend, Mr. Williams. One of the malicious rumors about this trip was that Mr. Park sent word out that Mr. Williams was to have a home provided for him both in New York and Utah, and that he was on no account to be allowed to go anywhere near a hotel or converse with suspicious characters.

Floating the Shares.

With Mr. Williams went Mr. Stewart and Professor Silliman, and the reports received from the mine were so favorable that, on the 1st of April, 1872, the directors invited the stockholders to take the locked-up and inaccessible vendors' shares, the directors being desirous of getting a quotation on the Stock Exchange, and it being necessary for this that more shares should be held by the Company itself. The only difficulty, they said, was about the price; but they had succeeded in inducing the vendors to dispose of shares at £23—the market price. The shares were taken, or taken in great measure, and everything went on even more swimmingly than before, although, strange to say, no quotation was granted. The

papers stated that "the directors would be in possession of the £180,000 reserve in a few days, and would then immediately commence paying 36 per cent. dividend." A pamphlet by "Nummus" appeared, called "Mining Enterprise in America, as illustrated by the History of a Great Investment," which was printed by a respectable publishing house, Messrs. Cassell, Petter & Galpin, and in some way seemed to have been published by them, though it was not, and they knew apparently nothing about mining enterprise in America. Extracts from this were made in such papers as the *Mining World* and *Stock Exchange Review*, and sent free to every stockholder.

Mr. Williams' Rosy Report.

On the first of May, the Directors announced the return of Mr. Williams with highly satisfactory accounts, and a meeting was held on the 7th of that month to hear them. Mr. Williams, having lost his father, could not attend it; but a letter from him was read, in which he expressed the opinion that the property was "honestly worth more than double what it was three months ago," while Mr. Silliman's second report said that the recent discoveries were "a guarantee for the future of regular and satisfactory dividends;" and on a stockholder venturing to inquire if he might be informed "what amount of ore was actually in sight, seen and measured," the Chairman, Mr. Anderson, advised him to read the reports and he would find that Professor Silliman vouched for 32,000 tons. On the 1st of November, the Directors announced the quantity of ore raised to date as 10,190 tons. The monthly dividends went on, the thirteenth being paid on the 2d of December, 1872, and, on the 10th of that month, Mr. Anderson made a report, detailing his visit to the mine, giving a glowing account of the property (the ore raised was 11,420 tons,) and paying a high tribute to the loyalty and disinterestedness of Messrs. Park and Stewart.

The Sad Downfall of Poor Emma.

With this gratifying tribute, the history of the Emma mine may be said to close. To be sure, there is an appendix in the way of charges and explanations and balance-sheet and proceedings by stockholders, but these are proceedings relating to individuals, their private fortunes, their integrity, and so on. But, as a mine, Emma on the 10th of December, 1872, ceased to exist. There were no more dividends, there was no more ore either in Utah, or in New York, or in London, or on the high seas, to arrive. The 32,000 tons vouched for by Professor Silliman had disappeared; so had the 11,420 tons raised; so had the £46,300 "cash on hand," which was an imaginary sum paid over first in the purchase money to the vendors, and repaid the next day to the company; so had £195,000 in dividends, the money for the last two of which, it seems, had been lent to the company by Mr. Park, as it was itself insolvent; and, in fact, the mine had netted about £47,000 from the 8th of November, 1871, to the 31st of December, 1872. Meanwhile, it appeared that the company had been mining on ground not their own. It will be remembered that the mine ran north-west and south-east, but the company which got the patent discovered that in a north-west and south-east direction there were other claims—the Illinois, the Cincinnati, the San Francisco Emma, and the North Star, all working close by. So in order to avoid this difficulty the patent was taken north-east and south-west, while the mining was done north-west and south-east—in the true direction of the lode. By this arrangement they secured a good title in their patent and at the same time it did not in reality make very much difference which way it was worked, for it would "bust up," as Mr. Park said, in a few months at any rate. In this way they mined their way into land of the Illinois company, and the balance-sheet disclosed the fact that they owed the Illinois company £18,000 on this account, which they reduced the £47,000 to £29,000. As to the quantity of ore remaining in the mine Mr. Park says: "No one can tell as to the quantity of the ore remaining in the mine save Him who made;" this being supposed to have a pious reference to the Creator of the Universe.

Who Tells the Story.

There are one or two more things which it is necessary to state in order to explain the nature of the source from which this information now comes. In November, 1871, one S. T. Paffard, having a little money to spare and seeing a notice of the Emma Company in some newspaper, obtained a prospectus and became strongly impressed with the statements contained in it, vouched for by such names as it bore, and especially by the name of General Schenck, the United States Minister. Being desirous of adding to his income, he took such shares as were within means, not on speculation, but as an investor. When the bubble burst he determined to find out why it was that shares were worth £3 which had been worth £23, and he has spent much time and trouble in correspondence and examination, and has in the end got together the real history of the enterprise in a little pamphlet dedicated "To the shareholders of the Emma Silver Mining Company (Limited), and to shareholders in mines of a similar nature in Utah and Nevada." He gives, in an interesting and instructive appendix, his correspondence with the eminent gentlemen connected with the enterprise, and, with a hopefulness which is certainly to be commended in one who has bought his experience so dear, he takes as the motto of his *True History of the Emma Mine* "*Magna est veritas et prevalebit.*"

SCIENTIFIC PROGRESS.

Zodiacal Light.

Mr. E. H. Pringle writes to *Nature*, from Camp Udopi South Canara, upon the subject of the zodiacal light, as follows:

It is a matter for regret that with the magnificent opportunities of investigating the character of the zodiacal light, afforded to Maxwell Hall by his elevated position in Jamaica, he does not seem to have brought the powers of either the spectroscope or polariscope to bear on it.

I think the full importance of the inquiry is hardly appreciated by many. Taking the generally accepted theory of the light—that of a lens-shaped disk of luminous matter, with the sun for its center, and a diameter exceeding that of the earth's orbit—its matter, lying as it does, in the plane of the elliptic, actually connects us with the sun, and may be the medium through which the solar magnetic forces act upon our own.

The intimate connection between solar outbursts, auroras, and terrestrial magnetism is an established fact. To the aurora, the zodiacal light is by many conceived to be nearly allied, and I do not think the evidence hitherto adduced against this theory is at all conclusive. The remarkable wave of light seen by Maxwell Hall is strongly in favor of it; and though spectroscopic observations seem to point the other way, they are yet so scanty in number that it would be as unfair to argue from them the want of connection between the two phenomena as it would be to assert that the planets have no volcanic fires of their own because they only give us a reflected solar spectrum.

Assume the zodiacal light to consist of solid particles of matter—planet dust—shining by reflected light, and it is not difficult to imagine the aurora playing amongst these tiny worlds, each of which might have its own small magnetic system, swayed like our own by the master magnet, the sun.

So far as my own experience goes I can see no objection to this assumption. Though I have seen the light very brilliant in both its branches, I have never yet found it to have a decided outline. Nor have I been able to trace it either east or west to 180° from the sun. Granting that this can be done, however, the apparent vanishing point of the earth's shadow lies comparatively near us, and far within this area is the point at which the shadow would subtend only a degree or two of arc, and at which it would be very hard to discern amid the feeble light of this portion of the zodiacal light; so that a slight extension of the diameter of the disk would remove any objection that might be raised under this head.

Imagine one of Saturn's moons revolving in an orbit within its belts, and fairly imbedded in the matter, which, for the sake of the argument, we must assume to be illuminated by the planet. To inhabitants of that satellite each night would bring a phenomenon closely resembling our zodiacal light, only far more brilliant. At midnight two cones of light would taper upwards east and west, and meet overhead. The brightest portion of each cone would be that along the axis and nearest the horizon. Towards the summit and on the borders, where the line of sight would lie through less depth of matter, the light would gradually fade away, but from the satellite being imbedded in the belt, the entire sky would be more or less luminous.

Has it not been noticed on our earth that, when the zodiacal light has been seen unusually bright, a "phosphorescence" of the sky was everywhere visible? May this not arise from our solar belt in a somewhat similar manner?

From my personal observations I see no reason to give a jentacular form to the disk. Parallel faces would afford a perspective such as the zodiacal light appears to me.

I would urge observers who may be fortunately situated, not to neglect opportunities. So far as I am able I shall do my best to aid the work of inquiry, and with the powerful instruments that Browning is forwarding me, placed at an elevation of more than 6,000 feet, under the clear skies of our Indian winter, I trust I shall be able to add something to our knowledge of the zodiacal light.

MAONESIA.—The Washington factory near Newcastle, manufactures the greater part of the magnesia used in the world. The principle of the process employed consists in treating dolomite with gaseous carbonic acid, under a pressure of five or six atmospheres. The dolomite is first dried, then finely pulverized, and afterwards placed with cold water in a cylinder, which constantly revolves on its horizontal axis. The carbonic acid gas, formed by the action of hydrochloric acid upon carbonate of lime, by a powerful pump, driven into the vessel at the pressure above noted. The solution of bicarbonate of magnesia thus produced is carried into a vertical cylinder, and submitted to steam (the consequent elevation of temperature regenerating the neutral carbonate), and then led into canals beside the last mentioned receptacle. Lastly, the substance is gathered into masses, from which are cut the parallelepipeds which, after desiccation, are supplied to commerce. Caustic magnesia is obtained by heating the carbonate in red hot muffle furnaces.—*Jour. of Applied Science.*

Electrical Apparatus for Exploding Torpedoes.

The well-known electrician, Mr. Moses G. Farmer, has, according to the *Boston Journal of Chemistry*, constructed a magneto-electric apparatus for exploding torpedoes, which is so perfect and certain that any naval officer who fails to explode a magazine upon the first trial, even under the most unfavorable circumstances, is liable to be tried by court martial for incompetency. The apparatus is very compact, being contained in a stout box not more than fifteen inches in diameter. The electrical currents are produced by turning a crank connected upon the outside with an axle, on which revolve a series of electro-magnets of peculiar construction. Two or three revolutions are sufficient to heat a platinum wire to redness a dozen miles away, and a fine iron wire, several inches in length, is fused by it in a dozen turns. But the striking peculiarity of this machine consists in a device by which the current can be sent through the charge without exploding it; and an electro-meter or deflecting needle is attached, so as to show the operator that the connection is complete before the charge is exploded. The perfection, accuracy, and success of this device, are remarkable, and place our Government in advance of other nations in effective torpedo management. A large number of these machines are now supplied to the naval department of the service, and doubtless their use will add greatly to the defensive means of fortifications, whether in harbors, on the coast, or on the island frontiers of the country.

TWO HUNDREN YEARS AGO.—The history of coal gas is attended with some strange incidents, which indicate very clearly that for the application of a scientific fact to practical purposes everything must be ready for the innovation, else it will be useless to attempt to force its introduction. The inflammability of gas obtained from coal was a well known long before the idea was entertained of turning it to practical use. The miners in the coal regions of Europe were long familiar with the inflammable qualities of the fire-damp, and very correctly attributed it to the gaseous exhalations of the mines. As early as the latter part of the seventeenth century, Dr. Clayton actually made coal gas, and described its properties very correctly. He distilled coal in a retort, and, to use his own words, the result was "phlegm, black oil," and a spirit which he was unable to condense, but which he confined in a bladder. These products would be now designated respectively as water, tar and illuminating gas. Clayton several times repeated the experiment, and used to amuse his friends by burning the gas as it came from the bladder through holes which he pricked with a pin.—*Am. Exch. and Review.*

HEAT-CONDUCTING POWER OF ROCK.—Prof. Herschel and M. Lebour have been experimenting in this subject. Twenty-eight specimens of rocks were reduced to uniform circles of five inches diameter and half inch thickness, carefully gauged. Out of six specimens that had been tried, slate plates, cut parallel to the plane of cleavage, transmitted the heat faster than any of the others. Where the flow of heat had become uniform, the water was raised 10° Fah. in thirty-two seconds. With marble, sandstone, granite and serpentine, about thirty-nine seconds were required to raise it by the same amount. The greatest resistance to the passage of heat was offered by two specimens of shale, gray and black, from the coal measures in the neighborhood of Newcastle, which occupied forty-eight or fifty seconds in raising the water one degree, or half as long again as the time taken by the plate of slate.—*Scientific American.*

FLAMMATION, in his work on "The Atmosphere," gives the extremes of temperature at different places on the earth, as follows: in no place, at an elevation of two or three yards above the surface of the ground, and in a sheltered position, has the temperature ever been known to exceed 135° , or go lower than -73° , giving a difference of 208° , a greater difference than between the freezing point and boiling point of water. The greatest recorded difference at any one place being at Yakouts, their warmest being 86° , and the coldest 72° below zero. The most equable climate being at the island of Pulo Penang, where the thermometer only varies 14° —from 76° to 90° .

IMPROVEMENT IN PHOTO-LITHOGRAPHY.—M. Paul proposes the substitution of albumen for gelatin in the bichromate process. The paper is covered with a thin layer of albumen, to which a concentrated solution of bichromate is added. After a sufficient exposure under the negative, the sheet is covered with lithographic ink and then immersed in cold water, in order to dissolve the unaltered albumen, which is removed by fine sponge. A very clear image, it is said, is thus obtained, ready to transfer to the stone.

NOVEL GAS-KINDER.—Prof. Bottger has succeeded in igniting a jet of ordinary coal gas in the following manner: The gas was allowed to issue from a finely-drawn-out glass tube and strike against a few grains of finely-powdered, dark-dry permanganate of potash, which is moistened with concentrated sulphuric acid. The gas ignites with the rapidity of lightning.—*Journal of Applied Chemistry.*

MECHANICAL PROGRESS.

Bridge Building.

Mr. J. M. Goodwin, of Cleveland, Ohio, has lately patented certain improvements in bridge construction, which are described as follows in the specifications: "The object of my said invention is to relieve the principal girders, chords, side or middle trusses or beams of bridges, and girders, beams of trusses used in structures other than bridges, of the action and effect of loads moving along or over them, technically known as 'rolling loads'; and to cause the stress of any load passing along or over, or distributed unequally upon, any bridge or structure in which said invention or device is used, to act always in a direction nearly absolutely vertical, and practically vertical, upon one certain surface, and at the same time to cause the stress of such rolling loads to be brought upon such surface or surfaces by a gradual accumulation, the stress upon such surface or surfaces of the principal girder or girders, acting at all times in a direction practically vertical, as aforesaid, and with a force always in proportion to the distance from the ends of the bridge at which any load upon the supplementary girders aforesaid may be (the said load being in this connection considered as passing from end toward center, the force only, and not the character, of such stress being changed by the changing of the position of the load), thereby removing from the principal girder or girders those undulatory and otherwise disintegrating disturbances of fiber which are produced by the direct action of rolling loads; and also to cause the stress of any unequally distributed load to be transmitted to the principal girder or girders aforesaid, through the surface or surfaces, and in the direction, nearly and practically vertical, hereinbefore specified."

Cast-Steel Railway Axles.

A writer in the *Annuaire*, a French periodical, strongly advocates the use of cast-steel axles, on the ground that, when it is of good quality, such material will safely stand twice the strain of wrought iron, and its bending and breaking moments will be in the same proportion. Calculating from these data, he says that the diameter of a steel axle, compared with that of a wrought-iron one, will be as four to five, and its weight only five-eighths of that of the other. Another advantage enumerated of employing this material is that the diameter of the journals may be diminished in the ratio of 0.706; and a steel journal will also bear a greater pressure per square inch of surface without heating than one of iron. The result of using a smaller sized journal is to diminish the haulage, which in every vehicle varies directly as the proportion between the diameter of the journals and that of the wheels. The weight of a steel journal is about three-quarter that of an iron one. By the adoption of steel axles there is also no necessity for making the wheel-bed, and consequently, the nave of the wheel, so long. The length of this part of the axle has not much influence upon the strength of it, provided the diameter be increased slightly in excess of that immediately behind it, and that the junction between the wheel and the axle be thoroughly well secured. The fixing of the wheel on the axle has, also, a very considerable influence upon the strains. If the nave be short, and no keys be used in the connection, the tension must be proportionately great per square inch of surface of contact. Again, the "grinding" of the flanges of the wheels occasions a particular pressure on this part of the axle, and tends to shear it with a force inversely as the length of the bearing, but this may be mitigated by rounding the exterior edges of the nave of the wheel.

AMERICAN LEATHER CLOTH.—The mode of manufacturing this cloth is said to be the following: A piece of cotton texture is passed between two cylinders, the upper one of which permits a mixture, consisting of oil, resin, lampblack, and other matters to flow upon the slowly-moving canvass. From the cylinders the fabric is wound upon a drum made of wooden sticks so arranged that the successive layers are kept apart from one another. When the whole piece has been wound upon the drum, the latter is placed, with the oiled cloth on it, in a drying chamber. After drying, the cloth is smoothed by means of pumice stone, and passed a second time through the cylinders, receiving another coating of varnish. It is then dried, and these alternate operations repeated at least five times, in order to make the coating sufficiently thick. The final process is pressing the cloth so as to give it the appearance of natural leather.

METEOROLOGY OF SAN FRANCISCO.—From observations taken at the United States Signal Office in this city it appears that during 1873 the mean barometer for the year was 30.04; mean temperature, 55.07; highest temperature, 79; lowest temperature, 41; total rainfall, 18.55 inches; prevailing wind, southwest; highest velocity of wind attained, 48 miles per hour; number of days in which rain fell, 64. For December the highest barometer was 30.33, and the lowest, 29.55; the highest thermometer, 59; the lowest, 44; the total rainfall, 9.72 inches; the prevailing wind, southeast, and the number of rainy days, 17.

Progress in Glass-Making.

Siemen's regenerative process for melting of glass has proved very successful, and has been introduced in some of the most extensive manufacturing in Europe. By means of its use the amount of smoke is greatly diminished, the color of the glass is improved, a greater control is obtained over the furnace, and a saving of fuel is effected wherever, by this process, slack can be substituted for large coal or lumps, such as is at present so largely in use. Should the expectations in regard to the use of this furnace for the melting of glass be fully realized, the gain in that manufacture will be very great, and the process will fully supplement those other improved methods which have brought glass-making to its present state of advancement. The substitution, some years ago, of carbonate of soda as the alkaline ingredient in glass, in place of kelp, and, subsequently, for crown and sheet-glass of sulphate of soda, in place of carbonate, was but the beginning, though a most important one, of improvement in this direction. This was followed by an increased size and better workmanship in the plates, sheets and tables, and by an improvement in the color of glass by use of purer materials and by modifications in the manner of melting. Numerous changes soon took place in the operation of flattening glass, resulting in the removal or diminution of many imperfections in glass; and to these succeeded the use of the diamond in the splitting of cylinders in the place of a red-hot iron, also an increase in the size of melting-pots and furnaces, with the view of economizing coal and labor, and the adoption, in the casting of plate-glass, of various mechanical contrivances. Finally, the use of the same pots for the two processes of melting and casting plate-glass superseded the old method of transferring the contents of the melting-pot into the vessel used for casting; and then small coal or slack was substituted, in the melting process, for large coal or lumps.—*Paint and Oil Trade.*

Constructing a Piano.

A writer has taken the trouble to give the actual material used in constructing a piano-forte. In every instrument there are fifteen kinds of wood, namely: pine, maple, spruce, cherry, walnut, whitewood, apple, bass-wood, and birch, all of which are indigenous; and mahogany, ebony, holly, cedar, beech and rosewood, from Honduras, Ceylon, England, South America and Germany. In this combination elasticity, strength, pliability, toughness, resonance, lightness, durability and beauty are individual qualities, and the general result, is voice. There are also used of the metals, iron, steel, brass, white-metal, gun-metal and lead. There are in the same instrument of seven and a half octaves, when completed, two hundred and fourteen strings, making a total length of seven hundred and eighty-seven feet of steel wire, and five hundred feet of white (covered) wire. The total number of strings, when properly stretched to produce the right tone, exert a pull of over ten tons; this represents the force with which the piano is drawn towards the other end, and it explains the reason why good pianos are built so strong and so heavy. Such a piano will weigh from nine hundred to one thousand pounds, and will last, with constant use, (not abuse,) twenty to twenty-five years.

CHINESE METHOD OF PRINTING.—Among the Chinese, having some 8,000 different letters, type-foundries are out of the question, and consequently there are no type-setters among them; but they follow the primitive way of printing from engraved wooden blocks. The matter to be printed is first written by means of transfer ink upon thin paper, and this is pasted face downward upon a block of a pear or plum tree. When dry, the paper is rubbed with care and leaves behind an inverted impression of the characters. Another workman now cuts away all the blank spaces by means of a sharp graver, and the block, with the characters in high relief, passes to the printer, who performs his work by hand. The two points that he has to be most careful about are, to ink the characters equally and to avoid tearing the impression, by means of a brush similar to our proof-brush. Printing-presses are not used. Proclamations, visiting-cards, etc., are printed in the same manner. An economical way of printing small hand-bills and advertisements for walls is to cut the characters in wax instead of wood; but they soon get blurred, and the printing from them is almost illegible. From a good wooden block some 1,500 sheets can be printed, and when the characters have been sharpened up a little, it is possible to obtain 8,000 or 10,000 more impressions.

They claim to have practiced this method more than four thousand years ago, while we commenced to print from wooden blocks only in the fourteenth century.—*Artisan.*

PLATINO WITH ZINC.—According to Bottger, copper and brass may be given a firmly adherent coating of zinc by the following method: Finely divided zinc is placed in a non-metallic vessel and covered with a concentrated solution of sal-ammoniac. This is heated to boiling, and the articles of copper or brass, previously cleaned, are then introduced. A few minutes suffice to produce a firm and brilliant coating. The powdered zinc is prepared by first melting the zinc and then pouring the molten metal into a mortar and triturating it until it solidifies.

New Incorporations.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. E. Journals.

For 6 days ending Wednesday, Jan. 7, 1874.

NAME OF COMPANY.	IN FEET IN MINE.	SHARES IN MINE.	HIGHEST	LOWEST	ADVANCE	DECLINE
WASHOE.						
Alamo Gold and S. M. Co.	300	6500	100	75		
Alpha Consolidated	3090	30000	175	65		
Amesbury		30000	125	65		
American Flat		30000	125	65		
Arizona & Utah	1900	45	110	55		
Bacon Mill & Mining Co.	45	54000	110	55		
Bell & Bell		54000	110	55		
Belcher	1040	104000	110	32	8	
Best & Belcher	224	20000	33			
Buckeye	20	5000	33			
Bullion	2508	16900	40	31	6	
Caledonia Silver M. Co.	3500	25000	41	32		
Confidence Silver M. Co.	150	10800	135	110		20
Central No. Two	100	20000	46	36	15	
Cibola-Potosi	130	24500	17	12		2
Confidence Silver M. Co.	345	20000	5	6		
Consolidated Virginia	1160	103000	14	80		
Cook & Geyer	100	10000	135	110		
Crown Point & S. M. Co.	600	100000	34	8	3	
Danely	2000	24000	34	8		
Dardanelles	1200	24000	34	8		
Eclipse	70	25000	10	6		
Empire Mill & M. Co.	75	50000	8	9		
Eschbacher	400	8000	57	9	2	
Fairmount						
Flowers	3000	12000	34	25		
Franklin		20000	34	25		
Globe	1200	400	32	34		
Gold & Curry S. M. Co.	400	16000	92	70		
Imperial	194	100000	10	8		
Indus	2000	30000	14	12		
Insurance						
Jacob Little and S. M. Co.	2000	30000	17	15		
Justice	3000	21000	37	9		
Kentuck	1200	24000	34	6		
Knickerbocker	70	25000	10	6		
Kossuth			25	3		
Lady Bryan	3500	35000	34	2		
Madison	1600	50000	34	2		
Mint Gold & S. M. Co.	1600	50000	34	2		
Nevada	3500	40000	34	2		
New York Consolidated	3500	40000	34	2		
North American	800	10000	62	11		
Ophir Silver Mining Co.	1400	16800	31	10		
Overman Silver M. Co.	1200	37400	34	2		
Phil. Sheridan	2000	24000	34	2		
Piedmont			12	1		
Rock Island	2000	24000	34	2		
Savage	800	16900	40	10		
Segregated Belcher	150	20000	10	10		
Segregated Caledonia		10000				
Seg. Rock Island			34	2		
Senator Silver M. Co.	2400	24000	34	2		
Silver Hill	5400	54000	15	10		
South Comstock			15	10		
South Overman	2400	24000	34	2		
Tucker Mill & M. Co.	1600	23800	34	2		
Sutro	2000	24000	34	2		
Trench	20	50	9	6		
Tyler	2000	24000	34	2		
Union	800	20000	31	18	1	
Union Consolidated			31	18		
Woodville & S. M. Co.	1400	24000	34	2		
Yellow Pine	1200	24000	34	2		
NEVADA.						
Adams Hill		50000				
Alps Silver Mining Co.	800	30000	34	3		
Amador Tunnel & M. Co.		30000	8	4	3	
American Flag M. & M.	200	30000	32	25	4	
Arkansas						
Belmont		30000				
Beverly		30000				
Chapman Mill & M. Co.		30000				
Charter Oak S. M. Co.	1000	30000	15	15		
Chief of the Hill		30000				

New Incorporations.

NOTE.—In the Stock Board an assessment is delinquent thirty days from the date of levy, exclusive of the date. The delinquent dates given in this list are those of the mining offices.

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS

Company.	Location.	No.	Amt.	Levied.	Deling't.	nt. Sale.	Secretary.	Place of Business.
Baltimore Cons. M. Co.	Gold Hill.	4	1 00	Nov 13	Dec 23	Jan 14	D. T. Bayley.	401 California st.
Buckeye G & S M Co	Gold Hill Nev	9	1 00	Dec 11	Jan 20	Feb 15	J. Marjorie	419 California street
Ca.oline M. Co.	Ely District	30	30	Nov 11	Dec 22	Jan 15	U. S. Smith.	320 California st.
Chandler & S M Co.	Washoe	8	75	Jan 5	Feb 10	Mar 3	G. R. Spinney.	320 California st.
Chire M & M Co	Gold Hill	14	1 00	Dec 18	Jan 28	Feb 16	G. R. Spinney	320 California street
Globe M. Co.	Gold Hill.	5	50	Dec 24	Jan 27	Feb 16	J. Maguire.	419 California street
Huhn & Hunt S. M Co	Ely District	30	20	Dec 11	Jan 22	Feb 12	W. C. Williams.	18 California st.
Idaho M. Co.	Gold Hill Nev	8	2 00	Dec 17	Jan 19	Feb 6	R. Wegner	414 California street
Kentucky G. S. & M. Co.	Ely District	7	25	Jan 3	Feb 14	Mar 7	R. G. Owens	513 California st.
Mahogany G & S M Co	Idaho	2	20	Dec 18	Jan 24	Feb 17	T. J. Owens	Express Building
Mint G. & S M Co.	Idaho	1	10	Dec 18	Jan 24	Feb 17	W. L. Catlidge.	414 California st.
Vermin S. & S M Co.	Gold Hill	23	20	Dec 23	Jan 27	Feb 13	W. W. Stetson	414 California st.
Sage M. Co.	Washoe.	3	5 00	Dec 3	Jan 6	Jan 28	E. B. Holmes	413 California st.
Serra Nevada S. M. Co.	Washoe.	37	2 50	Nov 14	Dec 22	Jan 12	R. Wegner.	414 California st.
Siena's or S. M. Co.	Washoe	9	50	Nov 26	Dec 23	Jan 23	W. C. Williams.	Stevenson's Bldg
Suconor M & M Co	Gold Hill	6	1 00	Dec 18	Feb 1	Feb 25	W. W. Watson.	302 Montgomery st.
Van Eyckle M. Co	Wishoe.	4	40	Dec 8	Jan 9	Jan 23	W. E. Dean.	413 California st.
	Idaho.	3	1 50	Nov 18	Dec 24	Jan 16	L. Kaplan.	Merchant's Bldg

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Adams G & S M Co	Nevada	50	Dec 29	Feb 5	Feb 26	G W R Kink,	434 California s
Adams Plag m & M Co	Ely Dist	4	100	Dec 16	Jan 21	G R Spinney,	230 California s
Auburn G. N. Co.	Placer Co.	6	50	Nov 17	Dec 23	R. Wegener,	441 California e
Bunker Hill Q. M. Co.	Amador Co.	12	100	Nov 12	Dec 20	W. E. Wagner,	414 California e
Columbus M. & M. Co.	Esmeralda Nev	2	50	Nov 26	Jan 26	W. E. Wagner,	414 California e
Chief Asa Extension M. Co.	Ely Dist.	10	20	Dec 30	Feb 10	B. B. Mico,	414 Montgomery s
Est. Bacua Cons. M. Co.	Nye Co., Nev.	3	50	Dec 30	Feb 10	R. Wegener,	402 California street
Forest Oak M. Co.	Santa Cruz Co.	23	50	Nov 21	Jan 7	H. Hanson	419 California s
Great Blue Cons. M. Co.	Gold Hill	5	Nov 21	Dec 30	Jan 5	C. B. Burroughs,	402 Montgomery s
Great Blue Gravel R. M. Co.	Dal.	10	10	Nov 20	Dec 22	A. A. Pardow,	424 California s
O. Hudson Treasre M. Co.	White Pine	4	25	Nov 20	Dec 22	W. H. Watson,	502 Montgomery s
Ingonar S. M. Co.	Ely District	6	25	Nov 10	Dec 6	D. A. Jennings,	414 California s
Isaiah S. M. Co.	Washoe	18	100	D 0 26	Jan 8	C. S. Neal,	419 California s
Isgrum & Wheeler M. Co.	Ariz-na	8	Dec 3	Jan 5	Jan 21	W. E. Do. N.	419 California s
Lane & Kurtz Caribon M. Co.	Brite Co.	3	300	Dec 12	Feb 12	T. Kimball,	419 California s
Moreshead & McF. Co.	Idaho	5	4	Dec 3	Jan 7	W. E. Do. N.	419 California s
M. P. Homestead & Railroad Assn.	Cal.	2	200	Dec 3	Jan 26	W. B. Isaacs,	404 Pine street
North Bloomfield M. Co.	Cal.	29	100	Dec 22	Jan 26	D. A. Smith,	314 California s
Newark S. M. Co.	Ely District	7	50	Dec 23	Feb 13	T. Jerby,	520 Sansome street
On to Con M. Co.	Washoe	7	50	Dec 13	Feb 13	R. Begley,	419 California s
O to Con M. Co.	Cal	7	20	Nov 17	Dec 17	H. G. Kibbe	419 California s
Pa-fine Asbestos Co.	Placer Co., Cal.	6	Nov 17	Dec 22	Feb 9	W. Aug Knapp,	116 Liederstadt s
Ponocottas G M Co	El Dorado Co.	2	100	Dec 17	Jan 16	B. B. Conduff,	306 Montgomery s
Scott & Jacks T. Co.	Idaho	2	100	Dec 17	Feb 16	D. Jennings	419 California s
Seattle Coal & T Co.	W T	2	100	Nov 11	Jan 22	W. H. Hutchison	537 Market street
South Charior M. Co.	Idaho	8	100	Nov 14	Dec 19	W. H. Hutchison	419 California s
St. Lawrence M. & M. Co.	Placer Co., Cal.	8	25	Nov 20	Jan 6	Frank Swift,	419 California s
St. Lawrence M. & M. Co.	Cal.	8	25	Nov 20	Jan 6	W. E. Do. N.	419 California s
Scorpion S M Co	Nevada	10	Dec 31	Jan 7	Feb 7	W. Stuart,	113 Liederstadt e tract
Tecumseh G S & Copper M Co	Cal	50	Jan 2	Feb 7	Feb 7	F. H. Martin,	531 California s
Wellington M & C Co	White Pine	1	50	Dec 11	Feb 12	J. F. Hermann,	418 Kearny s
Ward Becher Con M Co	White Pine	1	50	Dec 13	Feb 10	D. A. Jennings	401 California s

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date
Alpha Cons. M. Co.		Called by Trustees,	419 California st	Special.	Jan 3
Black Diamond Coal M Co	Cal	J H Dobinson,	305 Sansome st	Annual.	Jan 3
Cent al S. M. Co.		Called by Trustee,	419 California st	Special.	Jan 2
Central S M Co		Wm Willis	419 California street	Annual.	Jan 2
Cherry Creek Cons M Co		R Wegener,	419 California st	Special.	Jan 2
General Hill M Co		F Madge,	Merchants' Bldg	Annual.	Jan 1
Kossuth M Co		Ed F Stone,	419 California st	Annual.	Jan 1
Knickertucker M Co	Storey Co	W Boyce,	Stevenson's Bldg	Annual.	Jan 1
Lake S M Co	Washoe	Called by Trastes	419 California st	Special.	Jan 1
Redington Quickilver M Co	Lake Co	O M Peck,	624 Market st	Annual.	Jan 1
Sierra Nevada S M Co	Washoe	R Wegener,	419 California st	Annual.	Jan 1
San Joaquin & Kings River Irrigation Co		W Holmes	418 California st	Special.	Jan 1
State Co of Trans-Portation		H L Hutchinson,	557 Market street	Annual.	Jan 1
State of Maine M & M Co		J K Heriot,	306 Montgomery st	Annual.	Jan 1

LATEST DIVIDENDS—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable
Black Bear Quartz M. Co.		W. L. Oliver,	316 California St.	30	Oct.
Black Diamond Coal Co.	California.	J. B. Cornwall,	Cor. Harrison & Spear.	50	Mar.
Blackburn M. Co.	Wachoe.	H. C. Kube,	419 California St.	50	per cent
Crown Point G. & S. M. Co.	Wachoe.	G. E. Elliot,	419 California St.	3 00	Feb.
Cederberg G. M. Co.	California	D. M. Bokke,	420 Montgomery St.	50	Dec.
Con. Amador M. Co.	Cal.	F. B. Letham,	402 Montgomery St.	50	Dec.
Derby M. Co.		F. Cunningham,	304 Mont's st.	50	Nov.
Diam M. Co.		N. C. Fasset,	220 Clay St.	1 00	Jan.
Eureka M. Co.	Grass Valley, Cal.	R. Vegenar,	414 California st.	1 00	Dec.
Eastport Coos Bay Coal.	Oregon.	J. L. Pool.	Merchants' Ex.	5 00	Apr.
Eureka Consolidated M. Co.	Nevada.	W. W. Traylor,	419 California st.	50	Sept.
Golden Charlie M. Co.	Idaho	L. Kaulan,	Merchants' Ex.	2 00	Oct.
Grange Ditch & Mining Co.		H. B. Minor,	411 1/2 California St.	25	Oct.
La Grange Ditch & Mining Co.		H. Abbey,	312 Montgomery St.		Aug.
Minnesota G. & S. M. Co.		Wm. Willis,	419 California st.	1 50	Sept.
Meadow Valley M. Co.	Ely District,	T. W. Colburn,		1 00	July
Marygay G. & S. M. Co.	Idaho.	R. McFadden,	402 Montgomery St.	50	Aug.
Monitor-Belmont M. Co.	Nevada.	K. B. Minnr,	411 1/2 California St.	50	Dec.
Providence G. & S. M. Co.		A. M. Buntington,	Merchants' Ex.	1 00	Nov.
Raymond & Ely M. Co.	Ely Dist., Nev.	A. J. Moulder,	419 California St.	3 00	Sept.

Our Weekly Stock Review.

THURSDAY, Jan. 8, 1874.

Stocks have been "booming" this week until to-day when most of them came down a little from their elevation. Yesterday, there were some signs of abatement in the excitement of the past few weeks. The activity that has prevailed has been based upon the developments in a few good mines, but their prosperity has as usual, carried up the "wild cats" also. The Comstock's are all in good condition. The Ophir development is said to be a *bona fide* one. The Consolidated Virginia ore body shows improvement; the Hale & Norcross Company expect to develop something interesting shortly at their lowest level; the B-icher shows better than ever, and the important development of a fine body of very rich ore at the 1,400-foot level of the Crown Point further north than heretofore, adds one-third to the value of that mine. The general outlook for mining, milling, business, and the general interests of the country are most acceptably cheering.

The present decline is accounted for very reasonably by leading operators about as follows: During the month of December, when taxes, etc., were supposed to be in course of settlement, there were a large number of operators who, understanding that a spring rise was sure to take place in January or February, supposed that they were stealing a march on the outsiders by investing before money could be concentrated by the public in January; and the consequence was a large surplus of cash, which is carried by this class of operators, was put into stocks of all descriptions upon the supposition that thirty days' time would find a great demand for their investments; this causing an unprecedented rise, drew in small operators, who, when orders became scarce, got alarmed, and threw what they had into the market, already made weak by lack of orders. In the stock market "it never rains but it pours;" therefore, those who intended buying are scared off, producing a break.

A new mining company has been formed under the name of the California Mining Company, to work the six-hundred feet level on the Comstock Lode, adjoining the Ophir on the south. The claim embraces the Central, California, Central No. 2, and Kinnear ground, and by many is believed to be the most valuable portion of the Comstock. With a fine body of ore plunging into it from the Ophir on the north, and full

developed in the Consolidated Virginia on the south side of the river. This new claim must be of great value. We are informed that work will be commenced on it at an early day through the Consolidated sbatt. By the terms of the consolidation the California Chmpany's stock is distributed as follows: Nine-tenths (9-10) of one share for each share of Central No. 2, and two and one-half (2 1/2) shares for each share of Central, and balance, that is 7-12ths of the whole, to the Consolidated Virginia. The stock of the Consolidated Virginia is not affected by this arrangement, so far as relates to the ground between the Kinner and Bestand Selcher.

A stock dividend 7-12 of a share of the capital stock of the California Mining Company upon each share of the capital stock of the Consolidated Virginia Company, has

The only dividend declared thus far this year is that of Belcher, which is \$5 per share, aggregating \$20,000. There are eight in this mine is worth twenty months' dividends of \$3 each—\$1,000,000, or \$100 in per share for the Ophir fall from \$30 Tuesday \$25, but \$60 per share. Yellow Jacket came down \$20. Chollar, Overman and Hale and Nurecross, each \$10. Savage, \$20; Segregated Belcher, \$35; Alpha, \$15, and so on. Mines of real merit, like the Belcher, Crown Point and Consolidated Virginia, hold their own heavily. The partial waver of the Comstocks turned attention to their districts, and the Idaho stocks particularly were firmer. Belmont is in disgrace, having come down in its price because ore assaying \$1,000 per ton only.

The advance and decline of stocks for the week will be seen by reference to our stock tables.

Meetings and Elections

MINERS' PROTECTIVE ASSOCIATION.—President, J. D. Wheeler; Vice President, H. Schirring; Financial Secretary, H. Suhling; Recording Secretary, J. W. Buffum; Treasurer, H. Meyers; Trustees: A. N. Nelson and Wm. Slevers.

NONRU STAY.—At a meeting of the Board of Directors of the North Star Tunnel and Mining Co., Moreville Ridge, Butte Co., Cal., the following officers were elected for the ensuing year: Arthur Quinn, President; John Maskell, Treasurer; F. J. O'Reilly, Secretary.

PIUTE.—At the annual meeting of the Piute S. M. Co. H. R. West, Dr. M. J. Wilson, Thomas Devine, Hiram Rosekrans and C. H. B. Smalley were elected Trustees for the ensuing year. The Board organized as follows: Dr. M. J. Wilson, President; Hiram Rosekrans, Vice-President; Thomas Devine, Treasurer; A. F. Benjamin, Secretary; C. H. B. Smalley, Superintendent.

SUTRO. S. M. Co.—President, Solomon Heydenfeldt; Directors, W. W. Grayson, E. M. Hall, Geo. J. Ives and Wm. E. Miller.

HECKERDORN. G. & S. M. Co.—Trustees: F. Smith, Sarret Matbew, L. Chapeau, C. Guelmin, J. Verdier. F. Smith was elected President, and Paul J. Roberts, Secretary.

The following companies have filed certificates of incorporation in the County Clerk's office, San Fran-

CHERRY CREEK CONS. M. Co.—Dec. 31. Location, State of Nevada. Trustees: Geo. W. Beaver, B. F. Sherwood, John Turner, J. D. Fry, John A. Paxton. Capital stock, \$3,000,000, in shares of \$100 each.

DAYTON N. M. Co.—Dec. 31. Location, Devil's Gate Mining District. Directors: D. L. McDonald, L. Aldrich, Chas. B. Higgins, C. O. Leavitt, and Robert Sherwood. Capital stock, \$300,000,000, in shares of \$100 each.

SILVER CITY M. Co.—Location, State of Nevada. Directors: Edward Banoñ, George Congdon, George J. Dodge; Seth Cook and A. Borland. Capital stack, 6,310,000.

SULPHURETS M. Co.—Location, Storey County, Nev. Directors: Martin White, W. S. Hohart, Wm. Kohl, A. K. P. Harrison and W. E. Dean. Capital Stack, \$5,000,000.

GUANADA G. & S. M. Co.—Location, Storey County, Nevada. Directors: Louis Sloss, A. K. P. Harmon, Seth Cook, R. W. Graves and Joseph Clark. Capital stock, \$5,000,000.

CALIFORNIA TOBACCO CO.—Jan. 5. The object is stated to be the raising, cultivating, curing and manufacturing of all kinds of tobacco, and otherwise buy and sell

and deal in tobacco. Directors: Joseph Bandenstein, Emanuel Wertbeimer, Wm. H. Sharp, John A. Drinkhouse and Henry Sutliff. Capital stock, \$100,000, in shares of \$100 each.

SOUTH STAR G. & S. M. Co.—Jan. 6. Location, Devil's Gate and Spring Valley M. District, Lynn County, Nev. Directors: Charles J. Collins, James Pritchard, H. G. Cuward, Joseph F. Atwill and W. H. Smith. Capital stock, \$4,800,000.

ORLEANS G. & S. M. Co.—Jan. 7. Location, Storey County, Nevada. Trustees: A. K. P. Harmon, W. B. Thornburgh, John Skea, Joseph Clark and W. V. Dean. Capital stock, \$2,800,000. In shares of \$100 each.

MEMNON M. Co.—Jan. 7. Location, Devill's Gate
Lyon Co., Nev. Directors: Isaac L. Regna, A. M. Ed-
ington, A. K. P. Harmon, J. D. Fry and W. E. V. Dion.
Capital stock \$7,300,000, in shares of \$100.

INCREASE OF CAPITAL STOCK.—The Scorpion S. M. Co. has increased its capital stock from \$400,000 to \$4,000,000. The certificate states that the debts of the company amount to about the sum of \$500, the payment of which is secured by the property of the company.

MINING SUMMARY.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California

AMADOR COUNTY

KENNEDY. — *Ledger*, Dec. 27: On Monday morning last we visited the Kennedy mine and made an exploration of its underground workings. We descended and commenced our explorations following the lower level south from the new shaft about 200 feet. From the new shaft running south the ledge has increased immensely in width, the workmen are now driving south in the lower level a breast of twenty feet or compact ore and have not reached the hanging wall; the entire width of the ledge south has not yet been ascertained. The whole mass of rock looks remarkably well, and as the mill has been running for some time past on rock from this level, its true value has been fully ascertained, this vast mass of rock has so far yielded \$12 per ton. From the lower level we ascended to the first above it where the ledge has increased in a corresponding ratio with the lower one in running south, and showing precisely the same character of rock; from the second lowest level we ascended to others above and examined each as far as they have been driven south, and in every instance the increase in the size of the ledge is the same as the work progresses south. From the new works we followed the levels north until we entered the old

lowed the levels north until we entered the old drifts of the Kennedy, and had an opportunity to study the general characteristics of the mine. The old shaft and work connectives therewith are upon a chimney separate and distinct from the chimney now being worked south of the new shaft; in going from the old shaft south, the ledge worked from the last named shaft, dwindles down to scarcely a foot in thickness and in some of the levels wholly disappears, but in driving south the new chimney was struck, presenting a mass of pay ore seldom if ever before found of the same quantity and

value, in any mine in the State. The new shaft and the works connected with it, has developed the fact that two separate and distinct

chimneys are embraced within the Kennedy claims, the extent of neither of which has not yet been proven. It is very rare to our mines that heavy formations, such as the one now presented in the Kennedy, bear much gold, but the entire rock now being taken from the south level to the full extent of 20 feet in width, is all good milling ore, much of it well charged with gold bearing sulphurets, and nearly the whole of it ribbon rock, peculiar to the great mother lode. The twenty stamp mill belonging to the mine, is wholly inadequate to crush the

rock taken only by a few men; if the crushing power was 60 or even a 100 stamps, rock could

readily he furnished to
played and if 60 were

ty, the monthly yield of the Kennedy would be equal if not surpass any mine in the country. The conveniences about the mill and shaft are surpassed by no mill or mine in the State, nor can rock from any mine be sent to the surface, and from thence to the stamps cheaper or more expeditiously than at the Kennedy. The new shaft is a model in every respect, and the levels are most securely timbered in true workman-like manner, reflecting credit upon the mining knowledge and skill of Mr. Barryman, under-

BUTTE COUNTY.
ANOTHER BIG BRICK.—*Record*, Jan. 3: Another fine gold brick came down from Cherokee on Monday, valued at about \$40,000. They have cleaned up only a portion of the head mine the present month. The Spring Valley Company is running six or eight hydraulic chieft or little giants, and on some general clean up

will scarcely fail to produce a larger golden brick than ever.

CALAVARAS COUNTY.

NEW QUARTZ DISCOVERY.—*Chronicle*, Jan. 3: A quartz ledge of unprecedented richness has lately been discovered in Wet Gulch, Whiskey Slide district, by some Italians. But little work has been done upon it yet, but it is proving rich beyond all comparison. The ledge is not to exceed six inches in thickness, but it is nearly half gold. A piece of quartz about as large as your two fists, pounded in a mortar, yielded seventeen ounces of gold! We never heard the like before.

WOLFEANE.—The sinking of the shaft in Wolfeane mine, near Railroad, to the depth of 400 feet, is completed, and the running of levels commenced. Sinking will be resumed as soon as the levels are run far enough not to interfere with the work. We learn that the ledge is looking first rate.

MOSCITO.—*Cur. Chronicle*: Garland & Co. are now crushing rock from the Good Hope, in their 10-stamp battery, which, by a recent clean-up, proved rich enough to give the proprietors a large surplus above expenses. The 8-stamp battery is crushing rock from the Monte Cristo mine, which, judging from the countenance of the superintendent, Mr. J. Albright, promises to pay a handsome profit to the owners.

HAWKUS & CO.'S TUNNEL has just reached the body of pay ore in their mine, which will soon produce a chunk of metal from which these beautiful birds called eagles, are made.

EL DORADO COUNTY.

HYDRAULIC.—*Republican*, Jan. 1: Hydraulicking through a six inch nozzle, with an eight or nine hundred inch head, has been in progress at the Excelsior mine, Coon Hollow, during the past two weeks, and is doing splendid work. Another stream of the same size will soon be added, when things will fairly howl at the Excelsior.

NAPA COUNTY.

QUICKSILVER.—*Register*, Dec. 27: "Cinnabar" seems now to be on the end of every man's tongue, and a man who hasn't his pockets full of specimens is hard to be found. During the last few days some very rich discoveries have been made in the mountains west of this place. J. M. Davis & Co., have just brought in some of the best looking ore I ever saw, and they say there is plenty more of it in sight. New claims are being located every day. It seems that Nature has intended this to be one of the richest mining and agricultural districts in the State. The ledges are shallow, easily worked, and in a country where water and timber are plenty, bordering on a valley of productive land, and only ten to twenty miles from railroad communication.

NEVADA COUNTY.

GRAVEL.—*Union*, Jan. 4: The gravel mines in the upper part of this country are not running very heavily just now, because there is too much snow and ice to allow the water to go severely at the gravel banks.

RAINFALL.—The rainfall from December 31st, at 4 o'clock P. M., up to the same hour January 1st, was 2.12 inches; and from 4 o'clock P. M., of the 1st, up to the same hour on the 2d, the rainfall was 1.58 inches—making a total of 3.70 inches for the 48 hours, the ground gets itself frozen these nights, the sky is cloudless and the barometer ascends.

SIERRA COUNTY.

WASHINGTON.—*Downville Messenger*, Jan. 3: The Bald Mountain Company have had plenty of water for several days, and are rapidly running off their dirt.

GOLD BLUFF.—The Gold Bluff mill has been idle for a short time. The owners are running a short head rock tunnel, which interferes with getting out rock for the mill. The mill will be started in a short time.

TUOLUMNE COUNTY.

ANOTHER BIG STRIKE.—*Independent*, Jan. 3: The quartz claim of Reed & Ferrier above Columbia, bids fair to prove one of the richest mines in the county. A short time since they struck another rich spot, and the week before Christmas as we are informed, they came upon still another deposit richer than ever. One piece taken out weighed upwards of 95 ounces—all gold—and a panfull besides. This much is known, but how much more they got is only guessed at, as they keep their own counsel about it.

MOUNT JEFFERSON MINE.—*Democrat*, Jan. 3: For quite a time work on this mine which is situated at Garrote has been almost if not quite suspended; when working at a depth of 270 feet, Superintendent Frank Shattuck found very good rock in the west drift, but the water drove him out, and as the company, concluded not to go to the expense for new pumps and necessary apparatus, the mine was practically abandoned at that depth. Shattuck recently commenced sinking a new shaft about 300 feet west of the old works and is now at a depth of 25 feet from the surface. He has found good milling rock; at a depth of twenty feet the ore promises to pay from \$80 to \$100. The vein is from 7 to 10 feet wide and as followed down appears well defined and regular. The Superintendent feels confident he is on the same stratum that proved so good at the depth of 270 feet when the water drove him out. For several years this mine yielded richly and served to build up and keep up Garrote, giving employment to a large number of working men. It is hoped that the vein is still rich, which, with capital and patience, will prove profitable again to owners and the people in its vicinity. The prospect is good for this almost abandoned

mine attracting the attention of those who may have done the same thing—laid by a rich lead.

Nevada.

ELY DISTRICT.

WASHINGTON AND ORKLE.—*Record*, Dec. 28: Since the 5th, \$18,000 worth of bullion has been shipped, and by the 5th of next month expect to send off \$20,000 more. Up to yesterday 200 tons of ore have been shipped to the Amador mill, average pulp assay over \$200 per ton. The Washington & Creole Company will next week let a contract to sink the Mazzeppa 100 feet further.

MEADOW VALLEY.—No. 3 shaft is now 104 ft. below the tenth station. The drift from the tenth station running west, is in 62 ft. The east drift on the ninth level is in a distance of about 400 ft., and is being rapidly pushed ahead. The east winze from the eighth level is down 76 ft. The east drift on the 520-ft. level is in 344 ft. The summit shaft is down 892 ft. A cross-cut is being run to connect with the west drift of the eighth station, No. 7 shaft.

BOWEN.—Commenced drifting from the bottom of the shaft on Friday, with three shifts of men. The ground is very hard at present, and indications are favorable. The main shaft is 500 ft. deep.

PORTLAND.—Drifting commenced on Friday in the bottom of the main shaft. Three shifts of men are at work. The indications generally are good, and the ground very hard. The Portland shaft is 400 ft. deep.

NEWARK.—Drifting from the third and fourth levels. Commenced raising ore yesterday, and will continue raising ore hereafter. The ore is looking well. Working 30 men.

PAOK AND PANAOA.—Sinking on the ore and running the drift ahead for the main ledge. Working a strong force of men.

SILVER PEAK.—Sinking on the incline continues with the usual force of men. The indications are flattering.

PICOCHE WEST.—Work was resumed last Monday, and we have every reason to expect, from what we learn, that this mine will be more than self-sustaining in a short time.

PICOCHE.—The new works continue to move satisfactorily. Sinking progresses.

CONDOR.—Still drifting towards the ledge.

PEAVINE.—Expect to make connection with the new shaft in a few days.

INOMAN.—Prospecting the drift from the 580-ft. station. The drift is in 420 ft. and still progressing. Two shifts working.

HAVANA.—Work progressing as usual. Mine still looking well.

CAROLINE.—Shaft down 650 ft., and the drift is near the ledge. Seams in the country rock assaying encouragingly.

HUGH AND HUNT.—The south drift is being pushed vigorously ahead.

SPRING MOUNT.—No work is being done owing to the snow, which prevents the using of the whim.

AMERICAN FLAG.—Sinking rapidly. The American Flag mill is kept running on ore from this mine.

LOUISE.—No change in this mine worthy of special notice at this time.

CHIEF EAST.—Drift from the bottom of the shaft is in quartz, all carrying ore.

ALPS.—Drifting in the 547-ft. level. Still drifting.

WASHOE DISTRICT.

CROWN POINT.—*Gold Hill News*, Jan. 3: Daily yield, 400 tons, which is being extracted from the 10, 12 and 1,300-ft. levels. All the ore breasts are looking well. The south drift, on the 1,400-ft. level, which is being run to meet the Belcher, as well as with the south winze from the 1,300-ft. level of the Crown Point, is being pushed ahead vigorously. Some time since a cross-cut or drift was started on the 1,400-ft. level at a distance of about 350 ft. from the Belcher line. After passing through the west clay wall, which is 3 ft. thick, some very rich ore was encountered. As the drift was pushed forward it passed through some 12 or 15 ft. of almost barren quartz, when some ore assaying from \$50 to \$75 per ton was met with, which continued of the same quality for 24 ft., when was struck what was believed to be the east wall, but which proved to be only a horse of porphyry 6 ft. in thickness. After getting through the porphyry, ore was encountered, the assays averaging from \$250 to \$600 per ton. The ore continued of the same quality for a distance of 16 ft. The flow of water from the main drift on the 1,500-ft. level, continues without intermission—being all that the pumps can handle.

SCORPION.—This mine is situated about 2,000 ft. northeast of the Ophir shaft, on the same hill leading down to the mouth of Six-mile Cañon. It is one of the oldest locations on the Comstock lode, and has one of the largest outcrops of quartz of low grade ore in the district. Its croppings extend to within 300 ft. of the Ophir shaft. The company have a United States Patent, and have a tunnel of 600 ft., well timbered, and which cuts the ledge at a depth of 300 ft., finding ore that will mill from \$8 to \$14 per ton. The ore body is 20 ft. in width and yields mostly free gold. The company intend sinking a shaft of three compartments, 4x5 ft. in size. They will also prospect and extract ore from what is known as the Brown ledge for milling at the same time. The new shaft will be sunk directly on a line with the Ophir shaft.

BELCHER.—Daily yield, 500 tons. Recommended the work of sinking the main incline, preparatory to opening out the 1,400-ft. station. The drift on the 1,300-ft. level running north is in 287 ft. The drift running south from the

Crown Point line to meet it is in 559 ft. A new winze has been started to connect the 1,300 and 1,400-ft. levels. It is down 30 ft. The mine is looking well throughout, and is yielding the usual amount of excellent ore.

OPHIR.—The streaks of rich ore recently found in the cross-cut from the main south drift on the 1,300-ft. level, still continue to widen out and consolidate as the work progresses to the southward. The main south drift on the 1,465-ft. level still continues in rich ore.

SENATOR.—Sinking the shaft has made good progress during the week, fentling leaders of quartz in the bottom of the shaft that give assays as high as \$700 per ton, mostly silver. Opening a station to drift for the main ledge at the 400-ft. level will be commenced on Monday next.

TYLER.—The main west drift at the 200-ft. station during the week cut into a fine body of quartz that assays well, tapping a considerable flow of water, although not sufficient to impede the progress of the work.

MINT.—Sinking the main shaft for a new level is making rapid progress, the rock in the bottom blasting well and showing occasional stringers and feeders of quartz of a very promising character.

KOSKUTH.—The main west drift at the 200-ft. level has cut some fine streaks of quartz and ore during the week, giving promise of a good ore development when the main ledge is reached.

DANXY.—Nothing new except the rapid and steady progress of the main shaft. No water to interfere with the progress of the work.

JUSTICE.—Opening the station and getting ready to sink a main incline for a new level is making steady progress.

KNICKERBOCKER.—Setting up the new machinery is making steady progress, and it is expected that the whole will be ready to start-up in about three weeks.

BALTIMORE CONSOLIDATED.—Sinking the main shaft for a new level is making rapid progress.

YELLOW JACKET.—Sinking the main incline is making rapid progress. Drifting and prospecting the 1,500-ft. level is still being vigorously prosecuted.

DARDANELLES.—The interesting developments in the Overman mine, give additional value to this, the adjoining mine, and a consequence raise in the stock.

SAVAOE.—Opening the 1,900-ft. station is making good progress.

SUTRO.—Both north and south drifts are being pushed ahead vigorously with favorable indications in the faces of each drift.

OCCIDENTAL.—Some fine ore has been encountered during the week in the winze from the main tunnel, giving promise of a good ore development.

ALAMO.—Preparations to resume sinking the shaft, and commence the extraction of ore are making rapid progress.

SIERRA NEVADA.—Daily yield of ore 60 tons. The temporary hoisting machinery for the new shaft is in position, and will be ready to start up in a few days. Sinking the new shaft is making good progress.

OVERMAN.—Steady progress in the main west drift on the 1,200-foot level. A Burleigh drill and air compressor has been sent for, East, and will arrive in a very short time, when it is expected that short work will be made with the remainder of the distance that the tunnel on the 1,200 level will have to be run to tap the ledge. The foundation for the air compressor is already being laid, so that there can be no delay when it arrives.

LANX WASHINGTON.—The new hoisting works building and machinery of this company, which have just been completed and started up are of the most durable and complete description, and of sufficient capacity to work the mine to the depth of 1,000 ft. with perfect ease. The cost of the improvements will amount to \$80,000. The shaft is down 150 ft., and will be continued to the depth of 250 ft., when it is the intention to open a station and drift for the ledge. This company being situated just south of the New York Cons. expect to strike the gold cañon branch of the Comstock, tending to the south-east through the Belcher, Overman and New York Cons. toward the Justice, and are commencing work under the most favorable auspices.

CONSOLIDATED VIRGINIA.—Daily yield of ore, 250 tons. The ore breasts, both north and south on the 1,200-ft. level are both looking well and yielding finely. The north winze on the 1,200 ft. level, is down 152 ft. the entire distance in good ore, the bottom being even richer than at the commencement. It is hourly expected that the connection will be made between the up-rise from the 1,200 ft. level and the main east drift on the 1,000 ft. level, which will give a good ventilation and greatly facilitate work throughout the mine. The main drift on the 1,300 ft. level, is being rapidly driven ahead to tap and prospect the ledge. The mills are kept steadily running and the future prospects of the mine grow more flattering every day.

JACON LITTLE.—A fine body of good pay ore has during the week been cut into and developed by the west drift from the shaft. It is about 20 ft. wide, and said to be better ore than any heretofore found in that mine. It assays very high in gold, being in the proportion of two-thirds gold to one of silver. Experts pronounce this the west ledge of the Comstock, as the ground lies on Cedar hill, between the Sierra Nevada and the Ophir, and to the westward of both. The company have over 200 tons of ore already out on their dumps for milling when the proper facilities offer.

DATTON.—The ore breasts and stopes on both

the second and third levels are looking well, and yielding finely. The winze from the first to connect with the second station is finished, giving a fine circulation of pure air in that part of the mine, and opening the way for the extraction of the fine body of ore developed between the first and second stations. The Woodworth mill, which was again started up on ore from the mine, last Saturday, has been kept steadily running, and we may soon expect to hear of good returns.

INDEPENDENT AND OMEGA.—This mine is situated north of the Ophir. It was located in 1859 and contains 2,400 ft. on the Comstock lode. A tunnel 350 ft. in length has been run, entering the ledge at a depth of 100 ft., which between the clay walls was 80 ft. in width and showed some veins of very fine black ore, although not in sufficient bodies to pay to extract at that time. The tunnel is still in good working condition, and it is the intention of the company to resume work by drifting along the line of the ledge in a southerly course. It is the intention also to commence sinking a large working shaft 500 ft. east of the ledge, on a line with the shaft of the Utah.

UTAH.—Still driving the main west drift at the 400 ft. station; a steady increase in the flow of water.

JULIA.—The ore prospects in the main south-west drift on the 900 ft. level continue to show improvement daily. The main southwest drift on the 1,000 ft. level has been repaired, and work resumed in the face.

ARIZONA, UTAH AND GLOBE.—The indications of finding a permanent ore body in the south drift from the bottom of the incline show a steady improvement.

ROCK ISLAND.—This claim, which has been worked through a tunnel, shows a large ledge, from 75 to 85 ft. in width, and increased in heavy clay walls. While the ore at present is of low grade, it presents prospects very favorable to the development of a good mine. They are now drifting north and south from the main tunnel, and will begin crosscutting the ledge very soon. The working force in the mine is to be immediately increased.

SEABOARD CALLEDONIA.—This mine is situated between the Calledonia and Knickerbocker shaft, the title being derived from the North American Co. the Seg. Calledonia comprising 100 ft. of ground adjoining the Calledonia on the south. Two shafts have been sunk on the claim, one 80 and the other 150 ft. in depth. The last is almost the entire distance through low grade ore of the same character as that found in the Calledonia. Preparations are being rapidly made for the extraction and milling of ore. Prospecting the ledge to a greater depth will be pushed with all the vigor possible.

SILVER HILL.—Sinking the main shaft is making good progress, the rock in the bottom blasting finely. Both the north and south drifts at the second station show a decided improvement in the quality of the ore penetrated during the week.

NEVADA.—A fine body of ore has been encountered during the week in the south drift, 140 ft. from its junction with the main west tunnel. The body of ore is gradually widening, and promises a development of great value. There is also an improvement in the ore found in the up-rise from the main tunnel.

GOULD & CURRY.—The east drift on the 1,700 ft. level is hourly expected to strike the ledge, and there seems but little doubt when it is accomplished that rich ore developments will follow.

NEW YORK CONSOLIDATED.—The appearance of the mixture of clay and quartz at the bottom of the shaft has shown but little change during the week. The sinking is making steady progress, the bottom of the shaft still in clay and quartz. There is a slight increase of water.

CHOLLAS-POTOSI.—Daily yield, 95 tons of ore, the assay value of which is \$30 per ton.

BROCKEY.—The ore in the face of the north drift in the old shaft, 560 ft. north of the incline, has shown some improvement during the week. Preparations are being made to sink the main incline 100 ft. deeper for a new level. The Hope mill has shut down for a short time.

HALE & NOACROSS.—Sinking the main incline making good progress. Opening the 1,900 ft. station is making good headway. Sinking the north winze, from the 1,700 ft. level, to connect with the main north drift on the 1,900 ft. level, is also making steady progress, showing during the week some excellent indications of good ore.

CALLEDONIA.—Repairing the main shaft between the 500 and 600 ft. levels is completed, so the cages can now descend to the 600 ft. station. This station is being rapidly put in order for future working operations. The hoisting machinery is all in fine working condition, and everything in and about the mine shaping for a good, solid winter's work. The drain tunnel is being driven ahead at the rapid rate of 7 ft. per day.

PICTOR.—Operations have been somewhat impeded the last day or two by a heavy slide of earth at the mouth of the tunnel, blocking up the mouth and flooding the car track with water. The obstruction, however is nearly removed, and next week work will be resumed at the face of the tunnel. Superintendent Turney reports indications favorable.

IMPERIAL.—The new spur wheel is in place, and it is expected that every thing will be in readiness to again start up the hoisting machinery by Monday next. There has been no work done either in the shaft or on the lower levels during the week. The station for the 1,900 ft. level is opened, and a main drift will be started for the ledge during the coming week.

The Chilian Method of Amalgamation.

Mr. Frederick Prime, Professor of Metallurgy in Lafayette College, Easton, Pennsylvania, has furnished from a French source the following account of this process to the *American Chemist*:

The first process employed in Chili was that of the ordinary *patio*, but this was soon supplanted by another method which formed the basis of that now in use. This consisted of treating rich sulphurets in copper vessels with cupric sulphate, sodium chloride, and mercury. At the end of a little time almost the whole of the silver was amalgamated; being, however, only accomplished at the expense of a large amount of mercury, the loss frequently being 200 to 250 per 100 of silver; in spite of which this process was frequently employed for the treatment of ores containing more than 0.02 per cent. silver, owing both to the rapidity of the operation, it taking less than two hours when aided by heat, as also to the small percentage of metal (scarcely 0.0002 to 0.0003 per cent.) left in the tailings. The enormous amounts of argentic chloride, iodide, and chloro-bromide produced at Chanarillo soon demanded a more rapid, though less exact, process than the older one. In order to obtain some idea of the amount of ore requiring treatment, it will suffice to mention that the single mine of Deschuidora produced in the years 1831-51, the sum of ninety three millions of dollars.

In the new process applied to these ores, they were crushed and pulverised as in the old method. The pulverised ore was carried by a stream of water to settling basins of sheet iron, 6½ feet in diameter, and 9½ feet deep. The stream was conducted in turn to different basins, which, when once filled, are left to stand from eight to ten hours to permit the slimes suspended in the water to settle at the bottom. At the end of this period the clarified water was decanted off and the slimes were transferred to *tinias*. These *tinias* consist of wooden vats, having a cast iron bottom, and are 5 feet 10 inches by 3 feet 11 inches. These are provided in the line of their axes with a shaft having cast iron arms which slide over the bottom of the vat. The charge placed in these *tinias* was about a ton and a half. The ores are a mixture of chlorides, iodides and bromides, having a gangue composed of the carbonates of lime and baryta as well as clay and oxide of iron. The charge of the vat was completed by the addition of mercury, about twenty times as much of this being added as there is silver in the ore. The shaft was then set in rotation, making about four revolutions per minute. This operation lasted twenty-four hours, at the end of which the amalgamation was supposed to be completed. A stream of water was then introduced, and the rotation continued. The slimes were removed by the water, and carried into settling basins. When the water ran clear from the vats an orifice was opened in the lower portion of the vat, and the mercury and amalgam which ran out were received in a cast iron vessel, called *cocha*. The amalgam was then squeezed in a thick piece of cotton, and then laid aside for distillation.

The wages, loss of mercury, and various expenses cost \$9 30 per ton for ores containing less than 0.005 per cent. silver. The entire operation, including crushing, took about sixteen hours. The tailings carried off by the current of water, which were caught in settling basins, contained 0.0008 to 0.001 per cent. silver, in the case of ores of the above mentioned richness, and never exceeded 0.002 for richer ores of the same character. The silver obtained contained scarcely 0.01 per cent. of impurities.

The process just described subsequently underwent several modifications. The time occupied in treating the ore in the vats, exclusive of lixiviation, was reduced to six hours; and ores were treated in this manner containing as high as 30 per cent. silver.

Owing to the increase in the proportion of sulphurets as the mines were sunk deeper, the results of the method of amalgamation just described underwent modifications; the percentage of metal in the tailings being augmented to such a degree as to diminish the yield of silver.

The tailings, which were thrown to one side at the time of amalgamation, formed near the works enormous masses of poor ores, whose contents increased daily; the more so, as to these were added such ores as were thrown aside when picking over the ores.

Attempts were made to recover the silver contained in these large bodies of tailings, for which purpose various experiments were tried. The first one tried was the Freiberg process of roasting and chlorination; the results obtained were very unsatisfactory, owing to the inexperience of the workmen. Experiments were then made by chlorination and subsequent treatment with ammonia, which were still more unsuccessful, owing to the high price of ammonia. The argentic sulphate process (Zier-vogel's) did not yield any more satisfactory results.

Recourse was then had to the process which we have first described, and which had been so long abandoned. As we have stated, rich ores called *negrilla*, which were sulphurets, were treated in copper kettles together with cupric sulphate, sodium chloride and mercury. The reactions took place were the following:

The cupric sulphate was transformed into protochloride in the presence of sodium chloride, thus: $\text{CuSO}_4 + 2\text{NaCl} = \text{CuCl}_2 + \text{Na}_2\text{SO}_4$. The heated cupric protochloride coming in con-

tact with the copper of the kettle formed subchloride— $\text{Cu}_2\text{Cl} + \text{Cu} = \text{Cu}_2\text{Cl}_2$. The cupric subchloride, in the presence of argentic sulphide and mercury, reacted on the sulphide, the affinity of the mercury for silver promoting the reaction— $\text{Ag}_2\text{S} + \text{Cu}_2\text{Cl}_2 + \text{mHg} = 2\text{AgHg} + \text{CuCl}_2 + \text{CuS} + (\text{n}-2)\text{Hg}$. In this manner the amalgam was formed.

As we have seen, this process, as formerly carried on, occasioned the loss of a large amount of mercury. The reaction by which the cupric protochloride was converted into subchloride was at that period at the expense of the copper kettles and the mercury. Thus a great loss of mercury was occasioned, and the copper vessels were rapidly destroyed. When, therefore, a return was made to this process, the first thing sought for was the production of the subchloride in special vessels and by other means.

Recourse was had to the following method:—The sodium chloride is dissolved in water; 5 parts of salt per 100 of ore. Cupric sulphate is also dissolved in water until a Banné's aerometer indicates 20°. Sodium chloride is added to saturation. By this means the cupric sulphate is converted to protochloride. The protochloride is then transferred to a wooden vat, into which metallic copper is charged at the same time. The liquors in the vat are then made to boil by introducing steam at a pressure of three atmospheres. At a temperature of 100° C. the cupric chloride reacts on the metallic copper, and thus forms the subchloride which is subsequently employed in the amalgamation. The reaction is known to be finished when, on taking 50 c. c. of the solution, and introducing it into a liter of water, the oxychloride precipitates as a white powder, leaving the liquid entirely colorless. The subchloride is used as soon as made, and care must be taken to preserve it from contact with the air so as to avoid the formation of insoluble oxychloride. To prevent this oxidation the solution is slightly acidulated with sulphuric acid. We will now proceed to the treatment proper of the ores.

The ores are first crushed. For this purpose an apparatus called *trapiche* is employed, resembling the mill employed in the manufacture of oil. Two vertical cast-iron wheels, each weighing about four tons, form the chief portion of the machine; each of these has a rim of wrought iron or steel. These wheels are mounted on arms set in motion by a motor of some kind. They are given a velocity of ten to twelve revolutions per minute and rotate on a disk, called *solera*, made either of cast iron or steel, and on which the ore to be pulverised is spread. The ore is thus crushed to a fine powder. While the wheels are rotating a current of water is made to flow continuously, which carries off the ore as it is crushed. The quantity of water depends on the fineness to which the ore is to be crushed. The current of water is then made to flow through a succession of tanks, in which it deposits the ore it has carried off. The water escapes perfectly clear from the last reservoir. When the first tank is completely filled with ore, the current water is cut off, and the slimes allowed to precipitate for eight hours. The clarified water is decanted and the slimes, forming a thick paste, are shovelled out on to a level floor, where they are left until they are completely dried by the air. The capacity of each tank is about 16½ feet by 6½ feet at the base, and is 3 feet 4 inches high.

In the amalgamation proper the ore, properly dried, is charged into casks whose capacity varies from one to four tons; those of four tons capacity being preferred at present, whose dimensions are 5 feet 10 inches by 4 feet 10½ inches; the thickness of the staves is about 3 inches. The arrangement of the casks is almost identical with that formerly employed at Freiberg.

A charge is composed of four tons of ore with a sufficient amount of *saumure* to form a thick paste. A varying quantity of *magistral* is added, depending on the richness of the ore and the nature of the gangue. When the latter is calcareous, more *magistral* is used than when it is argillaceous, or ferruginous, since the calcareous gangue decomposes a portion of the cupric subchloride. For an ore containing less than 0.002 per cent. silver having a mixed gangue, from 28 to 38 liters of *magistral* is used. The casks are made to rotate for twenty to thirty minutes, in order to give the paste time to form; then the mercury is introduced, being about twenty to twenty-five times the amount of the silver in the ore. The rotation of the casks is then continued at the rate of four or five revolutions per minute. Six hours suffice to complete the operation.

If the ores subjected to this treatment contain a large proportion of argentic chloride or bromide, 25 lbs. of lead are added to the mercury for every 100 lbs. of silver. This lead is added as amalgam; it serves to prevent the chlorination of the mercury. The reaction of the argentic chlorides is: $2\text{AgCl} + \text{Cu}_2\text{Cl}_2 + \text{mHg} = 2\text{CuCl}_2 + 2\text{AgHg} + (\text{n}-2)\text{Hg}$. The lead chlorides more readily than the mercury; the chlorine and bromine set at liberty by the decomposition of the argentic chlorides and bromides reacting on the metal; thus avoiding, in the first place, the loss of mercury which would result from the chemical combination; and, secondly, another loss, much more considerable and purely mechanical, due to the division of the mercury into little droplets by the mercuric chloride, which, when once formed, envelops them in a thin pellicle which destroys the homogeneity of the metal, and prevents it from remitting. The mercury is thus reduced to a powder, occasioning great loss. The use of lead reduces this loss from 150 to 25 parts per 100.

When the amalgamation is completed, the next step is to wash the amalgam, which operation is performed the same as in the Freiberg process.

After which follows the refining of the amalgam, which contains cupric oxide and sulphide. The first of these is formed by the reaction of the lime of the gangue on the protochloride, the last by the reaction of the *magistral* on the argentic sulphide. The refining is divided into two parts, the mechanical and the chemical. The former is performed in a *tina* analogous to that already described, the process being to charge the amalgam into the vat, adding ten parts of mercury to 100 of the former. A current of water is then introduced, and the shaft is made to rotate at the rate of sixty revolutions per minute. In this manner the whole of the cupric sulphide and a very small quantity of the oxide are removed. This operation is finished when the water escapes perfectly clear.

To proceed to the chemical refining, the water in the vat is permitted to escape, and two parts of ammonium carbonate per 100 amalgam are added. The shaft is caused to rotate from four to five hours, and the amalgam is then washed, when it is found to be entirely freed from cupric oxide.

The distillation of the amalgam takes place in a closed vessel *per descensu*. The furnace is formed by a cast iron hell, the lower portion of which stands in a basin of water in which the mercury condenses. The upper portion of the bell is surrounded by a circular wall; the fuel being charged into the annular space between the wall and the bell, which is about 3 to 5 inches.

The spongy silver (*pina*) which is obtained is remelted in a reverberatory. It is necessary to thoroughly rub the metallic bath; the remnant of arsenic remaining is thus removed by contact with the iron tools, forming an iron arsenide which floats on the surface and is easily removed. The silver thus obtained is 980 thousandths fine.

The process which has just been described is applicable to all silver ores, with the exception of argentiferous copper pyrites, galena, blende, and such ores as contain more than 1 per cent. of free arsenic, the latter largely augmenting the loss of mercury.

In this manner it is possible to treat tailings not containing more than 0.0004 per cent., and ores not containing over 0.0006 per cent. silver. So long as the richness of the ores subjected to this treatment does not exceed 0.005 per cent., the tailings obtained do not contain more than 0.00015 to 0.0002 per cent. silver.

The ores subjected to treatment are never reduced to an equal percentage by mixing, as it is found much more profitable to treat the rich ores separately. In this case the operation is completed much more rapidly, the interest on the capital thus running for a much shorter period, thus compensating, to a great extent, for the cost of treating the refuse of the operation.

The mercury which has been used five or six times becomes so charged with impurities as to retard the amalgamation. It is purified by adding 20 grammes of sodium amalgam to every 200 lbs. of mercury.

The works are usually placed near a stream of water, in order to have both the water and motive power necessary for the various operations.

Works of sufficient capacity to treat eight tons per day consist of—1. An area of 550 yards for dumping ores. 2. Two *trapiches* set in motion by a motor of six horse-power. 3. Four basins. 4. An area of 1,100 yards for drying the pulverized ores. 5. Two amalgamating casks, with a motor of eight horse-power. 6. A vat to receive the wash-water of the casks and to recover the comminuted mercury. 7. A vat for washing the amalgam. 8. A distilling furnace. 9. A melting furnace. 10. A wooden vat for the preparation of the *magistral* with a small caldron. 11. Two vats in which to dissolve the sulphate. 12. A basin constructed of hydraulic cement for the *saumure*. 13. A caldron in which to treat the *saumure*. To which must be added the basins for clarifying and purifying the waters.

These last are made to pass through quicklime in order to recover the copper salts. They are thus rendered limpid and potable. The persons employed consist of a superintendent, an assistant superintendent, an assayer, a clerk, a foreman, and ten workmen.

The cost per ton of ore, containing 0.002 per cent. silver, is—pulverizing, 1.49 dol.; mercury, *magistral saumure*, 3.72 dol.; refining the amalgam, .04 dol.; distillation, .04 dol.; melting and refining, .09 dol.; tools and various expenses, .93 dol. to 1 dol. 0.03c. [These values are given in coin.]

This does not include interest, the operation taking each a short time, nor a sinking-fund of the capital.

The great charm of the Chilian method of amalgamation is its great simplicity. This process eliminates a large number of the operations preceding the amalgamation, or considerably simplifies them. If, for example, it be compared with the European method of amalgamation as formerly carried on at Freiberg, it will be found to be infinitely superior both for rapidity and simplicity. It entirely does away with the difficult operation of roasting, which is delicate in its manipulation and the cause of almost all the loss of silver. Even when compared with the American method of amalgamation as carried on in Mexico, it is infinitely superior as regards rapidity. It replaces the doubtful and hypothetical reactions of this process by chemical reactions which are both exact and clearly defined. In one word,

it solves in the most simple manner a question in silver metallurgy which has never been hitherto accomplished but by roundabout means, i. e., the elimination of the sulphur and the direct union of the silver and mercury.

Finally it may be stated that, while elsewhere amalgamation must give way to the fusion with lead as soon as this becomes possible, as applied with us it will not be the case, since it greatly surpasses this process. It is unknown who was the inventor of this method; it can only be stated that this process has been constantly in use at Copiapo since 1862.

Divisibility of Quicksilver, Gold and Silver.

The *Virginia Enterprise* says: "The divisibility of quicksilver, and also of silver and gold, as shown by the mining operations conducted in this State, is almost incomprehensibly great, and would seem to be almost illimitable, particularly in the case of the metal first named. A globule of quicksilver may be divided until no longer visible to the naked eye, and indeed scarcely visible under a powerful microscope, yet even the most minute subdivisions shall be found to contain silver or gold, perhaps both. How infinitesimally small, then, must be the particles of silver or gold contained in one of these invisible and immeasurable globules of mercury! In regard to the astonishing divisibility of the metal mentioned, we have just learned some interesting facts of Dr. Buncher, Superintendent of the Rock Point Mill, Dayton. This gentleman informs us, that some time since, when working in his mill for a considerable period, an ore in which gold largely predominated, he used every precaution to guard against loss. In addition to the usual settling tanks, he caused to be dug in the ground a number of large pits, into which the waste water flowed after leaving the tanks. After leaving these pits, the water passed off in a small flume, and to the eye appeared as clear as the water of the purest mountain stream. For the sake of experiment, Mr. Buncher coated a copper bowl with quicksilver, and placed it in such a position that the water of the flume should fall into it. He also placed in the flume, below the bowl, some copper riffles, properly coated with quicksilver. Although the water passing through the flume seemed to be perfectly clear, yet at the end of three months the bowl and riffles were cleaned up and over \$100 worth of amalgam obtained. His mill is driven by water from Carson River, and carried for a considerable distance through a large wooden flume. A month or two since it became necessary to shut off the water and repair a portion of this flume. In making the necessary repairs it was found that in many places the heads of the nails driven into its bottom had been thickly coated with amalgam. Within the distance of about three rods along the bottom of the flume the workmen engaged in making the flume collected over an ounce of amalgam. This was where there were no copper plates or other special facilities for catching the floating particles of quicksilver. The water flowing through the flume was taken from the river below a number of large mills, and, though far from being clear, would never have been suspected of containing floating quicksilver in such quantities as to amalgamate the heads of iron nails. In order to amalgamate iron it must be scratched or polished while immersed in quicksilver, therefore, it will be seen that much material must have passed by before the occurrence of the accidents required for the commencement of the accumulations found on the nails. As another evidence that quicksilver in considerable quantities floats in the water of flumes and streams below reduction works in a state of invisible division, and yet carries with it the precious metals, Dr. Buncher gave us this additional evidence: On a certain occasion one of his workmen required a piece of copper. Remembering to have seen some old sheets of that metal lying near the waste gate of the main flume, he went to the spot, and hauled them out of a puddle in which they were lying, and found them heavily coated with amalgam, and so eaten up that they were hardly thicker than writing paper. The water pouring out through the waste-gate had a fall of about fifteen feet. It did not fall directly upon the copper plates, but in such a manner as to keep them constantly splashed and wet. Mr. Buncher thinks the plates had lain in the place four or five years. Over a pound of amalgam was scraped off them. It appears to us that in these several striking instances of the treacherous and unsuspecting floating away of the precious metals there is for mill-men food for reflection, and for inventors a field in which to reap both profit and distinction."

COUNTERFEITING TRADE MARKS. — Reports have been received at the Treasury Department from Mr. Denman, Special Agent at Shanghai, stating that he expected to be in Calcutta on the 10th of January. He investigated the cause of the decrease on American exportation of drills to China, and ascertained that it was caused by British drills, the manufacturers of which imitated American trademarks and undersell American goods. The Chinese prefer American drills, but the fraudulent trade-marks on British goods have deceived purchasers. Our exportation has fallen off from 250,000 to 40,000 pieces per annum, while the British exportations increased from 14,000 to 250,000 pieces.

USEFUL INFORMATION.

Impure Water.

The *Journal of Chemistry* says: Public attention cannot be too often called to the danger of using impure water in households. The origin of typhoid fever, which so frequently runs through families in city and country, is oftener in wells and springs than is supposed. In cities it is easy to understand, when aqueduct water is not supplied, how wells may become contaminated, but for many it is not so easy to see how wells in the country, among the hills, or in the green valleys, can become so impure as to be sources of disease.

Since the general introduction of aqueduct water into large cities, typhoid fever has become more common in the country than in the city, and this disease is certainly zymotic, or one which results from a poison introduced into the blood. Wells in the country are very liable to become contaminated with house sewage, as they are generally placed, for convenience, very near the dwelling, and the waste liquids thrown out upon the ground find easy access by percolation through the soil to the water. The instances of such contamination which have come to our notice, and which gave rise to fevers, are numerous. The gelatinous matter which is often found covering the stones in wells affected by sewage, is a true fungoid growth, and highly poisonous when introduced into the system. It is undoubtedly concerned in the production of typhoid fever. How it acts it is difficult to determine, but it is at least conceivable that the spores of the fungus may get into the blood and bring about changes after the manner of yeast in beer. These spores, as is well known, develop rapidly by a kind of budding process, and but a little time passes before the whole circulation becomes filled with them, giving rise to abnormal heat, and general derangement, called fever. These fungoid or coniferoid growths are always present in waters rendered impure by house drainage, and great caution should be used in maintaining well waters free from all sources of pollution.

As a solution of the difficulty the *Artisan* says: The use of quicklime in the purification of water has long been practiced by dyers, the philosophy of its action being that, by neutralizing the carbonic acid dissolved in water, the carbonate of lime held in the solution is precipitated, the latter being insoluble in water which does not contain carbonic acid. It is customary to reduce the quicklime to a creamy consistency by the addition of water, and then to mix it with the water to be purified. After thorough incorporation, the water being left to settle for some time, not only the lime added but the carbonate of lime previously dissolved in water, would be found precipitated to the bottom. During the time the water is standing, it may, however, absorb more or less additional carbonic acid, and, therefore, be rendered capable of redissolving a portion of the lime. This defect in the process is much lessened, if not entirely remedied, while the purification of the water is entirely facilitated by immediate filtering after the addition of the quicklime. The carbonate of lime, being rendered solid by the addition of the quicklime, is distributed in very minute particles throughout the liquid. If the liquid be filtered immediately on the addition of the filtering agent, the separation may be effected much more rapidly than by allowing the water to stand and settle.

The patent upon a peculiar kind of filter for this purpose has been obtained by Mr. Gustave De Mailly, a civil engineer of Brussels. He used a filter consisting of a cylindrical vertical case of sheet or cast-iron, furnished with a lid, which case contains another cylinder, which is the filter proper. This last is also formed of sheets of cast or sheet-iron, one at the top and the other at the bottom, and united by three concentric cylinders of perforated sheet-iron. In the two annular spaces thus formed he places felt or wool, which is claimed to be rendered impenetrable by a peculiar process. It is claimed that when water passes through this material, which it does quite rapidly, all traces of suspended carbonate of lime are removed. The cleansing of the filter is accomplished by causing water to flow through it in an opposite direction from that it pursues during the process of filtering.

TO BRONZE GAS FITTINGS.—Boil the work in strong ley and scour free from all grease or old lacquer, next pickle in dilute nitric acid till quite clean (not bright), dip in strong acid and rinse through four or five waters; repeat the dip if necessary till it is bright, next bind it very loose with thin iron wire, and lay it in the strongest of the water used for rinsing. This will deposit a coat of copper all over it, if the water or pickle be not too strong. When too strong the copper will only be deposited just around where the wire touches. When the copper is of sufficient thickness, wash it again through the water, and dry with a brush in some hot air-dust (box dust is best), but oak, ash, or beech will do. It is now ready for bronzing. The bronze is a mixture of blacklead and red bronze, varied according to shade required, mixed with boiling water. Paint the work over with this and dry, and then brush till it polishes. If there are any black spots or rings on the work, another coat of the bronze will remove them. Lacquer the work with pale lacquer, or but very slightly colored, for if it is too deep it will soon chip off.

Test for Arsenical Colors on Wall-papers and in Paper generally.

Professor Hager recommends the following method for detecting this dangerous class of arsenical colors, which, we may remark, are not confined to green alone, for red sometimes contains arsenic: A piece of the paper is soaked in a concentrated solution of sodium nitrate (Chili saltpeter) in equal parts of alcohol and water, and allowed to dry. The dried paper is burned in a shallow porcelain dish. Usually in only smolders, producing no flame. Water is poured over the ashes, and caustic potash added to a strongly alkaline reaction, then boiled and filtered. The filtrate is acidified with dilute sulphuric acid, and permanganate of potash is added slowly as long as the red color disappears or changes to a yellow brown upon warming, and finally a slight excess of ammonium solution is present. If the liquid becomes turbid, it is to be filtered. After cooling, more dilute sulphuric acid is added, and also a piece of pure clean zinc, and the flask closed with a cork split in two places. In one split of the cork a piece of paper moistened in silver nitrate is fastened, in the other a strip of parchment paper dipped in sugar of lead. If arsenic is present, the silver soon blackens. The lead paper is merely a check on the presence of sulphuric acid. According to Hager, the use of permanganate of potash is essential, otherwise the silver paper may be blackened when no arsenic is present.

DYEING VENEERS.—Veneers are readily dyed upon the surface, but in this condition are much more liable to disfigurement than when the color is made to permeate the mass. Those colored throughout are therefore the most sought after, and before the late war were chiefly furnished from Paris. During the war, the supply being cut off, some German cabinet makers took up the subject, and after numerous experiments perfected a process which secures the desired result. The veneers are first soaked for twenty-four hours in a solution of caustic soda, and then boiled therein for half an hour. They are then washed with water until all the alkali is removed when they are ready to receive the dye. This treatment with soda effects a general disintegration of the wood, whereby it becomes in the moist state elastic and leather-like and prepared to absorb the color. Veneers thus treated, if left for twenty-four hours in a hot decoction of logwood, and after superficial dyeing immersed for twenty-four hours more in a hot solution of copperas, become of a beautiful and permanent black throughout. A solution of picric acid in water, with the addition of ammonia, gives a yellow color not in the least affected by subsequent varnishing. Coralline dissolved in hot water, to which a little caustic soda and one-fifth its volume of soluble glass have been added, produces rose color of different shades, dependent on the amount of coralline taken. After dyeing they are dried between sheets of paper, and subjected to pressure to retain their shape.—*Paint and Oil Trade*.

USES OF WASTE PAPER.—Few housekeepers are aware of the many uses to which waste paper may be put. After a stove has been blackened, it can be kept looking very well for a long time by rubbing it with paper every morning. Rubbing with paper is a much wiser way of keeping the outside of a teakettle, coffee-pot or teapot bright and clean than the old way of washing it in ends. Rubbing them with paper is also the best way of polishing knives and tinware after scouring them. If a little soap be held on the paper in rubbing tinware and spoons, they shine like new silver. For polishing mirrors, windows, lamp chimneys, etc., paper is better than dry cloth. Preserves and pickles keep much better if brown paper instead of cloth is tied over the jar. Canned fruit is not apt to mould if a piece of writing paper, cut to fit each can, is laid directly on the fruit. Paper is much better to put under carpet than straw. It is thinner, warmer, and makes less noise when one walks over it. Two thicknesses of paper placed between the other coverings on a bed are as warm as a quilt. If it is necessary to step upon a chair, always lay a paper upon it, and thus save the paint and woodwork from damage.

Tobacco LEAF.—The State Chemist of Connecticut, in his report, presents some interesting information in reference to the tobacco crop, with the results of tests upon the tobacco leaves. The general summary of the reports is as follows: The most highly valued tobacco in New England is the thin, tough, elastic leaf, which burns readily to ashes. Those leaves containing the most carbonate of potash in their ashes, burn the most freely and suitably. In some combinations potash does not favor the burning, and some tobacco manufacturers improve the flavor and burning quality by artificially impregnating the leaf with acetate, citrate, or tartrate of potash, applying the latter in solution and then drying. Chlorine injures the tobacco, as also does nitric acid. Sulphuric acid, united with potash, soda, or lime, favors the burning of tobacco. The best tobacco is produced on well-drained, warm, sandy lands. It is believed heavy manuring increases the quantity of the crop generally at the expense of quality as regards texture.

DOMESTIC ECONOMY.

Cooking Meats.

The most economical way of using meat is to cook it in hot water, and serve it up in its own gravy. If it is boiled for preparing soup, the water should not be too quickly raised to the boiling point, since this tends to coagulate the albuminous portions and to prevent the juices from passing into the water. The meat should be chopped or cut as fine as possible, and steeped for some time in cold water, which should then be gradually heated up to a temperature not exceeding 150° Fahrenheit, or 63° below its boiling point. At the last moment the soup may be allowed to reach the boiling point. The bones should be crushed or broken up into small pieces, and boiled, or rather simmered, for eight or ten hours, in order to thoroughly extract their nutritive matter.

If we wish to cook meat in such a way as to preserve the maximum of nutriment in the most digestible form, we should place it in large pieces in boiling water and keep it there for five minutes. The high temperature coagulates the albumen at the surface of the meat, stops up its pores, and thus prevents the juices from escaping. After this boiling for about five minutes, add cold water to reduce the heat to about 150° F., and keep it at that temperature till the meat is sufficiently cooked. It will then be found to be tender, juicy, savory and nutritious. Salted meat intended to be eaten cold should be allowed to cool in the water in which it has been boiled.

In roasting meat, as in boiling it, the first object should be to coagulate the albumen at the surface, in order to prevent the escape of the juices. The meat should be at first placed close to the fire, kept there for ten or fifteen minutes, and then withdrawn to a greater distance from the heat. If cooked in the oven of a stove or range, the oven should be very hot when the meat is first put into it, kept at the same heat for a short time, then cooled down partially (by opening the door or checking the fire), and the roasting should then be allowed to go on very slowly so that the inner parts may be thoroughly done. The loss of weight (mostly water and fat) is nearly one-third more in roasting than in boiling.

Roast meat has the richer flavor, because certain aromatic principles are developed by this mode of cooking. The occasional "dredging" of flour over the surface of the meat helps to stop up the pores and prevents the escape of the fat. Roasted meat is not so well suited for invalids and dyspeptics as boiled meat, since it is apt to contain acid substances formed out of the highly heated fat. Broiling is a species of roasting, but it ordinarily produces a more digestible food for the dyspeptic. Frying is the worst possible mode of cooking meat, especially for persons whose digestive powers are not vigorous, as it almost invariably develops a very acrid substance known as *acrolein* and many fatty acids that are nearly as unwholesome.—*Boston Journal of Chemistry*.

INTERESTING TO MINERS.—We learn that a patent has been granted to Henry M. Boies, Scranton, Pa., for Improved Packages of Powder Charge for Blasting. This invention consists in packing the powder, in convenient quantities, in long tubes of paper or any fabric or material of sufficient strength, rendered waterproof if necessary, of a proper shape and size to be used as a cartridge, and of such a length in excess of the powder inside as shall allow of its being folded into a compact form, and divided for use into cartridges of any desired length or weight. Each cartridge tube or package may be easily marked with the size, and quantity, and brand of its contents; and when it comes to the consumer, he can measure off from either end the quantity desired for a blast, slide the powder away from this point, divide the tube, fold back the ends, and the cartridge is ready for use, proceeding in the same way until the whole package has been used. Thus the danger of preparing the cartridge over the open keg and the liability to damage of the exposed powder are avoided, and the time and labor of making the cartridge, as well as the materials of which it is composed, are saved.—*Coal Trade Circular*.

Pudding Sauce.—One quart of boiling water, four large tablespoonfuls of white or brown sugar, two of flour, one of butter, one teaspoonful of salt, nutmeg or cinnamon to taste. Two tablespoonfuls of currant or blackberry wine or cider are a great improvement. Let the whole be boiled together for about ten minutes. It is necessary to mix the flour with a portion of cold water before adding it to the boiling water.

Artificial Oysters.—Take green corn, grate it in a dish; to one pint of this add one egg well beaten, a small teaspoon of flour, half a cup of butter, some salt and pepper, and mix them well together. A table spoonful of the batter will make the size of an oyster. Fry them a light brown, and when done, butter them. Cream, if it can be procured, is better than butter.

Warming Cold Boiled Potatoes.—Slice and put them in a basin with a little milk or water, some cream if you have it, and a little salt. Let it remain on the stove until it is thoroughly heated through, stirring often to prevent its sticking; a bit of fish left from a former meal or some beaten egg is a nice addition to it.

GOOD HEALTH.

Drinks During Meals.

The results obtained by Dr. Beaumont in his series of experiments on the person of Alexis St. Martin, who had a permanent gastric fistula, caused by a gunshot wound, demonstrates that the gastric juice, in order to exert its solvent action upon the food, must be at the temperature of 100°.

The common, excessive and alternate use of hot and cold drinks therefore, during meals, is clearly prolific to a host of ailments in manifold ways. It impairs digestion by alternately increasing and diminishing the temperature of the gastric juice—thus retarding the solvent action of that fluid. It lays the foundation for chronic gastritis; in consequence of the excessive and reciprocal contact of the two agents, heat and cold, with the mucous membrane of the stomach, and consequently causes dyspepsia.

It also causes cracking of the enamel of the teeth and an increased susceptibility of the nerves in their immediate vicinity. Many cases of protracted odontalgia, or—in common phrase, toothache, are no doubt due to this bad practice; as also the premature destruction of the enamel of the teeth in persons of healthy constitutions.

This bad habit is the generator of many cases of disordered organs and perverted functions generally in the animal economy.

While I deprecate the use of hot and cold drinks during meals, I nevertheless advocate the moderate use of fluids of milk-warm temperature, for the reason that they act as adjuncts to mastication, insalivation and deglutition of food, and that they assist the gastric fluids in the disintegration of aliments. For instance: it is well known, that, without the assistance of some fluids, it is extremely difficult to comminute a dry and brittle cracker or other similar substance.

Still it is well we think to dispense with fluids to a good degree during mastication, as their tendency is constantly to render the process less thorough and effective.—*Laws of Life*.

PHYSIOLOGICAL PROPERTIES OF CAFFEIN.—The physiological action of coffee, according to M.M. Aubert and Hease, should not be attributed to caffein, but to other principles. An injection of 0.6 cubic inch of coffee containing 0.6 grains of caffein killed a rabbit in a very short time, producing acceleration of the pulse and respiratory organs, uneasiness, and finally convulsions. An injection of 0.75 grains of caffein, however, did not produce death or any symptoms of sickness. An infusion of 770 grains of very hot coffee, corresponding to 6.3 grain of caffein, acted upon a man far more intensely than a stronger dose of pure caffein. Headache, vertigo, trembling, and similar symptoms are produced, which last upward of four hours. Coffee extract, deprived of caffein by chloroform and injected into the jugular vein of a rabbit, causes strong convulsions, but never tetanus, such as is produced by an overdose of caffein singly.

POSITION IN SLEEPING.—Sleeping rooms should always be so arranged, if possible, as to allow the head of the sleeper to be toward the north. Frequently in cases of sickness, a person will find it impossible to obtain rest if the head is in any other direction, and often a cure is retarded for a long time. A Vienna physician had a patient who was suffering from acute rheumatism, with painful cramps running from the shoulders to the fingers; and while his head was to the south he could do nothing toward his relief. On turning the bed, however, so that the head was toward the north, the patient uttered expressions of pleasure, and in a few hours a great improvement had taken place, and in a few days he was almost entirely cured. Many other cases are given by scientific persons; and people in building houses, should always have this in view.

ASPHYXIA BY ILLUMINATING GAS.—The symptoms are discomfort, inclination to vomit, convulsive movements of the muscles, especially those of the breast, the skin is cold, the breathing and pulse irregular. The remedies recommended are exposure to free air, even if cold, irritation of the skin by vinegar, and the palms of the hands, soles of the feet, and the spine with a stiff hair brush, blowing air into the lungs. When consciousness returns, place the patient in a heated bed in a room with the windows open, administer a few spoonfuls of Malaga, Madeira, or sherry wine. A mixture of tartar emetic and Hoffman's liquor, flavored with honey-water and orange-flower syrup, is spoken of as efficacious after the return of consciousness.—*Le Gaz*.

SCARLET FEVER FROM A DEAD HORSE.—Scarlet fever having attacked a whole family at the port of Amble, one of whom has died, Dr. Easton, the medical officer of health, has reported to the local authority his belief that the fever was produced from the family residing near a pond in an old quarry, in which was a dead horse. The family lived over a boat-house on the lake, and being quite isolated, the fever has been confined to the inmates. Orders have been given to prevent dead animals being thrown into the pond.

CHAPPED HANDS.—Instead of washing the hands with soap, employ oatmeal, and after each washing take a little dry oatmeal and rub over the hands, so as to absorb any moisture.

Aveling & Porter's Road Locomotive.

The illustration accompanying this article is taken from a photograph of one of the Road and Farm Locomotives built by Messrs. Aveling & Porter, of Rochester, England.

The large cost of the English rope system of Steam Plowing Machinery seems almost to preclude its general adoption in America. Messrs. Aveling & Porter after repeated trials and experiments with other devices say:—That with an engine weighing not more than five tons, and this weight carried on broad wheels such as the engraving illustrates, from 6 to 10 acres per day, varying with the nature of the soil, can be plowed with a four-furrow plow. The same sized engine, they further say, is more than sufficiently powerful to drive the largest sized threshing machine, and 15 tons can be easily hauled by it along moderate roads and up steep inclines. "To this date Messrs. Aveling & Porter have built more than 900 of

makes her a great favorite with the farmers, who have been bored with hitching their horses to a heavy steam engine, and spoiling them with the over load. Our greatest gain is in time, moving from place to place. In five minutes after the last sheaf is through, we are on the road; and we once moved 600 feet, and were threshing again in 10 minutes from the time the last sheaf was through at the last place (by a watch held on us by a friend). We are now drawing pork in the streets of Cincinnati, and we draw from 12 to 15 tons a load."

"Until June 1874, 'Steam Plowing Machinery' is admitted to the United States free of import duty." To Mr. W. C. Oastler, of 43 Exchange Place, New York, the manufacturers agent, we refer our readers for further particulars if desired.

CONSOLIDATED VIRGINIA BULLION.—The Virginia Enterprise of the 5th says that the Consolidated Virginia mine shipped the day before,

The Goodwin Fire Engine.

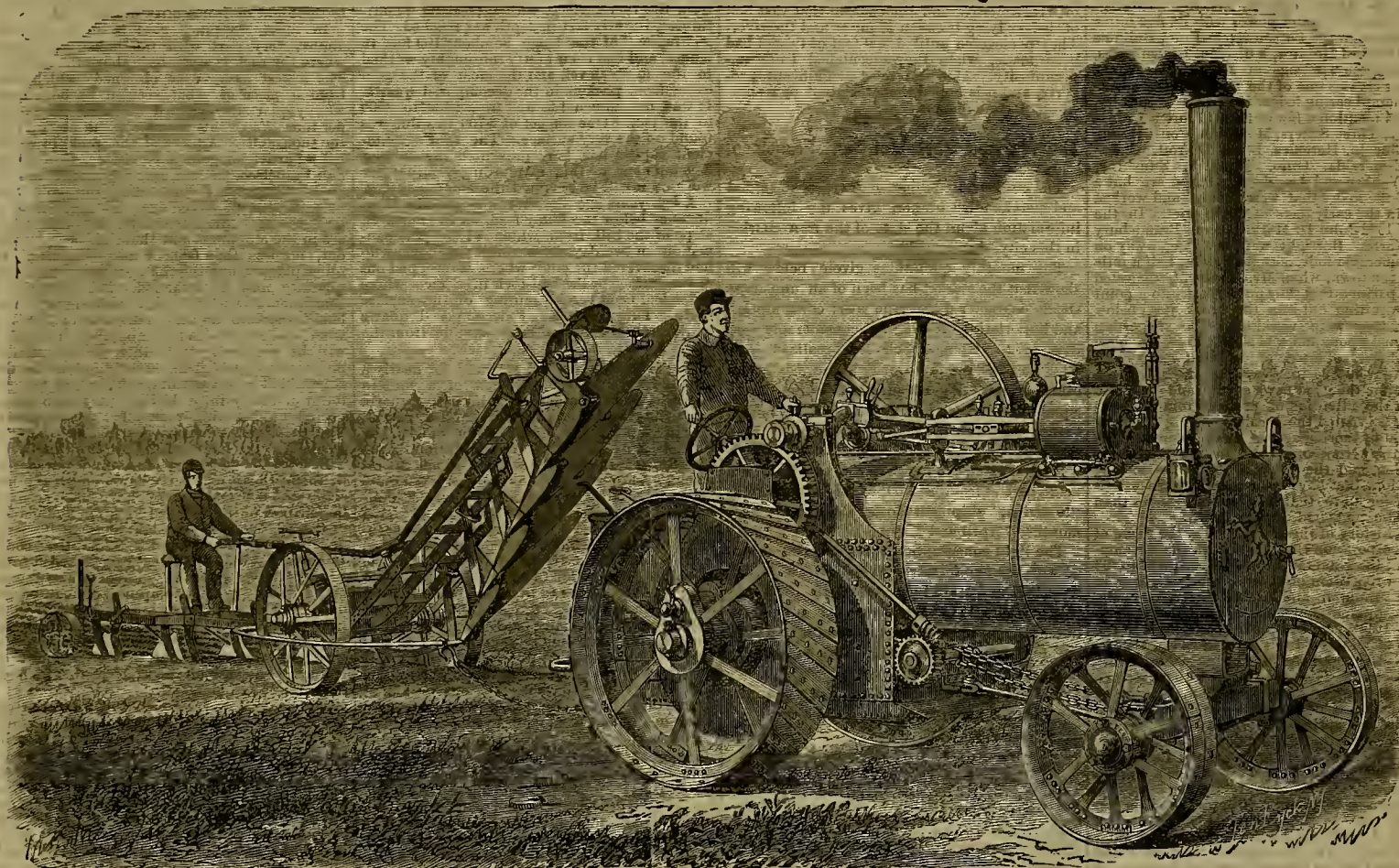
Messrs. Goodwin & West, manufacturers of the Goodwin Pump, a recent California invention, are manufacturing at the Miners' Foundry, a new steam fire engine, which is intended to supersede any other engine over manufactured in America or any other country. It is constructed on the principle of the Goodwin pump, but the special novelty in it is, that it is calculated with a pressure of 400 lbs. on the pump and 100 lbs. on the engine, to throw a 1½-inch stream 320 feet with 100 feet of hose. The engine itself is very handsome in its finish and ornamentation, and is exceedingly light, weighing at least 500 lbs. less than the second-class Amoskeag Engines; and the pump can be taken apart easily and without interfering with the working gear of the engine, or any other portion of the machinery.

The machinery is all very closely connected, the engine being set well down on the center

Liquid Slate Roofing.

We have received several communications in regard to an article describing the patent slate roofing, which was published recently, and inquiries as to cost, means of obtaining, etc. In reply, we would say that we have written to the manufacturers of this roofing, asking for all particulars desired, but have not as yet received an answer.

For those who did not notice the article referred to, an explanation of the new process may not come amiss. The slate dust, which accumulates in such quantity around the quarries, was until quite lately considered a waste product, and was, moreover, a source of annoyance and inconvenience to the stone workers. But it was found that by mixing it with certain ingredients, a paste could be formed which, while plastic and capable of being molded into any shape, would become perfectly indurated and compact on drying. The compound,



AVELING & PORTER'S ROAD LOCOMOTIVES, ADAPTED TO DIRECT TRACTION STEAM PLOWING.

these engines and are at present making six a week." "The Telford Pavement Co., of Plainfield, N. J., have two of the Aveling engines which they have used during the year for hauling broken stone for road contracts, and their testimony is that the work has been performed by the engines at less than one-third the cost of horses and mules." Mr. Diok, of Rass, Ohio, writing of his Aveling engine says:—"We have used our engines for almost all possible purposes: On the gravel road; for drawing logs out of the woods; for threshing grain, and are now hauling pork in the streets of Cincinnati, over a boulder pavement.

"On the macadamized road we draw from Hamilton to Venice, including wagons, 25,000 lbs. of coal, at one load—a distance of eleven miles. For logs in the woods, she is unequalled; we detach the engine from the wagon, and roll the tree on to the wagon, an inch at a time if we choose, and hold it there—a feat that horse power will not perform. All who see her at this are amazed at the wonderful power we possess, and say she seems a thing of life.

"We drew a tree of an average girth of over 7 ft. and 73½ feet in length from our timber, about four miles distant, and we calculate it weighed eight tons or more.

"We have threshed nearly 40,000 bushels of grain with her since harvest, and have found no place that we were unable to reach, no matter what the grade or how deep the mud. Her facility for taking herself and thresher away,

\$108,473.94, the product of ore reduced by their mills during the past week. The yield of the mine for the months of November and December (which is, in fact, the total yield of the mine since the development of paying ore) was \$644,094.13. Many more stamps are now running on ore from the mine than were at first employed. By the shipment made last evening it will be seen that the yield is rapidly increasing. The daily yield of the mine is at present 250 tons of ore, and the mine is looking well throughout. The north winze, which is down 152 feet, is in good ore the whole distance.

CHANGE OF FORM.—The American Artisan, so long and well known as a weekly journal of general scientific progress, with the opening of the new year is to be issued as a large monthly, in magazine form. We have always recognized the Artisan as one of our very best scientific exchanges, and are confident that if, in its new form, it only maintains its previous uniform excellence, it will take rank at the head of American journalism—but we are promised even an improvement for the future. The Artisan has our best wishes.

CARSON RIVER.—There is no longer complaint of a scarcity of water in Carson river. The late thaw has sent floods of water pouring into that stream from hill, vale and mountain gorge. All the mills are in full blast and their stamping outcrops the combined waters.

of the boiler. Any part of it can be oiled while in operation, and the pump can be taken apart, if necessary, without interfering with the engine. The pump is a 12-inch one, running entirely upon rollers, without any sliding motion, the inside chamber revolving upon the periphery as 1 is to 9.

All the wear and tear is taken up by an inside eccentric with a girth and key. The inside motion is taken up by outside screws on the side of the pump. The cut-off is worked automatically from the outside by the use of eccentrics on shaft taking all the pressure off from the periphery of the inside cylinder. The motion of the valve is adjustable from the outside. These pumps can be worked almost any length of time without opening, particularly in fire-engines, and are adaptable to mining, irrigating, agricultural, domestic and every other purpose for which a pump can be applied. A small steam pump of this pattern was tested last month at the Miners' Foundry with very satisfactory results. Size of pump, 4½x9. Pressure of steam, 45 pounds, 20 feet from boiler. Length of hose, 6 feet. Length of stream, 75 feet. Revolutions, 300 per minute. The steam fire engine being built there will be a very handsome one, and is well worth seeing by those interested in such machinery.

It costs \$5 a ton to get hullion from Los Angeles to the anchorage, and \$2.75 from there to San Francisco.

then, is neither more nor less than ordinary slate, supposing the latter to be possessed of the additional good qualities which have been secured. It is certainly water-tight, and is claimed to be a reliable defense against fire. At all events it would prevent falling sparks and cinders from igniting the wood work beneath, in the same manner that natural slates do. We see no reason why this liquid slate could not be so tinted by admixture of various mineral oxides as to take the place of the tessellated designs which make ordinary slate roofs, when artistically planned, so much admired. It appears that the new compound has been already adopted quite extensively in Eastern cities, and that in a quiet, business-like manner, its manufacturers have been steadily enlarging its use, while the general public, and all not immediately concerned, were ignorant of its very existence.

ORE SHIPMENT.—Ninety car-loads of ore from the mines on the Comstock are shipped daily over the Virginia and Truckee railroad to the various mills. The Gold Hill News says that the amount of ore shipped by rail to the various mills in that vicinity, during the month of December, was 2,534 car-loads, or about 18,000 tons.

There are in this State 780 mining ditches, having an aggregate length of 4,888 miles, and supplying 220,187 inches of water per day.

Alpine County Mines.

Monitor District.

The Alpine *Miner* in its general mining review, has the following about the mines in Monitor district: Monitor, although unlike any other district in the county, is second in importance and interest to none of them. When a long distance away the curiosity of the gazer is aroused by the many tinted peaks of this region. There is the General Shields, of a bright buff color, Red Mountain, of a deep vermilion, and Monitor Peak, with all the intermediate shades between buff and vermilion. The vast outcrop of the ledges cutting across the faces of these lofty mountains, some peering out from among, while others overtop the tall pines that are scattered over their sides, form such a picture as is seldom seen in a mining region. Upon a near approach to these vast repositories of the precious metals, persons at all excitable become enthusiastic in their belief in the riches of the mines of that section. This, like Alpine district, has the advantage of an unlimited water power with its five miles of frontage on the Carson river. From Bullion to the town of Monitor, a distance of two miles, following the windings of Monitor creek, the traveler crosses one of the most extensive belts of mineral-bearing ledges in the whole country. We will mention a few of them: Florence, Manchester, Three Sisters, Mountain, Constitution, Ahe Lincoln, Hercules, Blind, Detroit, Chicago, Esmeralda, Ohio, Tarshish, Sunshine, Wild Yankee and American. These are but a few of the many that were located and worked upon in the early days of the district. In the fall of 1862 John D. Marks, Jacob Brandebury and Warren Burright were working away on the Esmeralda lode, situated about half a mile below the town, when Mr. Burright suggested to his partners that they put a blast into a point of rock jutting out into the creek just below where they were working. The suggestion was acted upon, and a blast put in which blew off perhaps half a ton of ore that assayed all the way from \$65 to \$3,000 to the ton. In a short time the good news spread and began to attract the attention of parties from the outside, who visited the locality during the winter, and by spring a great rush ensued. It is safe to say that one blast in the Esmeralda cropping, laid the foundation of the mining operations that have been carried on so extensively, for up to that time nothing more than fair indications had been met with.

The history of the Marion—i. e. the name of the incorporation that undertook the development of the Esmeralda lode—subsequent to '63 is but a repetition of those heretofore given in Silver Mountain and Alpine districts—inadequate capital, discouragement, and final suspension. It is a firm and settled conviction in the minds of all the old settlers that in the Marion there is the making of one of the richest mines on the coast. The discovery of the Florence lode was the next great sensation. A man by the name of George Probasco came into camp early in the spring and spent a few days in looking around. On one of his excursions down the creek, in following along its bed, he found under the top of a fallen tree a mass of blue clay matter that excited his curiosity. Upon closer inspection with pick and shovel, it proved to be the top of a ledge which had become decomposed by the action of the water of the creek. In this mass of clay he found specimens of ore that had every appearance of native silver, but which in reality was nothing but a rich galena. Probasco went nearly crazy over his discovery, and when at a later day Dr. Hughes of Carson offered him \$12,000 coin for a controlling interest in his mine, he quite indignantly refused the offer. The result is that his mine remains to-day in much the same condition it was when discovered.

The Manchester mine, owned and worked by a San Francisco company, made some important developments, clearly proving the value of their property, but on the death of Mr. Henry Dreschfeld, the leading spirit of the organization, work was suspended in the early part of '65, and though frequently spoken of since by members of the company, has never been resumed. On the adjoining claim on the Manchester lode, known as the Merrimac Company, a tunnel was driven a distance of nearly two hundred feet, showing ore of a good quality of the same general character as that in the first mentioned mine. This ore is of the class known as argenteriferous grey copper, some of it carrying as high a percentage of silver as \$700 to the ton. The depth on either mine was comparatively slight, but sufficient to demonstrate the continuity of the vein, both the vertical and horizontal. To cut this ledge, the Florence, and some half a dozen others in the same belt, a location for a deep long tunnel was made by J. P. Ray, S. G. Lewis, and others, and called the Winchester. For three years Ray vigorously pushed work on this tunnel and drove into the mountain 1,065 feet, cutting in that distance the Florence lode some 400 feet in, and at a depth of 150 feet. The lode was well defined, 15 feet thick, with a vein of ore 5 feet. At 648 feet the Manchester lode was cut, showing a large ledge with clay castings on both sides. This ledge gave good assays, but nothing was done towards opening it up further than the running through it. At the extreme point reached by the tunnel another ledge was struck into, but never cut through. This last ledge is supposed to be the Constitu-

tion, which crosses the road and creek about one mile below town. The Winchester is a valuable property, and at no distant day may be extensively worked.

The Constitution, just below the Globe mill, owned by the (in) Active Company, of New York, is a master vein, being 20 feet between the walls, and carrying an argenteriferous copper ore with flakes of native copper liberally interspersed through the gangue. But little work has been done upon this mine. It was one time bonded to the Globe Company for the sum of \$3,000, which was cheap as dirt.

The Chicago and Detroit is located on the Esmeralda belt of ledges, and has as good a prospect for a rich mine as any reasonable company ought to desire. They have cut three veins in a distance of 300 feet, on one of which a drift has been run 100 feet, showing a continuous vein of low grade ore that can now be made to pay by the improved methods of reduction. One of the veins, which gives the greatest promise, has not been touched further than running through it with the main tunnel.

The Imperial Company is an English organization which commenced at a point on Carson river, just above Bullions, to drive a double track tunnel from the river under the summit of Mt. America, and thus cut all that vast belt of ledges lying between Monitor and the river. They persevered until 1,300 feet of tunnel had been made, when they succumbed from pecuniary. This is a most insignificant property, and it is hoped that work will be resumed on it at no distant day.

The Pig Iron Market of San Francisco.

The circular of William Jeffray, coal, metal and merchandise broker, gives the following information about the state of the iron market in this city, during 1873:

The monthly quotations given below will show that the market has been of an unusually steady character during the year; consumption and importations footing up considerably less than 1872. Glengarnock has realized from \$2.00 to \$2.50 per ton over Eglinton, Clyde and other brands, its importation being hardly equal to the demand, whereas the latter named brands constitute the major portion of soft iron on hand.

Several extensive purchases of soft iron were made here at, from \$52.00 to \$54.00 per ton, "to arrive," shipments to be made during the months of April and May.

The light consumption this year, as compared with the two former years—3,387 tons less than 1871 and 1,112 tons less than 1872—has been occasioned by the decreased amount of building, and light orders for mining machinery, both of which are anticipated to be very largely increased this year.

The following will give the monthly quotations for the past year:

SCOTCH SOFT.		PER TON.
January	.....	\$50 to 54
February	.....	50 to 54
March	.....	50 to 54
April	.....	50 to 54
May	.....	50 to 54
June	.....	50 to 54
July	.....	50 to 54
August	.....	50 to 54
September	.....	50 to 54
October	.....	50 to 54
November	.....	50 to 54
December	.....	50 to 54
ENGLISH AND AMERICAN WHITE.		PER TON.
January	.....	\$52 to 52½
February	.....	52 steady
March	.....	52 to 52½
April	.....	52 to 52½
May	.....	52 to 52½
June	.....	52 to 52½
July	.....	52 steady
August	.....	50 to 54
September	.....	50 to 52
October	.....	50 to 52
November	.....	50 to 52
December	.....	50 to 52

I find the stock of pig iron on hand January 1st, 1874, in all 7,786 tons, consisting of 6,246 tons soft and grey, and 1,540 tons white, as per statement below, being 785 tons less than the stock on hand January 1st, 1873.

Shipments at present in transit from England are comparatively light, but considerable shipments have been, and are being made from New York, from which source we have had but small shipments for a number of years.

	TONS.	TONS.
Stock of Pig Iron on hand Jan. 1st, 1873	8,571
Importations of Pig Iron for the year 1873—Soft, 6,982 tons; White, 1,355 tons—total	8,337
		16,908

STOCK ON HAND JANUARY 1ST, 1874.	
In Importers' hands, Scotch Soft	3,749
White	750
In Foundrymen's and Jobbers' hands, Scotch Soft	2,277
In Foundrymen's and Jobbers' hands, White	780
Grey	220
	7,786

Consumption of 1873—White, 923; Soft, 8,190.....9,112

The above synopsis shows the consumption of 1873 to be 1,112 tons less than 1872, and the importations of the year to be 4,831 tons less than 1872.

Amador County Mines.

The Amador Ledge, of the 27th, contains a letter from Butte City, from which the following is extracted:

Between Butte City and the Mokelumne river, in Joe's gulch, a newly discovered quartz ledge is being opened by Adam Smith & Co., which promises to become one of the best-paying mines in the county. The shaft is at a depth of twenty-five feet, the lode is four feet in width, and six inches of the ledge, just adjoining both the foot and the hanging walls, shows free gold in considerable quantities, and it is estimated that much of the rock taken out will pay at least \$60 to the ton.

In a direct range, and not far from where the prospecting of this ledge is being done, is located what is known as the Wiley mine, now owned by S. W. Bright and J. W. Brown, and has, with the exception of a few months' prospecting, remained unworked for the past fourteen years. As far as worked it has proved to be what is usually termed a "pocket mine," though nearly all the rock taken from the lode paid extraordinarily well for crushing. At the time it was being mined, between the years 1855-'58, the lead yielded enormously, paying from the very surface, with increasing plentifulness, till fifty feet in depth was reached. The "chimney" of the ledge is about 100 feet in length, and has been pretty thoroughly worked to the lower level, and the most of the gold came from pockets in the decomposed quartz. It was not unusual to find from \$100 to \$500 to the ton. One nugget of \$700 in value was found on the very surface. The want of sufficient capital has long prevented the further development of this extraordinary mine; but work on it will be resumed the coming spring.

A few years ago a pocket was found a short distance below the Wiley lead, on the northern slope of the hill, from which \$1,000 was panned out in two days by a couple of boys, who had discovered the gold where it cropped out of the surface of the red-rock in a race where water had been run in mining off the surface earth. This rich mass of decomposed quartz had every indication of being a slide from the main Wiley lead.

On Murphy's Ridge we find for nearly a mile in length by three-fourths of a mile in width, one uniform mass of gold bearing quartz veins, interwoven in slate and granite, and all dipping towards the center of the ridge, thus unmistakably indicating a concentration in the direction of the "mother lode" which is rationally supposed to be not very remotely sunken beneath the surface of its almost numberless tributaries, of which so many have heretofore afforded a treasure to fortune seekers, while those which are now being worked still continue their remunerative yields. The principal composition of the shallow earth capping the ridge seems to be decomposed quartz, and all contains more or less gold. The best pay thus far has usually been found in pockets, commencing immediately underneath the surface dirt and extending to various distances of not very great depth. Several years ago a company of three Germans took in a pan, in less than half a day, \$5,000, all the gold being nearly free from undecayed quartz.

The section of the ridge at present bearing the most favorable indications is in the immediate locality known as the Sylvester claim, which has been almost continuously worked for the last fifteen years, and considering the limited manner in which the labor on the mine has been prosecuted, it has paid astonishingly well. The slate, with which the quartz is profusely intermingled, is much broken and decayed, and has gold entirely through it. The style of working the claim has been, and at present is, to dig and pulverize the slate and rotten quartz during the dry portion of the year, panning or rocking the pockets found in the meantime, and then wash the remaining part during the winter season. Much of the decomposed quartz and slate are thickly studded with sulphurets which are richly and visibly impregnated with gold. For a mile distant from the lower end of the ridge toward the Mokelumne river the same singular formation continues, and though not as thoroughly worked as Murphy's ridge has been, many rich deposits on the range have been found, among them the noted Spanish mine, located near the head of Spanish Gulch. Like the ridge of which I have been speaking, this whole section remains undeveloped, solely for the want of necessary prospecting means.

The Amador Canal and Mining Company have completed three miles of their canal in Amador county, since November 1st. Have six miles to build to complete their whole work. Their canal will be forty-six miles long. It is the largest running ditch in the State, being ten feet on top, six feet on the bottom, and three feet deep. Will supply the Amador, Oneida, Kennedy and other quartz mines in Amador county, with motive power for machinery of mills and shafts. Will supply water to extensive placer diggings, and for irrigation.

ST. HELENA GOLD MINE.—Five tons of ore from the St. Helena (Napa) mine have been shipped to this city. An assay of the ore, made December 20th, by Leopold Kuh, gives the following result: Silver, \$93.57; gold, \$20.17. Total, \$113.74 per 2,000 lbs. Work is going on now very rapidly. Three hundred tons have been taken out, ready for working. The mine was opened as a gold mine, but has developed after the manner of the Gould & Curry, into a first-class silver mine.—*Alta*.

The Big San Bernardino Ledge.

Of Captain S. T. Curtis, one of the present owners, we have some interesting particulars in regard to the recently discovered mammoth gold-bearing quartz lode in San Bernardino county, California. The great vein is situated on a ridge composed wholly of quartzite. This ridge lies between Holcomb and Bear Valleys, on the eastern slope of the Sierras, and about twenty-five miles north of Mount San Bernardino, one of the highest peaks in Southern California. Holcomb Valley is 8,240 feet above the level of the sea and the mine is some hundreds of feet above the valley. The great ledge cuts through the ridge of quartzite we have mentioned, and has been traced about two miles. Through this distance it crops out at intervals, sometimes just above the surface, and again to a considerable height. On the claim of the Gold Mountain Mining Company, purchased by Captain Curtis and others, and which comprises 4,500 feet on the summit of the quartzite hill, the lead is about fifty feet wide, and crops out the full length of the claim to the height of from thirty to sixty feet.

In these croppings gold is to be seen in almost every part with the naked eye, even where the rock is sixty feet above the surface. The lowest assay ever obtained—which was from a piece of what seemed to be almost wholly quartzite—yielded at the rate of \$18.71 per ton. From this the assays run far up into the thousands. A piece of the rock in which not a particle of gold was visible, assayed in San Francisco, showed over \$3,700 per ton in gold. Wherever the lead crops out, gold is to be seen with the naked eye, and much that is quite coarse. Mr. Curtis estimates that there are in the croppings and that can be quarried out, no less than 600,000 tons of quartz. In other places along the lode at least the same quantity may be quarried. Mr. Curtis set some men at work on a drift which is to be run lengthwise into the lead, a distance of 160 feet, when a depth under the croppings of 160 feet will be attained. It is then the intention to make cross-cuts. This is being done for the reason that as yet nothing is known of the interior of the vein, it having only been prospected by breaking rock off the croppings. The principal locations on the lead are the Littlefield, the Hub and the Mojave Chief.

Besides the 4,500 feet of ground purchased by them, Curtis and party have bounded another claim of 3,000 feet. They have also secured large tracts of timber land and an abundance of water. Wood is abundant and can be had, delivered at the mine, for \$2.25 per cord. Lumber, likewise delivered; can be had at from \$13 to \$15 per thousand. Labor is also cheap, and with a proper 50-stamp mill ore can be reduced at a cost of \$2 per ton. About two miles from the mines of Curtis & Co., some Mexicans have been at work about two years with arrastras, and have taken out a large amount of money. They are on the same lead which is now creating so much stir.

The big lead was discovered by a Mr. Carter, who had been engaged in prospecting for his brother in the neighborhood at \$40 per month. He had met with but little luck, and one evening, while going home from work, resolved that he would quit. He stopped in a ravine and stood leaning against a huge boulder ruminating upon his hard luck. The sun was setting and as its rays fell upon the rock upon which he was leaning, he saw particles of gold glittering all over it. The next morning he went up to the top of the hill and found the huge rich croppings mentioned above. The reason that the lead was not sooner discovered, was owing to the fact that the whole foot of the hill being quartzite, no one thought of there being anything else at its summit. A man said to Mr. Curtis: "I have been in this region fifteen years, and have walked about this hill a thousand times; when I think of it I feel like taking a pistol and blowing my brains out." Even though there should be nothing but what is to be found on the surface, the lead is one of the biggest finds of the age.—*Virginia Enterprise*.

EUREKA AND PALISADE RAILROAD.—Dispatches from Palisade, dated the 30th ult., say: A gold spike was presented to-day to the Eureka and Palisade Railroad Company by Holland, of the Pioche Record. Notwithstanding the extreme cold weather which has prevailed in this section of the country for the past four weeks, work on the Eureka and Palisade Railroad has been pushed forward rapidly, and by the last of this week eleven miles of the ground bed will be ready for the ties and rails. Work on the bridge crossing the Humboldt at this place is progressing favorably. They have about half the piles driven, and it will be completed by the fifth or sixth of January. The offices of the company are in course of construction, and from present appearances it will be but a short time before the iron horse will replace the stage-coach and freight-teams between this point and Eureka. M. Salsbury, E. Woodruff and W. H. Ennor are here looking after the work, and there is no doubt of the early completion of the enterprise. About one hundred and fifty men are employed at the present time, and more will be added as soon as the weather is more favorable.

AROUND GRASS VALLEY, fuel for the quartz mines is getting scarcer and higher every year, and as the mines must not be "shut down," a railroad will have to be sent out after fuel.

Wulfenite or Molybdate of Lead.

The Salt Lake Tribune says: The superb specimens of this rare mineral, found in Box Elder county, have naturally excited much comment, as nothing so fine has ever been seen before as these specimens, even among the beautiful products of the Hungarian and Moldavian mines.

Prof. Silliman first called the attention of mineralogists to the fact that in the Wasatch ranges of mountains, this species replaced the phosphates of lead or pyromorphite commonly found as a characteristic mineral in lead mines. Prof. Silliman's paper on this subject was published in the *American Journal of Science*, ("Silliman's Journal") in March, 1872, and was generally reproduced in other scientific periodicals. The specimens of this species first found by him occurred in the Emma mine, in extremely minute crystals, which had escaped the notice of previous observers, but he found the same species also in ores from Swage and Davenport and other Little Cottonwood mines, and a diligent search failed to detect pyromorphite among the ores of this mining district. He also found the Wulfenite among the ores from Big Cottonwood and the American Fork, and was thus led to venture the generalization that it would prove to be the characteristic species of the Wasatch range. This prediction has been remarkably verified since by discoveries in Tecoma, and shows the value of an accurate and minute knowledge of mineralogy in the study of mining districts.

Prof. Silliman has had certainly a full share of abuse for his statements respecting the Emma mine, but we recall with distinctness his bold prediction in 1871, that the Emma was upon a great mineral vein, and his reasons then given for this opinion. Since that time Mr. Clarence King has rendered his remarkable testimony in the case of the Enreka vs. the Richmond Consolidated mine, in which he gives the most cogent and unanswerable reasons for regarding that mine, in limestone, as being a true fissure vein of the class known as pipe veins, and quotes the Emma as another example of the same kind of vein. Both are in his judgment filled from great depths and differ from fissure veins in crystalline granite rocks only from being limestone. Those who sneer at the Emma as being only a "deposit"—a "pocket"—"a cave," or anything else but a deep-seated vein which will hold in depth, will do well to read Mr. King's testimony, and remember that he has only rehearsed with more fullness of detail and amplitude of illustration, just what Prof. Silliman declared to be true of the Emma in October, 1871. We have full confidence in the future of this great mine, for a time under a cloud, but sure to shine out again to the confusion of enemies and the joy of all Utah, not to mention its shareholders—poor, timid, distrustful souls.

Shoshone District.

Some days ago we noticed John Whitebill, brother of the State Mineralogist, passing through on his way South. On Wednesday last the gentleman returned and reported having been in Shoshone district, situated about 130 miles from here, where he had been examining the mines of that section. Mr. W. has samples from the Indian mine which he exhibited to us. The general appearance of the ore is very encouraging, being sulphurets of silver contained in pure quartz, and will assay into the thousands. The ledge is represented as extending a distance of a mile and a half, showing rich cropping all the way. An incline has been sunk at one point to the depth of forty-five feet, all the way in ore. Shoshone district was discovered some years ago and many locations made there, but its great distance from communication has rendered its development slow, consequently leaving it, like many other valuable properties, almost unknown. Now by means of Travis & Co's stage line to Pioche, the distance to the mines has been very materially shortened, as, leaving the stage road at Patterson's, one hundred miles south from here, only twenty-five miles has to be accomplished to the locality, which can easily be done on horseback. We are informed that the late trip of Mr. Whitebill was made in the interest of some parties at Salt Lake who contemplate a purchase. We are glad to note a renewal of interest in this section of country, as, should active operations be commenced there, other and more important mining interests will be opened to capitalists in the immediate vicinity. Adjacent to Shoshone lie Pahranagat, Ten Piute and other districts which, years ago, attracted the attention of prospectors to a great degree. Undoubtedly a rich country lies south of us which only needs the necessary adjuncts of wealth and labor to open them to speculators. We are promised additional facts in this connection shortly which we shall take pains to lay before our readers when received.—*White Pine News*.

SILVER BRICK.—We were shown yesterday by W. T. Golden, Esq., a fine silver brick, the product of 3,300 lbs. of ore, taken from the Silver Clond mine, at Camp Floyd. It weighs 107 ounces, and is of the value of \$130.87. A vein of free milling ore has been struck in the mine, assays of which have gone as high as \$4,000, and the average yield is about \$50 per ton. Operations have been suspended during the stormy weather, as the company have no ore house erected. The mine is opened by a shaft 60 feet in depth, and a level 200 feet long.—*Salt Lake Tribune*.

Interesting to Quicksilver Miners.

An improvement in processes for purifying quicksilver has recently been patented by James B. Randol and Charles W. Wright, of New Almaden. The invention relates to an improved process for purifying quicksilver of the soot and other foreign matter which becomes intermingled with it in any other way. The blast or draft which draws off the mercurial fumes into and through the condensers from the furnace where the ore is sorted, also carries with it a mechanical mixture of fine dirt, particles of unconsumed carbon, some ash, some undecomposed cinabar and various other impurities, and minute particles of the metal. This combination of matter is deposited in the condensers in a condition resembling lamp-black or paste, it having become moistened by the steam introduced from the fuel and ore, and as a consequence it becomes intermingled with the quicksilver. The object of the invention is to separate this soot or mixture, or other foreign impurities, from the quicksilver. To do this the quicksilver intermixed with soot or other extraneous substances, is placed in an iron, or other suitable vessel or tank, to which water, heated to the requisite degree, is added, and the substances intimately mixed. Wood ashes, or other suitable alkali, are then added for the purpose of still further cleansing the quicksilver, which will flow forth in a bright stream from a pipe properly placed in the vessel. The claim granted by the letters patent is "The process of purifying mercury by treating it, under agitation, with heated water and alkaline matter, substantially as set forth." This process is used at New Almaden and has proved a great success, largely increasing the amount of quicksilver saved from the soot, and also reducing the cost for labor as compared with the old method of separation.—*San Jose Mercury*.

That Volcano.

A correspondent of the *Union*, writing from Pinto, December 20th, says: I notice in your paper of December 6th, the following: "A volcano has broken out in the Piute mountains, ten miles east of Eureka, Nevada. There is a heavy black smoke constantly issuing from the crater. Several gentlemen visited the place and brought back specimens of lava which had been thrown out."

As this telegram has doubtless been going the rounds of the press, creating the impression that a real volcano does exist in our mid-t, and being a resident, this winter, of Pinto district, I must state that no natural phenomenon as that alluded to above, has occurred in our peaceful community. The report of the breaking out of a volcano was not, I believe, a fabrication, but resulted from the following facts: A man by the name of Davis, passed through Silverado Cañon, stopped and kindled a fire near a fissure at the base of a cliff forming one wall of the cañon. This fissure connecting with the surface above, and being partially filled with inflammable debris (raven's nest, etc.), the fire communicated with the fissure by the draft created from the burning fuel below, and the smoke ascending upward produced the impression among some miners on the opposite side, of the appearance of a real volcano. This occurred a few days after several slight shocks of an earthquake; hence the report. Silverado Cañon presents many interesting features to the geologist. Its walls on one side tower nearly perpendicularly several hundred feet in height, and its strata (silicate of lime) are bent and distorted in every angle from the horizontal to the perpendicular. Its distorted and semi-metamorphic strata, containing numerous seams, cracks and fissures colored red and yellow by sublimed silicates and carbonates, attest to the violence of past volcanic disturbances. The specimens of lava returned from the reported volcano belong to another geological age. Since that time the wash and wear of the debris of centuries have filled portions of this cañon many feet in depth, and in other places expose indications of mineral deposits outcropping on terra firma.

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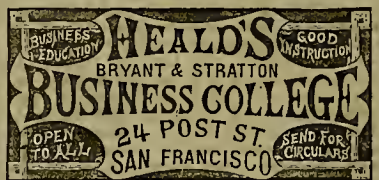
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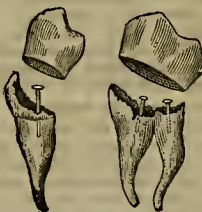
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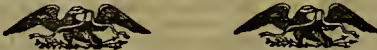
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Academy of Sciences.

The annual meeting of the California Academy of Sciences was held on Monday evening last, at their rooms on Clay street. A. P. Elfeld, Matthew Turner, and Levi M. Kellogg were elected resident members. After the donations to the museum had been presented, the President, Prof. Geo. Davidson, read his annual address, from which we make the following selections, showing the advance of science on this coast:

The past year has been a notable one in the history of the Academy. The appeals which our labors have made to the citizens of San Francisco have yielded the most gratifying fruits. We commence the New Year with fresher inspirations, and with stronger assurances of raising the Academy to the highest possible position for good. A deep interest has been manifested in our proceedings, as fully exhibited by the large attendance of members and their friends, and by the liberality of our associates.

Since the revivifying of the Academy in 1866, we have steadily moved forward, even where so many elements were in direct conflict with it. Although we are not in a position to-day to make absolute promises, we yet see broad daylight opening upon our struggles for scientific life. Almost within our reach has arisen what we have ardently and persistently worked for.

Prosperity of the Society.

Two years since our balance sheet showed about one hundred dollars in the Treasury, yet the unpaid bills indicated a large sum in arrears. Last year we had in hand a balance of \$1,568, less the amount required for the printing of the proceedings of the year. To-day we have \$3,000 invested, and about \$1,400 in the hand, subject to the bills for the reprinting of first volume of proceedings. And this, notwithstanding we have paid for the partial services of the Director of the museum; purchased cases for the museum and library; added books to the library; specimens to the cabinet; and incurred an unusual sum for printing and engraving. In fact, our expenditures have been nearly \$3,000. For the year the income from interest paid was \$195; from regular dues, \$2,100, whilst from life members was received the handsome sum of \$3,500.

During the year we have lost by death two of our resident members, E. Deunison and W. P. Pritchard, and two of our honorary members, John Torrey and Louis Agassiz, both so lately our guests. The services which the Academy conducted in memory of the latter are still fresh in your recollection. We can hardly expect to increase our membership in succeeding years in the same ratio, but we shall endeavor to awaken among our younger men an interest in our work and investigations. In the ordinary course of nature they must succeed to our places, and it is our duty to use every effort to induce them, as early as practicable, to share in the labors we have initiated.

The Publications.

The preparation of the material for the volume of the proceedings of the past year has fallen almost entirely upon Mr. Stearns, of the Publication Committee, and whilst he can best inform you of the quantity that has been published, the members cannot know the months of personal attention and supervision which he has unselfishly given to it, and only those conversant with the vexatious trials of the proof-reading of technical papers can appreciate the care and attention which every line and every word demands. In addition to the two parts of the proceedings of this year, the Trustees directed the republication of the first volume of the proceedings of the Academy, now out of print. This has been supervised by Mr. Stearns, and the plates engraved under his direction.

As an account-current of the activity and prosperity of the Academy, it is pertinent in this place to note what has been printed since its organization in April, 1853. At the close of 1857, four-and-a-half years after its birth, the first volume of its proceedings was completed, with 110 pages. The second volume, which was completed in 1862, embraced 236 pages, with index. At the close of 1867 was completed the third volume, in five parts, comprising 411 pages, without plates. During 1867 was also published Mr. Lesquereux's *Mosses of the Pacific Coast*, 38 pages, quarto; and *Richthofen's Natural System of the Volcanic Rocks*, 94 pages, quarto. At the close of 1872 was completed the fourth volume, in five parts, comprising 322 pages, with the plates. During the past year there have been published the first two parts of volume V, comprising 224 pages, with illustrations through the text, and 10 plates. Also the republication of the first volume, embracing 126 pages and five plates.

Efficiency of the Officers.

The labors of the Secretary have been faithfully performed, and involved a large amount of work, as he not only acts as Secretary to the Academy, but also to the Board of Trustees. The extent of the proceedings already noted, exhibit the increased amount of labor now falling upon that officer, who likewise notifies new members of their election.

The Corresponding Secretary has kept up the duties pertaining to his office, and proper and prompt acknowledgments have been made for donations to the Museum and Library.

The Treasurer merits our thanks and commendation as in previous years, because he

has so pertinaciously, but good-naturedly, followed us with his bills. If we are to live we must pay. By order of the Trustees I was directed to examine the bills of this officer, and his entries for the year; and at a special adjourned meeting on the 3d of January had the pleasure of reporting them correct.

In April the Director of the Museum was appointed by the Trustees to open the rooms of the Academy three days in each week, for the use of members and their friends; to label and arrange the specimens already in the Museum, some of which were in a sad state of neglect, and to classify all the current donations to the Cabinet and Library. For want of room much of the material is boxed up, and cases of the large specimens are on storage in the U. S. Coast Survey building.

The President then summed up the more important additions to the Museum during the year, showing the interest manifested in the collection by friends of the Academy, far and near, on the coast.

On this coast we are so favorably located for collecting the skeletons and specimens of the marine mammals of the northwest Pacific, that he is confident we shall require a unique collection in that department, not only for exhibition, but for study and description.

Lick's Munificent Gifts.

If we were quickened into new life a few years since, we have this year found the headwaters of perpetual youth. The impulse which Agassiz gave by his personal declarations in our behalf has been crystallized by the munificent donation of James Lick, late of Santa Clara, now of the whole world, and of all time! In February, 1873, unexpectedly to us, he unostentatiously presented the Academy with a deed for a lot fronting 80 feet on Market street, and running to a depth of 275 feet. In July, he presented another deed, adding 40 feet adjacent to the former. These deeds were conditional, but we accepted them without reservation, trusting that the conditions could all be fulfilled. Upon consultation with him, he assured me that his sole and only object was to assist the Academy, in the spirit of the deeds; that he had long contemplated such an act, and that our efforts had satisfied him we had vitality and meant to succeed; so that, if the conditions were judged onerous, or would invalidate his intentions, the terms should be changed. This he did, and on the 3d of October he presented me with a new deed to the first mentioned lot, accompanied with very liberal conditions. This deed was legally accepted by the Trustees, and the act unanimously sustained by the Academy. These facts have all been heretofore recounted and understood by you, and are now mentioned solely as matters in our history.

Another Bequest from James Lick.

That James Lick has faith in the objects and success of the Academy, he has proved by another act in connection with his greatest gift to the cause of the highest of the sciences. It is but a few meetings since he permitted me to announce his intention to appropriate large and ample means to erect and endow an astronomical observatory, with the largest telescope of the most exquisite equipment that the skill of American mechanism can produce. To-day he has authorized me to state that the California Academy of Sciences is to be the Trustee of that Observatory. When he undertakes this work he intends that the glass shall be cast and the lenses ground upon the site of the Observatory, not only that the work may be wholly Californian, but because it would be imprudent to incur the risk of transporting across the Continent an object glass so valuable and difficult of replacing. But this is not all: At my request he has permitted me to state, that by his will he has provided ample means for the building and fully equipping of the edifice contemplated and required in his deed of October, and for the purchase of material for the museum. Words of mine fail to convey the gratitude which science owes to such munificence; in his heart and head there is a wealth of love for human nature, and a keen appreciation of the influence of scientific knowledge in humanizing mankind. We can best pay homage to it by indefatigably carrying out the views which he has expressed in his deed—not in the narrowness of technicalities, but in the broadest liberality of expression.

Aspirations of the Academy.

I could here well close the record of our last year's progress and prospects, but as we are gathering strength, and begin to see our way clearly before us, it is incumbent upon us to reaffirm in a few words what are the higher aspirations and objects of this Academy of Sciences; and to define and mark out a broad policy which will be pursued so far as the means obtainable will permit, and the demands and discoveries of science suggest.

The primary aim of such an institution is the promotion of science. This must necessarily be accomplished by the pursuit and development of special study in the various branches of science, and therefore requiring original investigation by specialists in those branches. The discoveries effected by them supply the storehouse of practical and theoretical knowledge for our shops, manufactories, schools, colleges, institute of technology, and universities. To-day these are utilizing the condensed and correlated science of all previous speculators; a century hence their successors will be using all that will have been aggregated to their time.

With this ultimate object of special investigations continually in view, we propose to secure adequately endowed foundations for orig-

inal research in the different ramifications of science, to be carried on by men chosen for their ability and peculiar fitness for such work; that when such an organization is effected, or partially effected, these investigators shall, besides announcing their discoveries in the regular proceedings of the Academy, deliver lectures upon their special lines of research, and make known by experiment and illustrations what they have discovered, the mode of experiment, and the practical application thereof to art, manufacture, commerce, mining and agriculture.

Foundations to be Endowed.

These foundations shall be known by the name of the endower, so that we will have "The — foundation of original research in cosmical physics;" "The — foundation for original research in metallurgy," etc., etc. With such investigators should be associated as learners and assistants of proved capacity and aptness for such duty, the youth of our highest seats of learning and of the humblest shop and cabin. Small endowments should also be made to enable students of limited means to pursue their special studies. In time they fill the places of the older workers, and spread themselves over the earth as collectors in search of new materials in their favorite studies.

The field of research is illimitable, and the channels of investigation numerous enough to suit and gratify the peculiar mental power of all. The present material wealth of the country has developed from the practical application of scientific knowledge, although the relation may not be apparent to the casual or illogical observer. The future wealth and pre-eminence of the country will be under still greater obligations for such knowledge, which is daily unfolding. These fields and methods of research afford the largest inducements for the mental activity of our California youth, and for the leisure of the successful man of business, who has gained competency from steady pursuit of manufacture or trade.

The President then went on to state that a library of reference is absolutely necessary, which, as well as the museum, should be open at all times.

Pending these endowments, the Trustees propose to secure the services of men, eminent in science, to deliver popular science lectures; and the building we are soon to occupy is well adapted for this purpose.

I have the fullest faith in the consummation of our hopes of success in this broad scheme. We have seen millions granted by the wealthy in other countries, and in our own; we have watched the growth of this liberality; and we have tangible proof in the recent munificence of James Lick in our behalf, and of others toward the University of California. It is a subject that might be almost treated by the calculus of probabilities, and the time and amount of such endowment predicted, were not Californians so apt to exceed the most liberal acts and sanguine expectations of all others.

Reports of Officers.

From the report of Secretary Yale it appears that there has been a gratifying increase of membership during the past year. At the close of 1872 the Society numbered 325 members; during the past year 34 life, 98 resident and 12 corresponding members were elected, making the total membership as follows: honorary, 20; life, 59; resident, 251; corresponding, 110. Total, 470. Twenty-four regular meetings have been held during the year, and one special. The average attendance has been 35 members. The Treasurer's report shows a balance on hand of \$4,562.72. The reports of the Librarian and Director of the museum show an improvement in their departments.

Election of Officers.

President, Geo. Davidson (re-elected); Vice-President, John Hewston, Jr. (re-elected); Recording Secretary, Charles G. Yale (re-elected); Corresponding Secretary, R. E. C. Stearns; Treasurer, Elisha Brooke (re-elected); Director of the Museum, H. G. Bloomer (re-elected); Librarian, Dr. H. Behr. Trustees, General D. D. Colton, Col. George D. Gray, Capt. Oliver Eldridge, R. E. Stearns, Thomas P. Madden and Dr. A. B. Stout. Prof. Geo. Davidson, Chas. G. Yale and Elisha Brooke are ex-officio members of the Board of Trustees.

The Emma Mine.

We give on another page of this issue the Nation's condensation of "Paffard's Pamphlet" on the history of the famous Emma mine. It will be found interesting to our mining readers who, however, should swallow some of the statements with a grain of salt, as it is only one side of the story. The fallacy of the salting part of the programme is well treated by Mr. Henry Sewell in a letter to the Salt Lake Tribune, recently published in our column. A severe commentary on the whole business of running down the Emma and stamping it as an American swindle is the fact that only this week ore has been struck worth \$1,000 per ton. It was only last spring that the Emma owners were talking about disincorporating and abandoning the mine, but they have changed their minds.

The "salting" business on a large scale is not followed to any extent, as it is too difficult to perform, and seldom deceives the eyes of experienced men. Perhaps Mr. Paffard's motto of "magna est veritas et praevalabit" will apply to the Emma in a different sense from what he intended. If the new strike in Emma is found to be as valuable as supposed, she will be lauded to the skies and perhaps do more good to the mining interests of Utah than she has ever done harm.

THE MINING AND SCIENTIFIC PRESS has closed its twenty-seventh volume, and the fourteenth year of its existence. The PRESS is the most valuable incentive to enterprise, inasmuch as it sets forth weekly the hidden resources, advantages, mining, scientific, mechanical, etc., of the Pacific States and Territories, besides a large amount of valuable reading matter. As the paper is a specialty in its line it should be filed for reference by every subscriber.—*Tusculum Independent.*

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Mining and Other Companies.

Owing to the time necessary to mail the present large edition of the *M. & S. P.*, we are obliged to go to press. The following advertising—which is the very latest hour, we can receive advertisements.

Bunker Hill Quartz Mining Company.

Location of works, Amador County, California. Location of principal place of business, No. 19 First street, San Francisco, California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 12), levied on the Twelfth (12th) day of November, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Wales L. Palmer.....	138	5	\$50 00
Wales L. Palmer.....	128	20	200 00
Wales L. Palmer.....	140	100	1,000 00
Wales L. Palmer.....	107	100	1,000 00
Wales L. Palmer.....	114	20	200 00

And in accordance with law, and an order of the Board of Directors, made on the 15th day of November, 1873, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, No. 19 First street, San Francisco, Cal., on Monday, the Twelfth (12th) day of January, 1874, at the hour of 12 o'clock m. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expense of sale.

W. L. PALMER, Secretary.
Office, No. 19 First street, San Francisco, California.
de27

Commercial Coal Mining Company, of

San Francisco. Principal place of business, City and County of San Francisco, State of California. Location of works, Santa Cruz County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 15th day of December, 1873, an assessment of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at his office, No. 402 Montgomery street, room No. 23, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 25th day of January, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 23d day of February, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office, No. 402 Montgomery street, room No. 23, San Francisco, California.
de20

Cupel and Tiger Silver Mining Company.

Principal place of business, San Francisco, Cal. Location of works, Wallapai Mining District, Mohave County, Arizona Territory.

NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the 25th day of October, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J. P. Ridgeway.....	86	100	\$200 00
J. P. Ridgeway.....	87	1000	200 00
J. P. Ridgeway.....	88	1000	200 00
J. P. Ridgeway.....	89	1000	200 00
J. P. Ridgeway.....	90	1000	200 00
J. P. Ridgeway.....	91	100	20 00
J. P. Ridgeway.....	92	100	20 00
J. P. Ridgeway.....	94	100	20 00
J. P. Ridgeway.....	95	100	20 00
J. P. Ridgeway.....	94	100	20 00
J. P. Ridgeway.....	97	100	20 00
J. P. Ridgeway.....	98	100	20 00
J. P. Ridgeway.....	99	100	20 00
J. P. Ridgeway.....	100	100	20 00
William Miller.....	49	500	100 00
William Miller.....	50	500	100 00
William Miller.....	51	500	100 00
William Miller.....	52	500	100 00
William Miller.....	53	500	100 00
William Miller.....	55	500	100 00
William Miller.....	56	500	100 00
William Miller.....	57	500	100 00
William Miller.....	58	500	100 00
William Miller.....	59	500	100 00
William Miller.....	61	100	20 00
William Miller.....	145	50	10 00
William Miller.....	146	100	20 00
William Miller.....	147	100	20 00
William Miller.....	148	100	20 00
William Miller.....	149	100	20 00
W. H. Smith.....	24	25	5 00
W. H. Smith.....	25	25	5 00
W. H. Smith.....	28	20	4 00
W. H. Smith.....	29	20	4 00
W. H. Smith.....	30	20	4 00
W. H. Smith.....	31	20	4 00
W. H. Smith.....	32	20	4 00
W. H. Smith.....	140	1000	200 00
W. H. Smith.....	142	25	5 00
W. H. Smith.....	143	50	10 00
W. H. Smith.....	177	1200	240 00
Henry Raymond.....	13	200	40 00
W. H. Raymond.....	63	500	100 00
W. H. Raymond.....	66	500	100 00
W. H. Raymond.....	67	500	100 00
W. H. Raymond.....	68	375	75 00
T. E. Jewell, Trustee.....	33	500	100 00
T. E. Jewell, Trustee.....	34	500	100 00
T. E. Jewell, Trustee.....	35	500	100 00
T. E. Jewell, Trustee.....	36	500	100 00
T. E. Jewell, Trustee.....	37	150	30 00
E. Martin Smith, Trustee.....	38	1000	200 00
E. Martin Smith, Trustee.....	39	500	100 00
Augustus Laver.....	9	200	40 00
Augustus Laver.....	139	1000	200 00
Julius Renault.....	85	100	20 00
Julius Renault.....	138	100	20 00
Julius Renault.....	134	100	20 00
Julius Renault.....	179	100	20 00
Horatio McPherson.....	11	200	40 00
Eugene Chenot.....	46	50	10 00

Names.	No. Certificate.	No. Shares.	Amount.
Honore Lacoste.....	48	100	20 00
A Noel.....	74	25	5 00
L M Gantler.....	76	50	10 00
Joseph Verne.....	76	50	10 00
George Reiter.....	79	50	10 00
George Reiter.....	81	100	20 00
George Reiter.....	82	100	20 00
George Reiter.....	83	75	15 00
George W Drake.....	136	50	10 00
James H Martin.....	137	50	10 00
J C Warren.....	161	50	10 00
J C Warren.....	162	50	10 00
J C Warren.....	163	50	10 00
J C Warren.....	164	50	10 00
W O Sleeper.....	164	25	5 00
John M Murphy.....	165	100	20 00
M Krasynski.....	167	30	6 00
M Krasynski.....	168	30	6 00
M Krasynski.....	169	30	6 00

Names.	No. Certificate.	No. Shares.	Amount.
Charles Spencer.....	17	100	20 00
Charles Spencer.....	40	100	20 00
Charles Spencer.....	42	100	20 00
Charles Spencer.....	43	100	20 00
Charles Spencer.....	101	1000	200 00
Charles Spencer.....	102	1000	200 00
Charles Spencer.....	103	1000	200 00
Charles Spencer.....	104	1000	200 00
Charles Spencer.....	105	1000	200 00
Charles Spencer.....	106	100	20 00
Charles Spencer.....	107	100	20 00
Charles Spencer.....	108	100	20 00
Charles Spencer.....	109	100	20 00
Charles Spencer.....	110	100	20 00
Charles Spencer.....	111	100	20 00
Charles Spencer.....	112	100	20 00
Charles Spencer.....	113	100	20 00
Charles Spencer.....	116	1000	200 00
Charles Spencer.....	117	1000	200 00
Charles Spencer.....	118	1000	200 00
Charles Spencer.....	119	1000	200 00
Charles Spencer.....	120	1000	200 00
Charles Spencer.....	121	200	40 00
Charles Spencer.....	122	100	20 00
Charles Spencer.....	123	100	20 00
Charles Spencer.....	124	100	20 00
Charles Spencer.....	125	100	20 00
Charles Spencer.....	126	100	20 00
Charles Spencer.....	127	100	20 00
Charles Spencer.....	128	100	20 00
Charles Spencer.....	129	100	20 00
Charles Spencer.....	130	100	20 00

And in accordance with law, and an order of the Board of Directors, made on the twenty-fifth day of October, A. D., 1873, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, room No. 12 Express Building, San Francisco, California, on Saturday, the twelfth day of December, A. D., 1873, at the hour of 12 o'clock m., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

C. J. EATON, Secretary.

Office, room No. 12 Express Building, San Francisco, California.

POSTPONEMENT.—The above sale is hereby postponed until Saturday, January 17th, 1874, at the same hour and place. By order of the Board of Trustees.

C. J. EATON, Secretary.

Great Blue Gravel Range Company—

Location of principal place of business, San Francisco, State of California. Location of works, Placer County, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment (No. 4) levied on the 20th day of November, 1873, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Alexander, W. T.....	397	100	\$10 00
Alexander, W. T.....	398	100	10 00
Babcock, J. T.....	147	25	2 50
Babcock, J. T.....	388	100	10 00
Babcock, J. T.....	446	100	10 00
Bowers, D. L.....	283	50	5 00
Bowers, D. L.....	284	50	5 00
Bowers, D. L.....	285	50	5 00
Bowers, D. L.....	286	50	5 00
Bowers, D. L.....	287	50	5 00
Bowers, D. L.....	288	50	5 00
Bowers, D. L.....	289	50	5 00
Bowers, D. L.....	290	50	5 00
Bowers, D. L.....	291	50	5 00
Bowers, D. L.....	292	50	5 00
Bowers, D. L.....	293	50	5 00
Bowers, D. L.....	294	50	5 00
Bowers, D. L.....	295	50	5 00
Bowers, D. L.....	296	50	5 00
Bowers, D. L.....	297	50	5 00
Bowers, D. L.....	298	50	5 00
Bowers, D. L.....	299	50	5 00
Bowers, D. L.....	300	50	5 00
Bowers, D. L.....	301	50	5 00
Bowers, D. L.....	302	50	5 00
Hunt, C. A.....	233	100	10 00
Hunt, C. A.....	234	100	10 00
Hunt, C. A.....	235	100	10 00
Hunt, C. A.....	236	100	10 00
Hunt, C. A.....	237	100	10 00
Hunt, C. A.....	238	100	10 00
Hunt, C. A.....	239	100	10 00
Hunt, C. A.....	240	100	10 00
Larue, James.....	33	500	50 00
Larue, James.....	229	1000	100 00
Larue, James.....	448	700	70 00
Murphy, M. A.....	163	20	2 00
Murphy, M. A.....	223	100	10 00
Murphy, M. A.....	168	85	8 50
Powell, Peyton.....	2	1	1 00
Powell, Peyton.....	4	10	1 00
Powell, Peyton.....	5	10	1 00
Powell, Peyton.....	6	10	1 00
Powell, Peyton.....	7	10	1 00
Powell, Peyton.....	8	10	1 00
Powell, Peyton.....	9	10	1 00
Powell, Peyton.....	10	10	1 00
Powell, Peyton.....	11	10	1 00
Powell, Peyton.....	12	20	2 00
Powell, Peyton.....	13	20	2 00
Powell, Peyton.....	14	20	2 00
Powell, Peyton.....	15	20	2 00
Powell, Peyton.....	16	20	2 00
Powell, Peyton.....	17	20	2 00
Powell, Peyton.....	18	20	2 00
Powell, Peyton.....	19	20	2 00
Powell, Peyton.....	20	20	2 00
Powell, Peyton.....	21	20	2 00
Powell, Peyton.....	22	50	5 00
Powell, Peyton.....	23	50	5 00
Powell, Peyton.....	24	50	5 00
Powell, Peyton.....	25	50	5 00
Powell, Peyton.....	26	50	5 00
Powell, Peyton.....	27	50	5 00
Powell, Peyton.....	28	50	5 00
Powell, Peyton.....	29	50	5 00
Powell, Peyton.....	30	50	5 00
Powell, Peyton.....	31	50	5 00
Powell, Peyton.....	32	100	10 00
Powell, Peyton.....	33	100	10 00
Powell, Peyton.....	34	100	10 00
Powell, Peyton.....	35	100	10 00
Powell, Peyton.....	36	100	10 00
Powell, Peyton.....	37	100	10 00
Powell, Peyton.....	38	100	10 00
Powell, Peyton.....	39	700	70 00
Peck, E. S.....	43	200	20 00
Peck, E. S.....	47	500	50 00
Watson, Geo P J, Trustee.....	386	50	5 00
Watson, Geo P J, Trustee.....	386	200	20 00
Watson, Geo P J, Trustee.....	386	3300	330 00
Wheeler, S. S.....	362	50	5 00
Wheeler, S. S.....	365	50	5 00
Williams, A.....	400	100	10 00

And in accordance with law, and an order of the Board of Directors, made on the 29th day of September, 1873, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the Secretary, No. 331 Montgomery street, room 15, San Francisco, Cal., on the 15th day of December, 1873, at the hour of 2 o'clock p. m., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

Office—331 Montgomery street, San Francisco, California.

WM. H. KNIGHT, Secretary.

POSTPONEMENT.—The above sale is hereby postponed until the 14th day of January, 1874, at the same hour and place. By order of the Board of Trustees.

WM. H. KNIGHT, Secretary.

Iida and Rhoda Lewis Consolidated Mining Company.

Principal place of business, San Francisco, California. Location of works, Wallapai Mining District, Mohave county, Arizona Territory.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the twenty-seventh day of October, A. D., 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Engeno Pardini.....	292	20	\$2 00
E D Dement.....	303	25	2 50
E D Dement.....	304	25	2 50
E D Dement.....	305	25	2 50
E D Dement.....	306	25	2 50
E D Dement.....	307	25	2 50
E D Dement.....	308	25	2 50
E D Dement.....	309	25	2 50
E D Dement.....	310	25	2 50
E D Dement.....	311	25	2 50
E D Dement.....	312	25	2 50
E D Dement.....	313	25	2 50
E D Dement.....	314	25	2 50
E D Dement.....	315	25	2 50
E D Dement.....	316	25	2 50
E D Dement.....	317	25	2 50
E D Dement.....	318	25	2 50
E D Dement.....	319	25	2 50
E D Dement.....	320	25	2 50
E D Dement.....	321	25	2 50
E D Dement.....	322	25	2 50
E D Dement.....	323	25	2 50
E D Dement.....	324	25	2 50
E D Dement.....	325	25	2 50
E D Dement.....	326	25	2 50
E D Dement.....	327	25	2 50
E D Dement.....	328	25	2 50
E D Dement.....	329	25	2 50
E D Dement.....	330	25	2 50
E D Dement.....	331	25	2 50
E D Dement.....	332	25	2 50
E D Dement.....	333	25	2 50
E D Dement.....	334	25	2 50
E D Dement.....	335	25	2 50
E D Dement.....	336	25	2 50
E D Dement.....	337	25	2 50
E D Dement.....	338	25	2 50
E D Dement.....	339	25	2 50
E D Dement.....	340	25	2 50
E D Dement.....	341	25	2 50
E D Dement.....	342	25	2 50
E D Dement.....	343	25	2 50
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E D Dement.....	362	25	2 50
E D Dement.....	363	25	2 50
E D Dement.....	364	25	2 50
E D Dement.....	365	25	2 50
E D Dement.....	366	25	2 50
E D Dement.....	367	25	2 50
E D Dement.....	368	25	2 50
E D Dement.....	369	25	2 50
E D Dement.....	370	25	2 50
E D Dement.....	371	25	2 50
E D Dement.....	372	25	2 50
E D Dement.....	373	25	2 50
E D Dement.....	374	25	2 50
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E D Dement.....	382	25	2 50
E D Dement.....	383	25	2 50
E D Dement.....	384	25	2 50
E D Dement.....	385	25	2 50
E D Dement.....	386	25	2 50
E D Dement.....	387	25	2 50
E D Dement.....	388	25	2 50
E D Dement.....	389	25	2 50
E D Dement.....	390	25	2 50
E D Dement.....	391	25	2 50
E D Dement.....	392	25	2 50
E D Dement.....	393	25	2 50
E D Dement.....	394	25	2 50
E D Dement.....	395	25	2 50
E D Dement.....	396	25	2 50
E D Dement.....	397	25	2 50
E D Dement.....	398	25	2 50
E D Dement.....	399	25	2 50
E D Dement.....	400	25	2 50

And in accordance with law, and an order of the Board of Directors, made on the 29th day of September, 1873, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the Secretary, No. 331 Montgomery street, room 15, San Francisco, Cal., on the 15th day of December, 1873, at the hour of 2 o'clock p. m., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

of Directors, made on the 20th day of November, 1873, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the company, rooms 5 and 6, No. 303 Montgomery street, San Francisco, California, on Monday, the 15th day of January, 1874, at the hour of two o'clock p. m., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

W. H. WATSON, Secretary.

Office—Rooms 5 and 6, No. 303 Montgomery street, San Francisco, California.

Hayden Hill Mining Company—Location

of principal place of business, San Francisco, Cal.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 29th day of September, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Geo M Pinney, Trustee.....	12	500	75 00
Geo M Pinney, Trustee.....	13	500	75 00
Geo M Pinney, Trustee.....	15	500	75 00
Geo M Pinney, Trustee.....	17	500	75 00
Geo M Pinney, Trustee.....	18	500	75 00
Geo M Pinney, Trustee.....	3	100	15 00
Geo M Pinney, Trustee.....	4	100	15 00
Geo M Pinney, Trustee.....	122	4	6 00
S A Raymond.....	1	100	15 00
H S Brown, Trustee.....	100	20	3 00
W H Gawley.....	12	500	75 00
W H Gawley.....	13	500	75 00
A W Blair, Trustee.....	38	50	7 50
A W Blair, Trustee.....	44	50	7 50
A W Blair, Trustee.....	45	100	15 00
A W Blair, Trustee.....	47	100	15 00
A W Blair, Trustee.....	48	100	15 00
A W Blair, Trustee.....	49	100	15 00
A W Blair, Trustee.....	51	500	75 00
A W Blair, Trustee.....	52	500	75 00
A W Blair, Trustee.....	54	500	75 00
A W Blair, Trustee.....	55	500	75 00
A W Blair, Trustee.....	56	500	75 00
A W Blair, Trustee.....	57	100	15 00
A W Blair, Trustee.....	58	100	15 00
A W Blair, Trustee.....	59	100	15 00
S A Raymond, Trustee.....	77	250	37 50
S A Raymond, Trustee.....	78	250	37 50
S A Raymond, Trustee.....	79	250	37 50
S A Raymond, Trustee.....	80	250	37 50

Machine Builders.

ESTABLISHED 1851.

PACIFIC IRON WORKS,

First and Fremont streets,
SAN FRANCISCO.

IRA P. RANKIN, A. P. BRAYTON,
GEO. W. FOGG, Superintendent.

Steam Engines and Boilers,

MARINE AND STATIONARY,

IRON AND BRASS CASTINGS

Mining Machinery of Every Description,

And all other classes of work generally done at first-class establishments, manufactured by us at the lowest prices, and of the best quality.

Particular attention paid to Jobbing Work and Repairs.
Sole Agents for sale of HUNTOON'S CELEBRATED PATENT GOVERNOR.
GODDARD & CO.
18720-3m

FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

TEAM ENGINES,

Quartz, Flour and Saw Mills,

also Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above How-
street, San Francisco. 3-4y

THE RISDON

Iron and Locomotive Works.

INCORPORATED.....APRIL 30, 1863.
CAPITAL.....\$1,000,000.

LOCATION OF WORKS:
Corner of Beale and Howard Streets,
SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of Light and Heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors: Joseph Moore, O. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
24v17-07

UNION IRON WORKS,

Sacramento.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS,

CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for new and old cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,
SACRAMENTO CITY.

PACIFIC

Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of
RAILROAD AND OTHER IRON
—AND—
Every Variety of Shafting,

Embracing ALL SIZES of
Steamboat Shafts, Cranks, Piston and Con-
necting Rods, Car and Locomotive Axles
and Frames

HAMMERED IRON

Of every description and size.

Orders addressed to PACIFIC ROLLING MILL
COMPANY, P. O. box 2021, San Francisco, Cal., will re-
ceive prompt attention.

The highest price paid for Scrap Iron.

Miners' Foundry and Machine Works,

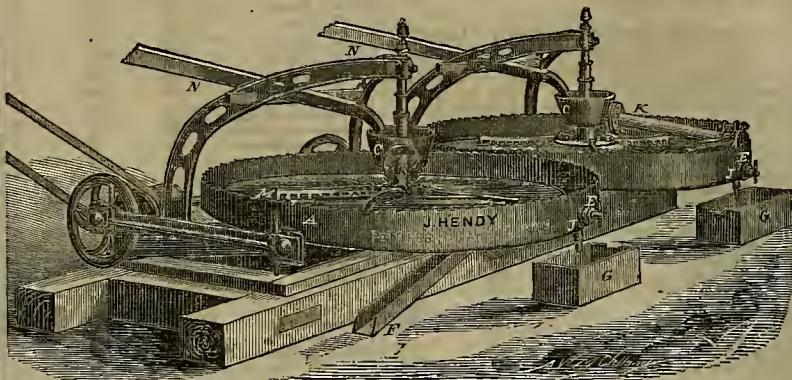
OO-OPERATIVE,

First Street, bet. Howard and Folsom, SAN FRANCISCO

Machinery and Castings of all kinds.

HENDY'S

LATEST IMPROVED PATENT SELF-DISCHARGING SULPHURETS CONCENTRATOR.



Can be seen at the Manufactory, 32 Fremont Street, San Francisco.

SAN FRANCISCO, April 27, 1872.
JOSHUA HENDY, Esq.—Dear Sir:—As a practical miner and millman, I take pleasure in recommending the use of your Concentrators in all mills where gold or silver ore are reduced. No mills should be without them for the following reasons:

1st. They are good sizers (no perfect concentration in pulverized ore can be effected without first sizing).
2d. The best Concentrator I have ever known—(the concentrated stuff only containing 5 per cent. of sand).
3d. They are good amalgamators, light (feathery) particles of amalgam and particles of coated gold, by attrition are brightened, and from their specific gravity and the action of the pan, fall to the bottom and adhere.
4th. They require but little power and attention to run them, and with ordinary care will last for years.
I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oaka and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,
Yours respectfully,
JAS. H. CROSSMAN, M. E.

409 California street, or Cosmopolitan Hotel.

BLANKETS VS. CONCENTRATORS.—The Keystone Consolidated Mining Co., located at Amador, Amador county, Cal., have recently taken out the blankets in front of the battery and substituted twenty of Hendy's Concentrators. Sixteen of the Concentrators take the tailings direct from the batteries and the remaining four re-concentrate the pulp from the sixteen. The latest report from the mine is that they do away with the labor of six or seven men who were formerly employed with the buddles and blankets, and in addition the concentrators save about half a ton of sulphurets daily.—(Mining and Scientific Press, Sept. 6th, 1873.)

References:

Reference is made to the following mills, some of which have had HENDY'S CONCENTRATORS in use for over four years:

EMPIRE MILL. (8 Concentrators).....	Grass Valley, Nevada County.
NORTH STAR M. & M. CO. (3 Concentrators).....	Grass Valley, Nevada County.
VULTURE CO. (3 Concentrators).....	Prescott, Arizona.
NOY'S & CO'S MILL. (3 Concentrators).....	Prescott, Arizona.
LUCY MINING CO. (3 Concentrators).....	Owyhee District, Idaho.
EL TASTE CO. (3 Concentrators).....	Sonora, Mexico.
ST. LAWRENCE MILL.....	Georgetown, El Dorado Co.
ST. PATRICK MILL.....	Newcastle, Placer Co.
JULIAN MILL.....	Newcastle, Placer Co.
VICTOR MILL.....	Oregon.
KEYSTONE MILL. (22 Concentrators).....	Amador Co.

CAUTION—All of HENDY'S PATENT CONCENTRATORS are marked thus: "J. HENDY, Patented April 17th, 1866, and May 19th, 1868."

For full description send for Circular. Orders or letters of enquiry, address,

JOSHUA HENDY, San Francisco.

Office and Works, 32 Fremont street.

22v27-1am-1f

CAST STEEL SHOE AND DIE COMPANY,

OFFICE—Room 28, Hayward's Building, 419 California St.,

SAN FRANCISCO.

CAST STEEL SHOE.

**PATENTED CAST STEEL SHOES
AND DIES for Quartz Mills.**

An improvement greatly needed—being Stronger, more Durable and Economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as bar steel.

—ALSO—
Cast-Steel Tappets, Cams, Hammers, Gearing and Castings
OF ALL KINDS, A SPECIALTY.

CAST STEEL DIE.

CAMERON'S

MINING STEAM PUMPS.

DAVID STODDART,

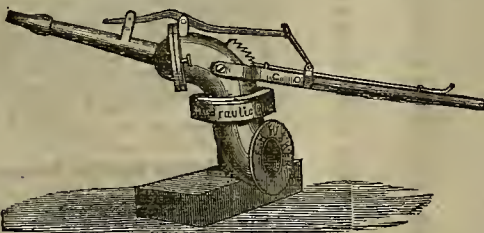
114 Beale Street,

SAN FRANCISCO.

HYDRAULIC CHIEF.

FISHER'S
KNUCKLE
JOINT
AND
NOZZLE

IS THE
Cheapest and Best
Hydraulic Machine
in use.



The only reliable party in the Hydraulic business who protects his patrons.
9v23-1f Address F. H. FISHER, Nevada, Cal.

HYDRAULIC MINERS, TAKE NOTICE—I hereby caution Miners and Manufacturers against making, buying, selling or using a Hydraulic Machine or Joint known as the Little Giant, manufactured and sold by R. R. & J. Craig and Richard Hoskin, as the same is an infringement upon the invention of the machine known as FISHER'S HYDRAULIC CHIEF, secured by Letters Patent, No. 110,222, dated Dec. 20, 1870. All parties participating in such infringements will be rigorously prosecuted. Nevada, Jan. 13th, P. H. FISHER.

MACHINES
Manufactured
TO ORDER,
to throw from
One
to an
eight-inch
STREAM.

SACRAMENTO FOUNDRY,

N. E. corner N and Front streets.....SACRAMENTO,

Steam Engines—all Kinds of Mining Machinery.

SHIP, AGRICULTURAL, STOVE, RANGE AND HOUSE CASTINGS.

Iron Railings and Ornamental Work of every description

At the Lowest Rates.

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STEIGER & BOLAND,

IRON FOUNDERS.

IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Rolling Pan and Callahan Grate Bars, suitable for Burning Screenings.

NOTICE.—Particular attention paid to making Superior Shoes and Dies. 20v26-3m

CALIFORNIA BRASS FOUNDRY,

No. 125 First street, opposite Minna,
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ALL KINDS of Brass, Composition, Zinc, and Babbitt Meta Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Belts and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch. PRICES MODERATE. J. H. WRELL, V. KINGWELL.

THOMPSON BROTHERS,

EUREKA FOUNDRY,

129 and 131 Beale street, between Mission and Howard,
SAN FRANCISCO.

LIGHT AND HEAVY CASTINGS,

of every description, manufactured. 24v16qr

Machinery.

TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the said styled

**"Only Reliable Party in the Business
Who Protects His Customers."**

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

All persons infringing on either of these patents

WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under Craig's, Rice's, Macey's and Hoskin's patents.

I Guarantee Full Indemnity to all my Customers.

Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an Improved LITTLE GIANT.

For further particulars apply to

R. HOSKIN, Dutch Flat,
R. R. & J. CRAIG, 304 Montgomery st., S. F.
Or WILLIAMSON & CORY, Marysville.
Dutch Flat, August 1, 1873. 6v27-2m

CROCKER'S PATENT TRIP HAMMER QUARTZ BATTERY.



This machine, complete, weighs 1,500 lbs. Has an iron frame, five steel arms with stamps weighing 17 lbs. each, which strike 2.0 blows per minute, in a mortar provided with screens on both sides, and crushes 100 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$400.

G. D. CROCKER,
17v26-1f 315 California street, San Francisco.

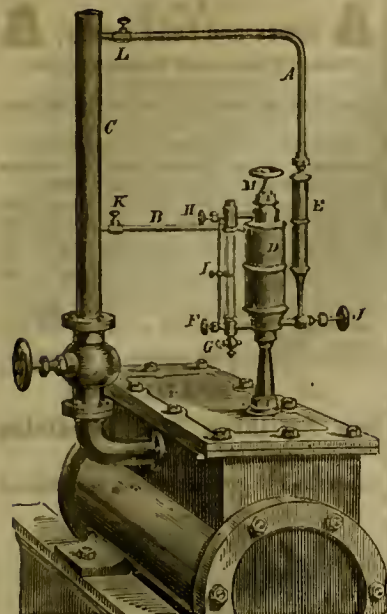
STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

10v27-1f J. HENDY, No. 32 Fremont Street.

Brittan, Holbrook & Co., Importers of
Stoves and Metals, Tinners' Goods, Tools and Machines;
111 and 111 California St., 17 and 19 Davis St., San Francisco, and 178 J St., Sacramento. mr.-ly

BUY BARBER'S BIT BRACE.

N. Seibert's Eureka Lubricators.**THE HIGHEST PREMIUM**

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stops; H, F, valves to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Manufactured by California Brass Works, 125 First street, S. F. 24v25tf

THEODORE KALLENBERG,
MACHINIST,

and Maker of Models for Inventors. All kinds of Dies Stamps and Punches made. Also, all kinds of Small Gears Cut.
Repairing done on very Reasonable Terms and in the best manner. No. 32 Fremont street, S. F. 19v23-3m

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JOS. THORNHILL,
Bricklayer and Contractor
Particular attention paid to all kinds of FIRE WORK such as BOILERS, FURNACES, OVENS, GRATES, RANGES, etc.

Metallurgy and Ores.

JOHN TAYLOR & CO.,
IMPORTERS OF AND DEALERS IN
ASSAYERS' MATERIALS
Chemical Apparatus and Chemicals,
Druggists' Glassware and Sundries,
PHOTOGRAPHIC GOODS, ETC.,
512 and 514 Washington street, SAN FRANCISCO

We would call the special attention of Assayers Chemists, Mining Companies, Milling Companies, Prospectors, etc., to our large and well adapted stock of
ASSAYERS' MATERIALS

Chemical Apparatus,
Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast. Our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for computation of assays in Grams Grammes, will be sent free upon application.
7v25-tf JOHN TAYLOR & CO.

Important to Miners and Mill Men.
Silver-Plated Copper Amalgamating Plates, for Saving Gold.

Of all sizes and in any quantity, furnished to order. Full instructions sent for operating. Particular attention given to plating goods for Builders, Plumbers, etc. Hotel and Restaurant work replated.

SAN FRANCISCO GOLD AND SILVER PLATING WORKS,
655 Mission street, San Francisco.
2v25-3m E. G. DENNISTON, Proprietor.

Richardson & Co., Copper Ore Wharves, SWANSEA.

RICHARDSON & Co. have been for thirty years established in Swansea as Agents for the preparation of Sampling, Assaying, and sale of Copper, Silver, Gold, Lead, Zinc, and all other Ores and Metals, for which they have extensive Warehouses and Wharves under cover, 1,000 feet of Quay Frontage within the Floating Dock, and the most complete Machinery and Appliances. They are also prepared to make advances against Ores in anticipation of realization, and to guarantee all payments when required.
2v25-17

ANDREW CRAIG, A. C. PUTNAM, JAS. W. WHITLATCH, JNO. L. MURPHY,
The California Ore Crushing and Sampling Company,
Nos. 413 and 415 Mission st., San Francisco.



Our works are the largest, and afford the best facilities for CRUSHING and SAMPLING ORES on the Coast. Work done at the Shortest Notice. Prompt attention to all orders. 22v27-3m

Varney's Patent Amalgamator.

These Machines Stand Unrivaled.

For rapidly pulverizing and amalgamating ores, they have no equal. No effort has been, or will be spared to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits. They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows.

The pan being filled, the motion of the muller forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular flow between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.

Settlers made on the same principle excel all others. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed.

Mill-men are invited to examine these pans and settlers for themselves, at the office, 229 Fremont Street, San Francisco.

Nevada Metallurgical Works,

21 First street.....San Francisco.

Ores worked by any process.
Ores sampled.
Assaying in all its branches.
Analysis of Ores, Minerals, Waters, etc.
Plans furnished for the most suitable process for working Ores.
Special attention paid to the Mining and Metallurgy of Quicksilver.

E. N. RIOTTE,
C. A. LUCKHARDT,
Mining Engineers and Metallurgists.

RODGERS, MEYER & CO.,
COMMISSION MERCHANTS,

ADVANCES MADE

On all kinds of Ores, and particular attention PAID TO
CONSIGNMENTS OF GOLD.
4v16-3m

G. W. STRONG. W. L. STRONG.
STRONG & CO.,
Metallurgical Works,

No. 10 Stevenson Street, near First, San Francisco. We purchase high grade Gold and Silver Ores, Bullion, Etc. Ores worked and tested made with care; also, Ore Assays of Gold, Silver, Copper, Lead, Tin, Iron, Manganese, Oinnabar, Nickel, Etc.

LEOPOLD KUH,
(Formerly of the U. S. Branch Mint, S. F.)
Assayer and Metallurgical Chemist,
No. 611 Commercial Street,
(Opposite the U. S. Branch Mint,
SAN FRANCISCO CAL. 7v21-8m

CHARLES F. KIRCHNER,
Sampler and Crusher of Ores,
NO. 11 DRUMM STREET,
San Francisco.

ORE BAGS FOR SALE

IN QUANTITIES TO SUIT,
Apply to
CROSS & CO.,
316 California street, San Francisco.
COPPER ORES.

The undersigned, agent of Messrs. POPE, COLE & Co., proprietors of the Baltimore Copper Works, purchases for cash all grades of Copper Ores above 16 per cent, paying the full value of same in Baltimore less Freight, Insurance, Interest and Commission.
HORACE D. RANLETT,
16v27 218 California st., San Francisco.
P. O. Box 2046.

PLATINUM

Vessels, Apparatus, Sheet, Wire, Etc., Etc
For all Laboratory and Manufacturing Purposes
H. M. RAYNOR,
25 Bond street, New York.
Platinum Scrap and Native Platinum purchased.

The California Powder Works

No. 314 CALIFORNIA STREET,
SAN FRANCISCO.

Manufacturers and have constant on hand

SPORTING,
MINING,
And BLASTING
POWDER,

OF SUPERIOR QUALITY, FRESH FROM THE MILLS. It being constantly received and transported into the interior, is delivered to the consumer within a few days of the time of its manufacture, and is in every way superior to any other Powder in Market. We have been awarded successfully

Three Gold Medals

By the MECHANICS' INSTITUTE and the STATE AGRICULTURAL SOCIETY for the superiority of our products over all others. We also call attention to our

HERCULES POWDER.

Which combines all the force of other strong explosive now in use, and the lifting force of the BEST BLASTING POWDER, thus making it vastly superior to any other compound now in use.

A circular containing a full description of this Powder can be obtained on application to our Office.
16v20-3m JOHN F. LOHSE, Secretary.

BLACK DIAMOND FILE WORKS.

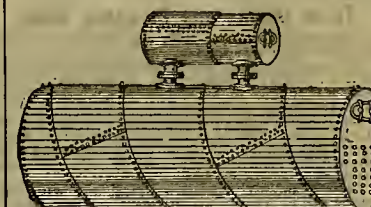
G. & H. BARNETT,

Manufacturers of Files of every Description,
Nos. 39, 41 and 43 Richmond street,
Philadelphia, Pa.

Sold by all the principal hardware stores on the Pacific Coast. 18v25-1y

San Francisco Boiler Works,

123 and 125 Beale Street.....SAN FRANCISCO
E. I. CURRY,
(Late Foreman of the Vulcan Iron Works,) Proprietor.



High and Low Pressure Boilers of all Descriptions.

SOLE MANUFACTURERS OF THE CELEBRATED
SPIRAL BOILER.

SHEET IRON WORK of every description done at the Shortest Notice.
All kinds of JOBBING and REPAIRING promptly attended to. 17v25-3m

Steam Boiler Manufactory

—OF—
JAMES H. SHANLEY, Successor to D. McDonald,
Oregon street, below Front, San Francisco.

All Sorts of Steam Boilers Made to Order and Repaired.
Also, all kinds of Sheet Iron Work done promptly, and at prices to suit the times. 1v27

McAFEE, SPIERS & CO.,

BOILER MAKERS

AND GENERAL MACHINISTS,

Howard st., between Fremont and Beale, San Francisco.

Gravel Claims and Hydraulic Mining.

Special attention given to the development of this important interest in California.

SURVEYS AND REPORTS MADE—COMPANIES ORGANIZED.

Mills, Mines, Mining Machinery, Wood and Timber Lands.

REAL ESTATE BUSINESS OPPORTUNITIES.

Best of References.

W. B. SKELLENGER,
No. 422 Montgomery street, San Francisco.
13v27-3m

Diamond Drill Co.

The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

A. J. SEVERANCE & CO.
Office, No. 315 California street, Rooms 16 and 17.
21v26-tf

Friel's Patent Paragon Vapor Stove.

PATENT GRANTED MAY 20, 1873.

The Great Labor Saver of the Household.
ECONOMY, CONVENIENCE AND SAFETY COMBINED.



All Recommend It.

Prices from \$5 to \$25, according to size. Manufactured and sold by **WM. FRIEL,** 69 and 71 Fourth street, San Francisco.

N. B.—Agents wanted in every town in the State. On payment of \$5, one Stove will be sent as sample. 22v25-2ami

THE DR. BLY ARTIFICIAL LIMBS.

163 Tehama Street,

COR. OF THIRD, BETWEEN HOWARD & FOLSOM.

The best Artificial Limbs made. Send for descriptive circular. References to parties wearing these Limbs given when applied for.

THE "ANATOMICAL LEG," WITH A UNIVERSAL ankle motion; the above cut is its illustration. This artificial leg approaches so much nearer an imitation of the functions of nature than any other, that it stands without a rival among all the inventions in artificial legs, old or new. (The very latest announced new inventions duly considered.)

Address: **MENZO SPRING,**
166 Tehama St., San Francisco, Cal.
26v27-1am-hp-3m

NOTICE.

To Plumbers, Tinnere, Metal Roofers, Type Founders, Iron Founders, Etc.

F. C. BELDEN & CO., METALLURGISTS, are now manufacturing at their works, No. 215 First street, SAN FRANCISCO, a superior quality of

Solder Babbit Metal and Type Metal,

Which they can supply, in quantities to suit, at a MUCH LOWER PRICE than any wholesale house in this city.

F. C. BELDEN & CO.
18v6-3m-18p 215 First street, San Francisco.

SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON and ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material. Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

All kinds of Machinery made and repaired.
24v22-3m **JOSEPH MOORE,** Superintendent.

The Phelps' Manufacturing Co.,

(Late S. F. Screw Bolt Works.)

MANUFACTURERS OF ALL KINDS OF
Machins Bolts, Bridges Bolts, and Ship or Band Bolts.
13, 15 and 17 Drumm Street, San Francisco. 4v241y

COAL MINE.

We have a partially developed coal mine within a half mile of the C. P. R. R., in the State of Nevada, for sale, or would dispose of an interest to a party who would assist in the further development of the mine. Specimens can be seen at the office of the "Scientific Press." Address,
HUMBOLDT COAL CO.
Care of A. J. HATCH,
Reno, Nevada.

BLISS & WILLIAMS,

167 to 173 Plymouth street, Brooklyn, N. Y.,
Manufacturers of Presses, Dies and Tools

FOR MAKING
SALMON, FRUIT AND OTHER CANS,
And working Sheet Metals in all forms. Catalogues furnished upon application. 20v27-3m

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and Progressive Industry.

BY DEWEY & CO.,
Patent Solicitors.

SAN FRANCISCO, SATURDAY, JANUARY 17, 1874.

VOLUME XXVIII
Number 3.

Abbe's Bolt Forging Machine.

It has long been a conceded fact, that, in forging bolts, the four or six sides of the head should be acted upon by the forging dies without moving the bolt blank from the position in which it is first held, and that the forging dies should be wider than the bolt head, so as to leave no fins on the corners of the head. The object of the inventor of the herewith illustrated machine has been to produce a tool which should combine these advantages with all the requirements of every class of bolt forging. Four dies are used, and the bolt is held firmly and securely in one position until finished, always, it is claimed, producing a bolt under the head, just the size of the rod, with the sides of the head in parallel lines with the body. All classes of bolts and shapes of head desired are made, especially the fish joint or T-headed bolts, which we are informed, cannot be made on machines where the bolt is turned to receive the action of the forging dies. The production of the apparatus varies, with the size of the bolt to be forged, from eight to sixteen perfect bolts per minute; and changing from one size of bolt to another, or from one shape of head to another, it is stated, requires hardly a moment's time, especially adapting the device to the use of railroad shops.

Among the points of advantage claimed are, first, simplicity; every bolt and joint being dispensed with except those which produce the result of working the four dies, while there are neither gears, came, nor springs about the machine, thus saving to the user both the expense and the time occupied in making necessary repairs. The sliders are all gibbed so that any trifling wear can be readily taken up without removing the slides to put on a thin strip of iron. The sliding surfaces are always running in oil, as they are placed above the water and cinders. The machine is provided with a cupboard for its tools, a new feature in this class of devices.

The holding vise is operated by a handle, A, attached to the cross shaft. On each end of the latter are the arms, having links, B, attached to work the sliding frame, which open the radial arms that carry the holding dies. These holders are backed up by a filing-in piece, adjusted forward by means of the screws. The length of the bolt is gauged from one inch upward by adjusting the end screw. The driving wheel is in operation all the time; the machine only when it is forging the bolt. The long slide carries the bottom die on its lower end. The top slidodie, C, works on the face of the long slide, which is actuated by two levers, D, E, having curved slots, the top die slide having one lever with reserve curve, all working on the same pin. The pin in the upset carrier, F, passes through the curved slots, and as it acts back and forth, moves them in opposite directions. The slide dies have their motion by means of links, G, attached to the upset carrier.

When the bolt blank is placed in the holders and clamped tightly by means of the handle, A, the handle, H, clutches in the driving-wheel with the shaft, the upset carrier advances by means of the connections to upset the iron, the forging dies being all open. As the upset carrier recedes to half-stroke, the slide dies compress the sides of the head, and at extreme end of stroke the top and bottom dies act upon the other two sides of the head, and so continue to do until the bolt is finished, which is done in four revolutions of the driving-wheel.

The manufacturers, Forsaith & Co., Manchester, N. H., are now making two sizes of these machines, one for both large and small bolts, and the other more particularly for the smaller sizes.

BELCHER BULLION.—There were yesterday deposited in the Bank of California 31 bars of bullion, worth \$120,000. During the week just past this company have shipped \$451,500, or at the rate of nearly two millions per month.—*Enterprise*, Jan. 11.

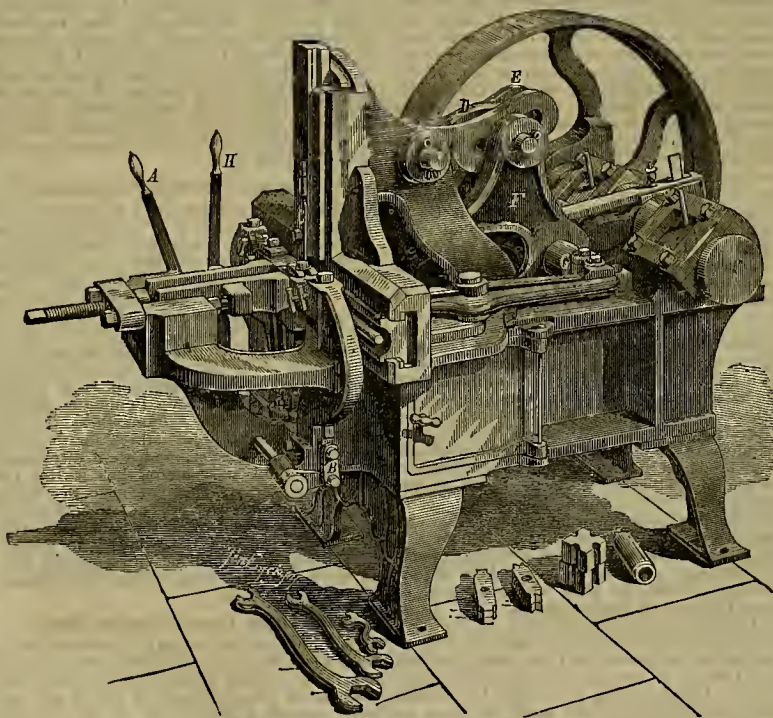
The Lafin & Rand Powder Company.

We take occasion in this issue of the Press, to inform the mining public of the establishment in this city of a new powder agency, thus completing the list of the eastern powder companies represented on this coast. The Lafin and Rand Powder Company is widely known throughout the States west of the Rocky Mountains, for the superiority of its blasting powder. It is better known on our coast as the Smith & Rand Powder Company, which some four or five years since was represented in this market by Messrs. Treadwell & Company. This company is the largest of the powder companies in the United States, and probably in the World. Their works turn out over half a million kegs of powder yearly. They own four mills in the State of New York, one in New Jersey, three in Pennsylvania, one in Maryland, and one in Wisconsin. The Passaic

determined to use it throughout the principal parts of the mine. Mr. Kabath says that the superintendent, Mr. Corey, estimates that he saves \$16 per day with one battery in one shaft, so that a very large saving must follow by introducing it generally in the mines.

The original bill of the Ophir Co. to the Lafin & Rand Co., was \$141.65, and even reducing Mr. Corey's estimate to \$8 per day, the apparatus has more than paid for itself in the two months it has been used. Say 50 working days, makes a saving of \$400.

The main business of the Lafin & Rand Co., is in supplying different engineering operations with material adapted to their wants. The quality of powder required in mining bituminous coals, for instance, is very different from that which most economically removes the hard quartz rock from our gold and silver mines. Moreover the product of one is wanted in as large masses as possible, and the other with the smallest comminution. The working



ABBE'S BOLT FORGING MACHINE.

Mills in New Jersey, now being built, will, when completed, be able to turn out 200,000 kegs of powder annually.

The company make the highest grades of sporting powder, which they claim to be superior to any other. The agent here, Mr. N. J. Kabath, (of the firm of Kabath & Ladd,) 224 Sansome street, informs us that the Russian, Spanish and French Governments had their cartridges filled with powder made by this company after 15 months competitive trial with other American powders. The standard velocity of this powder is said to be kept up at great expense as any lot deficient in this respect are not allowed to go out of the factories.

This company also manufacture Smith's Patent Battery, an electric apparatus for blasting, and have also become agents for Brown's electric fuse. Several of our leading mines have adopted the electric apparatus for blasting, and the agent shows numerous testimonials to its efficiency. The Ophir company having used this apparatus in their prospecting work, have

of a marble quarry for slabs or the same limestone for burning, furnishes another familiar example. So too, a single railway cutting can frequently employ to advantage a different grade of powder in the side hill, in the tunnel and in its "approach." A leading New York journal says that a noted contractor recently discharged, simultaneously, by means of this company's electric apparatus, some 40 different blasts within supporting distance of each other, which contained three different kinds of powder, and on measuring found his profits to be over \$1,500 from the one explosion. The amount of money that can be saved by adapting means to ends in this matter will astonish those who have not investigated this subject. The question of explosives is a very practical one in these days of railroading and mining.

Reductions in cost have been made by this agency in this blasting apparatus; for instance, a battery formerly costing \$110 is now sold by Mr. Kabath for \$80. He not only supplies the different kinds of powder manufactured by the Lafin & Rand Powder Co., but furnishes, electric blasting apparatus, fuses, connecting and leading wires, detonating caps, rubber tubing, etc., for blasting purposes. The company claim for their powder superiority in cleanliness, uniformity of grain and velocity.

Sargent's Land Bill.

Dispatches to the *Call*, dated Washington Jan. 14th, say:—Sargent's bill relating to public lands in the State of California, which was reported from the Mining Committee to-day with an amendment, was recommitted, in order to allow some slight amendments, suggested by the Commissioner of the General Land Office, to be considered. However, it will doubtless pass the Senate substantially as reported to-day. It now provides that public lands in California shall not be excluded as mineral from pre-emption or homestead entry, unless it shall be shown that bona fide mining claims exist thereon, or that the land is necessary for outlet or other mining easements; and the prices of both agricultural and placer mineral lands shall be \$1 20 per acre. Provided, that nothing herein contained shall be so construed as to change the presumption now existing, either by law or department regulations, that lands within railroad grants are mineral in character. The second section, providing for joint entries by two or more settlers on the same legal subdivision, is unchanged. A new section is added, providing that in cases where mining claims are duly located under the mining laws, it shall be lawful for applicants for patents to make application to purchase lands to the extent of the smallest legal subdivision containing said claims, if such application does not conflict with the rights of other parties, and patents shall issue accordingly. The section permitting all proofs and affidavits to be made before an officer authorized to administer oaths is amended so as to require affidavits when taken outside of the land district to be made before the clerk of a court of record.

Sargent's bill, reported from the Senate Mining Committee to-day, supplemental to the Land Act of May 10, 1872, is amended by the Committee so as to make the time one year instead of six months from the date of the passage, within which applicants for patents for mining claims are required to make final proof and payment of their claims that have been already filed, and those which may be filed hereafter; provided in both cases legal notice has been and may be given without the appearance of an adverse claimant.

Purifying Quicksilver.

EDITORS PRESS:—I see by your issue of Jan. 10th, page 27, that you copy from an interior paper an item to the effect that a patent has been obtained for treatment of "mercurial soot." Without any circumlocution or bombast, let me tell you that in Dec. 1867, in Monterey county, I treated 569 lbs. of soot from which the mercury was dripping, as follows: The soot with dripping mercury was placed in an iron cauldron, and set out of doors, where the rain fell on it, and it was frozen over, there being a cover of ice some three inches thick. To decant or disturb the cauldron from its support I considered dangerous, and to break the ice would lose eoot and mercury, I therefore decided to evaporate the frozen water and to accomplish this at the lowest temperature possible kept the mass agitated with a stick; knowing that alkaline matter, lime or ashes, would be advantageous etc., I used the ashes made at the boiler furnace. The result was that a greater portion of the mercury the soot contained, flowed out freely and was put in flasks; while a small portion of eoot, apparently dry and light, was rolled in newspaper on a rude box made of shakes having about six inches on each side, and the paper and box put back in the furnace. The paper package was soon in flames and from it rose a white cloud, with a hissing noise. The shake box was longer in being heated, but soon gave up a similar white cloud, which filled the upper space of the furnace and followed the direction of the draught. The operation was performed in Roach's furnace, where all being made tight, there is no escape, and the contents may be observed from the peep hole, the draft being inwards. I claim no patent, on this; the public are welcome to the information, and I think priority will establish my right of discovery.

JOHN ROACH.

CORRESPONDENCE.

American Mines and English Owners.

The Richmond Consolidated.

EDITORS PRESS:—The silence of your valuable paper regarding the mining interests of this truly important and prosperous section of sageland has been of late so noticeable that it has induced me to drop you a few lines, in relation to the appearance and condition of the mines included in the above incorporation, prefaced by a paragraph or two that may be not devoid of interest to your numerous readers.

The caption of this article certainly would be a suggestive one at any time, but is doubly so at present, owing to the unfavorable opinion entertained of American mines by the capitalists and mining men of London. That the want of confidence in American mining property, existing there at this juncture, is both natural and business-like, nobody that has given the matter the attention necessary, or read the accounts published from time to time in the London and American journals of the nefariousness of practical, professional "mining sharps," will at all deny. The industrious, speculative tendencies of that large class of our floating population which comes under the generic term—"mining sharp"—have done much to disgrace the commonwealth, injure our mining prospects, and reflect discredit upon the American name and character abroad. The mining sharp, however, belongs not exclusively to this country, though it has now to suffer in a more or less degree from the results of his dishonest acts. He is as

Indigenous to Albion's Isle

As he is to the broad lands of this country and flourishes and prospers there fully as well as he does here. This is just and proper. He has a right, I suppose, to practice his peculiar profession in London or elsewhere within the sea-girt isle, and avail himself of the rights and privileges be inherits under its glorious Constitution. We would find no fault with him for this, or question the rights of the class to which he belongs, to pursue whatever course is deemed best to help to fill their purses with, and fleece their own countrymen, did they but confine themselves and their operations to London exclusively. This they do not do, but extend their travels to Nevada and Utah as well, and make common cause with the experts and blacklegs of the same class that are so largely represented in every mining town on the coast. From their knowledge of Englishmen and their acquaintance with the routine of mining business daily transacted in the Stock Boards of London, they are, with the aid of their American confederates, easily enabled to put up stupendous jobs to fleece their own honest countrymen with and practice the most glaring imposition upon their good natured credulity too. These are truths so patent to all that they cannot be gainsaid. The depreciation in value of some of the mines of this State and Utah, stocked in London, have on appreciable bearing upon the foregoing, and for the sake of argument and illustration we will briefly review the causes that have led to their decline.

To most mining men the facts attending and upon which were leased the success of the unconscionable parties who conspired together to effect the sale of the Emma and other declining

Mines in Utah

Are too tolerably well known to be more than glanced at here. With these astounding facts fresh in the minds of the duped Brits, is it any wonder that our mines are languishing for the want of the necessary capital to develop their dormant wealth, or that their confidence in our honesty—when engaged in negotiating mining sales—is at a point indicated by zero? No, it is not. Time and patience, an honest policy and fairer dealings on the part of mining men may, however, help to place it at a higher point in the ascending scale. A reference to two or three of these Utah mines about the productiveness of which such a terrible hubbub was raised at the time or soon after their incorporation in London by the leading conspirators and their well paid, well drilled satellites, will not be amiss. We all of us remember the furor created by the gilded accounts that reached the willing ear of the dear public of London some few months ago—of the inexhaustible resources of the Emma, Flagstaff and Last Chance mines. These accounts were, at the time, borne out too, by the judicious payments of dividends derived from one hypothesized to interested parties ere it was developed and one ere it was elevated to sun-light from its primitive channels. These three companies backed by their fabulous mines rivaling in wealth the hidden caves of Monte Cristo, commenced at once to pay

Monthly Dividends

Of 18 and even 24 per cent. per annum regardless of the strain and heaviness of such frequent disbursements. The Emma first from the too apparent trickery resorted to, to uphold the highly colored romantic reports published of it—and from being too heavily pressed and too largely attacked—yielded to the inevitable consequences that were sure to follow such acts. The Flagstaff and Last Chance companies soon found themselves similarly swamped, and

their condition to-day serves to deter others from parting with their bank notes to plausible, oily-tongued adventurers. There must be something of more solidity and tangibility shown them now to induce them to invest. A London Journal received from a friend in Europe thus sums up the capital loss sustained by the partial failure of these three mines, to bear out the expectations of their purchasers.

	Amt. p'd.	Mkt. Worth.	Depreciation.
Emma	£1,000,000	£175,000	£825,000
Flagstaff	1,000,000	150,000	1,000,000
Last Chance	100,000	65,000	35,000
	£1,400,000	£390,000	£1,000,000

These figures are startlingly truthful and accurate and shades a falling off from the purchase price of a little over 72 per cent. Who will deny that this is not a serious loss in but three enterprises within a short time?

Collapse with Other Mines.

The collapse too, of the Pacific, from which so much was expected swells the above aggregate by some hundreds of thousands more. It has proved to be an almost total failure, and was as barren of results—other than loss—to shareholders, as was the \$450,000 mines of Mineral Hill, now notoriously worthless. Next comes the Pinto property, the Maryland and other mines, sold by a well-known Nevada banker to the "syndicate" that had then incorporated under that name. Their value is I fear, very little to-day, or at least was, some time ago, ere they were merged in the Bayside S. M. Co., of London, whose property in that now nearly defunct district is superintended by John S. Murphy Esq., of this town. This gentleman has been indefatigable in his exertions towards developing these mines since his assumption of their management, and it will be no undeserved compliment paid him too, to say that under his administration business tact, and rare energy as a mining superintendent, they are in a fair way to result in a success not heretofore anticipated.

Prominent Men in the Schemes.

The are many others which have proved fully as worthless as any of the above that were launched in London, under equally notorious circumstances that cannot be mentioned in the space I propose allowing myself. Enough, however, to say—that when an American Minister fully accredited to the Court of St. James, and American Senator, fresh and impeccable from stormy Nevada, could, and did, so far prostitute not only themselves, but made the influence acquired from the exalted positions they held, subservient to their own base ends, in the furtherance of a scheme from which they were and did receive large rewards, and which is to-day denounced as one of the latest swindles of the age—next to Credit Mobilier and the Arizona diamond splurge—enough I say, to say that where such transcendently exalted personages as they were, would not hesitate to do that which they did at the sale of the Emma, it is about time for Englishmen to say, and with reason too, "what can we expect from private individuals, when U. S. Ministers and Senators will be guilty of such dishonorable acts?" The doings of these gentlemen are operating to the disadvantage of the interests of both Utah and Nevada to-day. Other things too, are not forgotten.

An Attempted Swindle.

Apart from the Emma, we have the brilliant gotten up scheme of the Arizona Diamond swindle, the Lake Superior Tin swindle, and the attempted swindle of Messrs. — and others in salting or attempting to salt the Burro mine, of Ralston, New Mexico, preparatory to a sale in London. Samples of ore were produced in England, and assays exhibited too, of ore that never saw the Burro or was in the Burro lode, if such existed, outside of the imaginative brains of its vendors, but was shipped from a quarter entirely remote and different, and made to appear as the Burro ore. Fortunately, however, for the pockets of our English cousins, the trick was discovered in time to save them their contents.

Thus far we've been glancing at the dark back-ground of the picture; now let us look to the bright foreground and see what we will find there to act as an offset to its unredeeming traits. It is gratifying to be able to produce around our object of interest amid so much to condemn—desiring of praise or mention—and the object is the property of the

Richmond Consolidated S. M. Co.,

(Limited) of London, whose name stands at the head of the article. This property at first consisted of the Richmond only. This mine was stocked in the latter city under the Limited Liability Act, passed to regulate the operations of joint stock companies. A similar Act, if passed by the Congress of the United States, or the Legislatures of the States of Nevada and California, if permissible under their Constitution, would go far to check the impositions practiced upon the stockholders of the many mining companies doing business on this Coast. The Richmond Mining Company are now the undisputed owners of the many valuable mines in Eastern Nevada, that are but little inferior to many of the mines on the famous Comstock. They are the Richmond, Tip-top, Lookout and Silver Region mines. Since the late lawsuit with the Eureka Consolidated company, of this place—whose also valuable mines lie contiguous to the above—the company, for greater security, has had them incorporated under and in conformity with the laws of the State of Nevada.

These mines are situated on the north-western and north-eastern slopes of Ruby Hill, and about two and a-half miles due west of Eureka.

They are reached by a good road, lately built by the company to facilitate the transportation of ore to their furnaces at the upper end of our smoke-hedimmed town. There are three of these furnaces in active daily operation, whose united reduction capacity is 150 to 180 tons of ore each twenty-four hours.

The Amount of Bullion

Run from these monsters in the same period is wonderful, and if anything should occur to prevent the regular daily shipments, it accumulates in an equally wonderful manner, and should be seen to be fully appreciated. This bullion will average \$350 to \$375 per ton of 2,000 lbs., and I believe these estimates are rather below than above the true figures.

The Silver Region and Lookout mines are on the north-eastern slope of Ruby Hill. The former embraces 1,500 feet running longitudinally with the range of the hill, and takes in the Lizette tunnel through which they are worked.

The Outside Improvements

Most noticeable to the eyes of the visitor, are the buildings on the southeast of the tunnel covering the hoisting works erected over the vertical shaft—now sunk over 200 feet—through which the company propose in future to work the valuable ground through which it penetrates. It is expected this shaft will cut ore at a depth of 300 feet or more, and this it can hardly fail to do. The intervening space of a couple of hundred feet between shaft and tunnel is devoted to timbers to be used in the mine. These are all hewn and are cut and prepared in proper lengths and sets by three or four men accustomed to the business. The company, however, purpose soon introducing machinery to cut and fit them in sets cheaper and in a more expeditious manner than now. Next are the substantial ore bins at the outer orifice of the tunnel into which it is dumped from the iron cars used to convey it from the apparently inextinguishable chambers below. The ore is run through chutes from these lines into the wagons of Walter B. Hern, who has the contract for hauling it to the furnaces. Lower down the slope of the hill are two comfortable, substantial lodging houses for the company's employes, and close by is an equally comfortable, elegant boarding house. The foreman's office and quarters are also comfortable affairs.

The water used is supplied from a ditch and pipes connecting with the works outside from which the aqueous element is in turn conveyed to a tank at the inner orifice of the tunnel, and a few feet from top of incline, close to which the hoisting engine stands, in its subterranean abode, ever ready to hoist to its level the stuff which produces the glittering metal in such abundance to its lucky owners. The smoke is conducted from this underground furnace through a most costly smoke-stack—indeed, no less than an \$85,000 one—it being the shaft of the Lookout mine.

The Lawsuit That Took Place Between

The Eureka Consolidated and Richmond companies, to determine the ownership to the Lookout, is of too recent an occurrence, and too fresh in the minds of your many readers to need more than a passing mention here. The trial being the most important of the kind ever commenced in Eastern Nevada, lasted from the 10th of May to the 3d of June, 1873. There was most overwhelming evidence produced on the part of the Richmond, as well as an impartial summing up by the Hon. D. C. Kenny presiding Judge of the 6th Judicial District of Nevada; and, notwithstanding these, the jury could not agree, they standing 7 for the latter and 5 for the former, and were discharged after being out sixty hours, thus leaving the litigants at liberty to commence the battle again. This, however, was not done, for J. J. Corrigan, ex-President of the Company, very promptly purchased the property in dispute for the sum of \$85,000, accompanied by a U. S. patent to its entire area, which forever barred all future litigation.

The Lizette Tunnel Under the Mines

Through which the property is worked, has a curved length of something over 600 feet to the new incline. This incline has a depth of 200 feet, run at about an angle of 40° or 42°, and cuts through a portion or the western foot wall midway in its descent to the bottom or northwestern chamber, all the distance through the finest quality of ore. In this bottom chamber, a few feet from bottom of incline and 200 feet from top of the Lizette tunnel, is a winze commenced last month. The writer, on the 26th December last, visited the mine in the company of J. J. Corrigan, Esq., President of the Company, and J. B. Magee, Esq., Superintendent, and found at that time this winze down some 13 or 14 feet in ore. Since then the latter gentleman has informed me, that it has since that date attained a depth of some 60 or 70 feet vertically through ore of a very superior grade to that found so abundantly above, thus proving beyond cavil the continued depth of the lode and the value and permanency of not alone this property, but of the others of the district. Its course appears to be southwest and northeast, and dipping northeast at about an angle of 28° or 30°.

The mine is indeed wonderfully rich in the Amount and Quality of its Ore

Thus far exposed to view, and is, should there be no further developments made, sufficient to run the company's furnaces during the next two years or more. The imagination alone is incapable of grasping at anything like an accurate idea of the thousands and thousands of tons of high

grade ore now in sight, and it certainly would take more capable pen than mine to give anything like even an approximate description of it or of its longitudinal and lateral drifts and crosscuts, or of its vast chambers elegantly and substantially timbered in a manner at once durable and safe, which reflects credit alike on its efficient-experienced foreman, P. Roseter, Esq., and on its courteous, affable, and successful superintendent, J. B. Magee, Esq., mentioned above.

The Management.

This latter gentleman assumed control by appointment nearly one year ago, and the highest and most deserving compliment that can be paid his efficiency and management since the commencement of his administration affairs of the company, is that its interests have been faithfully guarded their minutest details as well as their largest and most important transactions receiving his care, attention and direction. In consequence of his rare administrative abilities, increasing watchfulness and untiring exertions, together with his great experience as a smelter and miner, the interests of the company he represents have been extended and promoted to a degree not known before his appointment. These things are apparent to all. His cause thus far has been very successful indeed, and it is past favor to presume, that should he continue in the company's service, its interests will be greatly benefited and its sphere of action and operations enlarged, which will give a corresponding return to its fortunate shareholders. He has, moreover, endeared himself to all under him, from the accomplished Secretary, Matt. Howell, to the lowest and most humble workman.

As noticed above, the mines are worked under the direction of P. Roseter, Esq. This gentleman is not only an experienced miner and foreman of several years, but a quiet gentleman, too—urbane and courteous in manner and bearing to all with whom he comes in contact. He is an old Comstocker besides, and has been in the service of the Richmond from its incorporation, over two years ago, to the present time. This term alone is sufficient evidence of his worth as a man and of the value of his services and experience to it as foreman. These services are demonstrated in the care and attention devoted to his business, the admirable condition of the mine considered from a working point, the elegance and security of its timbering and the order and neatness and quietness that are such marked features, both in and out of the mine, whose wondrous riches will add to the prosperity and permanency of Eureka and bring a smile of unfeigned satisfaction to its lucky shareholders.

J. D. P.

Eureka, Nevada, Jan. 5th, 1874.

MINERAL RESOURCES OF ARKANSAS.—This State can, without exaggeration, boast of her mineral deposits, especially when we take into consideration the various parts, their general rich quality, and enormous quantity. Here are magnetic, hematite, specular, calcareous, and other varieties of iron ore, lead, zinc and coal, manganese and associate metals, together with marble, gypsum, salt, kaolin, whet and hone stone, slate, limestone, granite, marl, paint, and niter earth. The coal-fields of the State embrace an estimated area of twelve thousand square miles, and in the valley of the Arkansas river, where the most coal mining has been carried on, the beds are from 4 feet to 9 feet in thickness. This coal is similar in structure and appearance to the Cumberland coal of Maryland, and its quality, by analysis, is very similar. It is also an excellent steam and manufacturing coal. The Arkansas river runs for one hundred and fifty miles through this coal formation. The advantages that Arkansas possesses in this respect must shortly enlist the attention of coal mining capitalists of the Eastern States. The hematite iron beds, in some places cover acres of surface, where there is abundance of the best kind of timber for making charcoal and limestone of good quality for flanking purposes. Never-failing, large water-powers also are contiguous to these iron ore deposits.

PROFESSOR AGASSIZ.—The doctors are puzzled to account for the symptoms of the disease by which Agassiz lost his life, and a careful autopsy has been made. The brain and all the vital organs, especially the heart, were examined with great care. The stomach and liver were free from disease; but in the heart were found evidences of the trouble with which the Professor suffered a few years ago. Special attention was paid to the brain, which was found to be very large and heavy, though its exact weight has not yet been determined. Careful examination was made of the base of the brain, and to insure success in this, it will be necessary to allow it time to harden.

STEAM TO AUSTRALIA.—J. C. Merrill & Co., agents for the Australasian and American Steamship Company, report that the steamer Macgregor will arrive in San Francisco on or about the 19th proximo, and sail on Tuesday, the 27th. Clyde-built steamers specially adapted to this line have been built, and will therefore be dispatched on schedule time every twenty-eight days. Annexed are the rates of fare from San Francisco: To Honolulu, first-class, second-class and steerage, \$75, \$50, and \$40, respectively. To Fiji Islands, \$150, \$125 and \$90. To Auckland, \$160, \$135 and \$90. To Sydney, \$200, \$150 and \$100. To Melbourne, \$220, \$160 and \$110.

MECHANICAL PROGRESS.

Type-Setting Machines.

The question is very often asked by publishers, with a strong emphasis on the first word, "Is there a type-setting machine which will economise the labor of the printing office, or save us from some of the inconveniences attendant upon the illness, incompetency, or, as sometimes happens, the natural perversity of type-setters?" We must say that, for our part, we would rather deal with the crookedness of the compositor. No type-setter has yet been invented equal to Nature's own compositor, and none will yet be invented equal to it until the principle upon which inventors proceed in working out the problem is radically changed. We are shown Kastenbein's machine, in the office of the *Christian Union*, and are told it "works admirably;" but we see one man with a pick and another with pincers, helping along the man who plays the machine, while another corrects and takes up the type, and yet another opens the apparatus and shakes up the "supply tubes" or forces open a gate. We find that the distributor does not work with half the rapidity, and is still more complicated. Yet we are told that "the *London Times* uses six of them." That should settle the matter, only it does not; and we feel that even if the *London Times* used fifty of the machines it would make them no better than they are.

The truth is that no machine within the means of the printer has yet been invented which will do the necessary work. No such machine can or will be invented, as we have said, until the principle adopted is radically changed.

Delcambre's Type-setting Machines differ but slightly from those above referred to. These are the only machines we know of in regular use in New York newspaper offices, yet we think that no one could observe the trouble they give, and their rather meager results, and believe that machine type-setting had become a fact. The capacity claimed for the setting machine is but 3,000 or 3,500 an hour. Deduct from that the fact that you must have a still more complicated distributor of half the capacity; that these machines are delicate, valuable, hard to sell, and requiring special operators, and the fact that "the *London Times* uses six like them," is but a meager recommendation.

As in this brief notice, in reply to many questions, we are confining ourselves solely to those machines which are most in use or seem likely to be, we will next consider the Westcott Type-Setter. This is in many respects an important machine. In the first place it does away with a distributor, at best a rather absurd part of a type-setter, for it is hard to expect a machine built to set type, to be able to undo its work to advantage; it is a cheaper machine, less likely than some others to get out of order, and contains more real power for usefulness within itself than any other. It is not likely that it is the last result that inventors will yet arrive at, but it certainly has high claims. It consists of a compact iron semi-cylinder, containing matrices moved with keys. These matrices travel to a reservoir of melted type composition; the type is made, passed through its ganges and cutters and moved to its proper place finished and cold, more quickly than it could be taken from a box.

We have seen this machine work, and find it to be one of the most ingenious, as it is certainly one of the most interesting machines we have ever seen. It is called, after its inventor, "The Westcott Type-Setting Machine," but it must occur to any thoughtful printer that type making is a very nice operation; that the inspector in a foundry must be constantly at work with his glass and his ganges to discover the smallest changes and differences; that type made as described must be subject to flaws, as indeed are all type; that the cutters and ganges must eventually wear out, etc., etc. Yet practice will soon tell us about these things, and it is possible that experience will remedy them. If so, the occupation of the type-founder, except for fancy type, is modified. Meanwhile we are told that the Harpers have ordered so many, and others so many, etc., facts which say little in favor of the machines, but show that they will be so well tried that printers will know soon enough whether they can use them to advantage or not. The machine is apparently not very fast, but it must be borne in mind that there is no distribution to be done.

Lastly, we must say a word for Orrin Brown's machine, which is, we learn, working to advantage at the present time in Boston. It is on book-work, however, and this is an important fact. It is probable indeed that the first available type-setters will be used for this purpose.

If any questions are answered in the above, the whole object of the article is gained, and we may say that few printers need trouble themselves for some time to come about any advantage they hope to derive from type-setting machines, especially if wanted for small offices.—*Newspaper Reporter*.

NEW CAR STARTER.—Amos Whittemore, of Cambridgeport, Mass., has obtained a patent for a device whereby the momentum of the car is made to lift one end of the car in stopping, and the weight so raised is made so to act as to help the car forward in starting.

Temperature Indicator for Petroleum Oils.

Petroleum oils, as is well known, contain various volatile oils, which, in being disengaged in a state of vapor and mixed with atmospheric air, form an explosive mixture that has been the cause of numerous accidents. It is consequently important to ascertain, by a simple method, as quick and as exact as possible, the temperature of ignition. M. Granier has arranged an apparatus for the purpose, which he has exhibited before the Société d'Encouragement.

A small receptacle of a cylindrical form and made of metal, is closed by a movable cover, furnished, in the center, with a circular opening. This vessel is about two-thirds filled with the oil that has to be tested, so that there may be a chamber of air between the surface of the oil and the top of the cover, in which may be received the inflammable gases disengaged by the oil. A tube, soldered to the bottom of the vessel, holds a wick, the extremity of which ends in the middle of the opening of the cover. A thermometer is inserted in the oil to indicate successive and minute changes of temperature.

For the purpose of testing any oil, it is poured into the vessel to the height already stated. The wick absorbing the oil is then lighted, and thus gradually heats that in the vessel. This is hastened by the presence of some fine copper wire, which extends from the burning wick into the oil, thus spreading the heat through it. When the temperature is sufficiently elevated, the vapors are disengaged, and an explosive mixture is produced, which, on catching fire, causes a slight explosion. The temperature is noted at this moment, and the point of ignition thus ascertained.

"Wet the Ropes."

That some things shrink after they have been washed, and that others expand is well known, but the cause of this requires explanation. If we take a new rope, ten feet or more long, and fix one end of it across a beam, and to the other end attach a heavy weight, and so stretch the rope till the weight just rests upon the ground, the weight, if the rope be well saturated with water, will be raised from the ground simply by the shrinking of the rope. The following statement is an illustration of the fact: The Chevalier Fontana undertook to raise an obelisk at Rome. While the stone was suspended in the air, just over the pedestal, the ropes stretched so much by its weight that the base of the obelisk could not reach the pedestal, and the work was about to be given over, when a man among the crowd called out "Wet the ropes!" This advice was followed, and the column was seen gradually to rise to the required height, and was then placed upon the pedestal, where it now stands in front of St. Peter's. The obelisk is now known as erected by Pope Sixtus. In the shrinking of various cloths it should be remembered that they are made up of small cords which contract by moisture, more particularly when wetted for the first time, both in warp and weft, that is, in length and breadth. Paper, with filaments in all directions is forced asunder by the introduction of water among its pores. On this account the wet side will always be the outside of its curl. Wedges of dry wood, driven into clefts of stone, and then well wetted, will rend rocks asunder.—*Ex.*

WATCH SPRING.—Hair-springs, says a writer in the *Victoria Magazine*, are made in the factory, of finest English steel, which comes upon spools like thread. To the naked eye it is as round as a hair, but under the microscope it becomes a flat, steel ribbon. This ribbon is inserted between the jaws of a line gage, and the dial-hand shows its diameter to be two twenty-five hundredths of an inch. A hair plucked from a man's head measures three twenty-five hundredths—one from the head of a little girl at a neighboring bench—two twenty-five hundredths. Actually, however, the finest hair is twice as thick as the steel ribbon, for the hair compresses one-half between the metallic jaws of the gage. A hair-spring weighs one-fiftieth-thousandth of a pound troy. In straight line it is a foot long.

IMPULSE ON THE STEAM GAUGE.—If a steam gauge runs up or down momentarily for a few seconds, it is no proof that the steam pressure has increased or diminished a corresponding amount. The material of which a pressure gauge is made has inertia, and a sudden impulse may drive it beyond the figure indicating the true pressure. It acts like a water column in a tube in which the water by sudden admission from below may be thrown up beyond the true level, but in a few seconds it will come back to the right place. Turning on your steam suddenly may give an impulse to your gauge which drives its indicator beyond the true figure, but it soon settles where it ought to be.—*Lamberton's Gazette*.

THE SPECTROGRAPH.—The name is given to a simple little device for copying drawings, exhibited in the French department of the Vienna Exposition. It consists of a board, near the middle of which is a piece of window-glass fastened at right angles to it by means of two grooved wooden uprights. When placed near a window, with a drawing or copy on the end of the board nearer the window, its reflection in the glass causes it to appear upon a sheet of white on the opposite side of the glass. In this way quite an accurate tracing can be made by one who is no draftsman.

SCIENTIFIC PROGRESS.

Recent Experiments With Diamonds.

Diamonds are rather costly objects to subject to destructive experiments on an extended scale, and not many investigators have been favored with the privilege of doing it. Thanks, however, to the liberality of the proprietor of a large diamond-cutting establishment in Amsterdam, a certain M. von Baumhauer has been permitted to make numerous studies of the behavior of these interesting gems when subjected to high temperature under various conditions, thus adding largely to our knowledge of the diamond's nature and properties.

The combustibility of the diamond in oxygen was demonstrated long ago; what the pure heat upon it has remained a matter of doubt. Some experiments seemed to show that at extremely high temperatures the diamond is slowly converted into coke or graphite, an effect observed especially when the gem is subjected to the energetic action of a powerful galvanic battery. In certain experiments, in which Moren and Schröter raised diamonds to the highest heat of a porcelain furnace, care being taken to prevent contact with air, a slight discoloration of the surface was observed, whether due to heat or imperfect protection against oxygen could not be decided positively. Inclosed is a bit of hard coke, and placed in a plumbago crucible packed with charcoal powder, diamonds operated on by Siemens and Rose withstood, without the least change, the temperature at which cast iron melts. A cut diamond, under similar conditions, subjected to the heat of molten wrought iron for a considerable period of time, was superficially blackened, but otherwise unaffected. By some this experiment has been interpreted as implying the slow conversion of the diamond to graphite at the temperature at which wrought iron melts. It is possible, on the other hand, that the change was due to air in the crucible; indeed probable, in view of the experiments more recently made by M. von Baumhauer.

By an ingenious device, the last named experimenter was able to subject diamonds, surrounded by an atmosphere of dry hydrogen, to a temperature at which both diamond and platinum holder become invisible; but with uncolored diamonds, their transparency and brilliancy were not in the least affected. Heated in contact with air, diamonds were not only blackened, but reduced in weight, showing positive combustion. In oxygen they burned with a vivid incandescence at a temperature below white heat. In a crucible which allowed the combustion to be observed through a sheet of mica, the burning diamond was seen to be surrounded by a white flame, less bright without and tinged with violet on the outer edge. Pure diamonds burned tranquilly, retaining their sharp edges even when so reduced as to be visible with difficulty. Impure specimens snapped and flew.

Burned in an oxyhydrogen flame, capable of melting platinum, diamonds emitted a brilliant light and wasted rapidly, but did not blacken. Heated to a high temperature in an atmosphere of carbonic acid, they were slowly consumed, decomposing the carbonic acid, and combining with its oxygen with loss of weight. Similarly treated in superheated steam, no effect was produced, showing that at white heat the diamond does not decompose water, as might be expected from its affinity for oxygen. In regard to the supposed transformation of the diamond into coke or graphite by means of pure heat, especially by that of a battery of 100 Bunsen elements, M. von Baumhauer is very doubtful. It should not be admitted, he holds, until the effects observed are proved to be not the result of chemical action, produced by foreign matter, or by the transformation of particles of carbon from the charcoal poles to the surface of the diamond.

The effect of heat on colored diamonds is more pronounced, with the exception, perhaps, of gray and yellow gems, which appear to resist such action, the same as the colorless ones. Green diamonds are variously affected. One of a dirty green tint was changed to pale yellow, with a slight increase of its transparency; but its brightness remained the same. Another, so green as to be almost black, likewise retained its brilliancy, but gained in clearness, while its color was changed to violet. A light green gem lost its color entirely, but was otherwise unaffected. Brown diamonds lost most of their color, showing under the microscope a limpid field scattered with black spots. A diamond almost colorless assumed, under the influence of heat (out of contact with air), a deep rose color, which it retained some time when kept in the dark. In the light its color faded, but always returned again with heating. A naturally rose colored diamond reversed the phenomena, losing its hue with heating, and afterwards gradually regaining it.—*Scientific American*.

SCIENCE AS KNOWN TO THE ANCIENTS.—In Egypt mummies have been found with teeth filled with gold, and in Quito a skeleton has been discovered with false teeth secured to the cheek bone by gold wire. In the museum at Naples, among some of the surgical instruments discovered at Pompeii, there is a facsimile of Sims' speculum. In the ruins of Nineveh, Layard found several magnifying glasses.—*Medical Record*.

The Quadrature of the Circle Again.

S. O. C., of Utah, sends as a lengthy communication, mentioning that he has invented a contrivance by which he can practically measure the circumference of a circle to within the thousandth part of an inch, and asks, 1st. If he has not now either solved the grand old problem of the quadrature, or at least made an important step toward its solution? 2d. If it would be advisable to patent his contrivance?

To the first question, we answer that if he understands by the solution of the problem in question the finding of the circumference of a given circle, or of the ratio between the diameter and circumference, the problem has been solved more than two thousand years ago by Archimedes to within a thousandth of an inch for small circles; while Melius, a mathematician of Holland, three hundred years ago, solved it to the same degree of accuracy for circles of a radius equal to the distance of the earth to the sun. Our correspondent must take into consideration that practical measurements can never compare in accuracy with calculation. In the latter we may go as far down as we chose into a millionth and a billionth part of an inch; while Ludolf van Ceulen, also a Hollander, found that in practical measurements hundredths of an inch are the utmost limits, and that peculiar contrivances or microscopes are required to measure a thousandth of an inch. To mention an ordinary case as an example, take 25 inches and try practically how long its seventh part will be, expressed in decimals. You will find that it is a little over $\frac{3}{7}$, or 3.5 inch; and with a great deal of accuracy you may even go so far as to find 3.57 inch. But by calculation alone, dividing 7 into 25, you find easily that it is 3.57142857, which is correct to within one thousand millionth part of an inch. So it is with the circle; calculations have been made giving numbers so correct that if we suppose a circle of which the radius is equal to the distance of the most remote star visible with the best telescope, we may calculate the length of its circumference correctly to within the thickness of the film of a soap-bubble, and even more than that; in fact the accuracy obtained in that respect surpasses all ordinary imagination.

If our correspondent understands by the solution of the problem the finding of a correct ratio between the diameter and the circumference in whole numbers, the problem is insolvable, as no such ratio can exist. That of Archimedes, $\frac{22}{7}$ gives the circumference too large, $\frac{100}{314}$ gives it too small, $\frac{113}{355}$ too large again, $\frac{333021}{103993}$ too small, etc. The notion of some people that ratios in whole numbers must always exist is very erroneous. Elementary geometry gives as many lines which have no common measure. Such, for instance, is the case with the ratio between the side and diagonal of a square, which can never be correctly expressed in whole numbers, nor fractions, nor in any finite decimal fraction, (this fraction being 1.414213, etc.) and looking at the subject in this light, it is surprising that the problem of crossing the square has not become as celebrated as that of squaring the circle. The cause of this, however, is that the nature of this relation ($1/\sqrt{2}$) was known long ago, being a so-called irrational quantity, while the nature of the quantity expressing the circumference of the circle for the diameter = 1 has only in later times been discovered to be an irrational quantity of a higher order beyond the ordinary irrational quantities, and unfit to be expressed by the same, much less by ordinary numbers or fractions.

In regard to the patent on the contrivance of our correspondent, we fear that there will be as little novelty in it as in his solution. It has probably long ago been surpassed by other contrivances made for the purpose of taking correct measurements. But even if new, the great question in taking patents is: Will it pay? And surely this would not pay.—*Manufacturer and Builder*.

ON THE PREPARATION OF CHLORAL HYDRATE.

—This article is made by pressing chlorine gas into alcohol of about 95 degrees, for about 12 to 14 days, until it attains a gravity of 41° B. The product is then purified by mixture with an equal volume of sulphuric acid and distilling, a large amount of hydrochloric acid being thus driven off. The chloral is then itself distilled off, the product is again rectified by distillation, water is added to the distillate and it is set aside to crystallize. As by-product, ethylene and ethylidene chloride are produced, which are purified by fractional distillation, and also used as anesthetics.—*Druggists' Circular*.

POTASSIUM.—Professor Dalbein obtains metallic potassium by a new process which is likely to prove of some commercial value. He first forms sulphide of potassium by treating dissolved sticks of caustic potassa with sulphurated hydrogen, and subsequently evaporating until the mass is solid in cooling. This mass is then mixed with somewhat more than its bulk of iron filings, and subjected to distillation, the product being run off into petroleum.

CEMENT FOR PIPES, ETC.—J. Spillar recommends a mixture of pulverized iron borings, kaolin, and sirupy silicate of soda as a base for fixing on the heads of stills which are required to stand a high temperature. We should judge the same might be found useful in other situations, such as the joints of cast iron furnaces, for instance.

Meetings and Elections.

CONSOLIDATED VIRGINIA M. Co., Jan. 9th.—Edward Barron, President; J. C. Flood, W. S. O'Brien, S. Heydenfeldt, B. F. Sherwood, D. T. Bsgley, Secretary; G. Fair, Superintendent.

PALM CONSOLIDATED M. Co., Jen., 9th.—President, W. H. Allen, Treasurer National Gold Bank and Trust Company; other Directors, Job Seaman, D. E. Buel, C. S. Pillsbury, J. R. Frink; Secretary, W. Angus Knapp. The property lies in San Bernardino county, and consists of some 16,500 feet of ledges, some of which are 40 feet wide.

STATE OF MAINE M. & M. Co., Jan. 13th.—Trustees, C. M. Boyd, John Fsy, W. J. Filley, A. C. Morse and William Faulkner.

CENTRAL S. M. Co., Jan. 12th.—Trustees, B. F. Sharwood, J. C. Flood and Edward Barron.

EMERALD HILL M. Co., Jan. 13th.—Trustees, Pem. B. Horton, Chas. P. Hurley, John A. McGlynn, John M. Johnson, John D. Mintin, n. Henry A. Fox, John B. Oliver, B. D. Murphy and T. W. Calvery.

ver, B. D. Murphy and T. W. Colburn.
SAN FRANCISCO STOCK & EXCHANGE BOARD, Jan. 12th.
--Wm. Burling was re-elected President; Coll Dean,
Vice President; B. H. Coit, re-elected Chairman; Hy.
Schmeidell, re-elected Treasurer; Franklin Lawton,
re-elected Secretary; W. H. L. Barnes, re-elected Counsel-
lor. Messrs. Schmeidell and Lawton have held their
respective positions ever since the organization of the
Board, nearly twelve years since.

New Incorporations.

LEVIATHAN M. Co., Jan. 8th.- Gold Hill, Storey conn-
ty, Nevada. Capital stock; \$10,000,000. Directors -G.
A. Treadwell, J. Bell, W. G. Albion, John Lloyd and J.
J. Robbins.

PALM CONSOLIDATED GOLD M. Co., Jsn. 8th.—Location, San Bernardino county. Directors, J. R. Frink, Wm. H. Allen, Joh M. Seamans, David E. Buel and E. S. Pillsbury. Capital stock, \$5,000,000.

THE IDA ELLMORE M. Co. has filed a certificate of increase of capital stock from \$1,000,000 to \$3,000,000.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mine mentioned.

California.

AMADOR COUNTY.

GLONE.—*Miner*, Jan. 10: The property consists of a location on the Abe Lincoln and Hercules lodes, also of the Worden company on the Esmeralda lode. A double track tunnel 6½ ft by 6½ is run into the mountain is a southerly conrse a distance of about 1,000 ft. with a side drift called the east tunnel, 300 ft. long, and a south drift 180 or 200 ft. in length, and a second south tunnel of 200 ft. At a distance of about 300 ft. a large vein was cut into, which was denominated the Abe Lincoln, hnt which was the Hercules with the former united into one massive ledge. At a point where the combining of a body of argenteiferous copper made its spessance, a winze was sunk a few feet by hand, when there was such decided improvement manifest that hoisting apparatus was obtained and an effort made to go down by sid of steam hoisting and pumping machinery.

COAL.—*Ledger*, Jan 10: Prospecting for coal in Jackson valley is progressing steadily, and new discoveries have been made. Work on the Luncha Plana mine has only been prosecuted to a limited extent for some time past. The last work developed a considerable increase in the main vein, and as the works are driven in the coal becomes heavier and of superior quality. The owners intend running an incline to the vein from the north side of the hill, thus rendering their mine easier of access. Recent work on the mine near Ione City has developed a heavy body of coal of excellent quality.

ONEIDA.—*Sutter Creek Independent*, Jan. 6: The newly-discovered body of rock in the lower level of the Oneida is being opened up as rapidly as possible. The ledge is now increased to a width of 5 or 6 ft. The rock is believed to be of a richer quality than heretofore discovered.

CALAVERAS COUNTY.

Good YIELD.—*Chronicle*, Jan. 10th: From the Monte Christo mine at Mosquito Gulch 60 tons of quartz yielded 95½ ounces of gold—an average of \$36 per ton. The rock was crushed in Garland's new mill at Mosquito. The Monte Christo is owned by Messrs Albright, Rechenbach & Co. The rock recently crushed was taken from a depth of about 120 feet from the surface. The ledge varies from 1 to 3 feet in width, the rock all containing gold.

BLUE MOUNTAIN.—Late intelligence from Blue Mountain is flattering in the extreme. Rich quartz has been struck in the bottom of the shaft in the Heckeendorn, and the number of hands employed has been increased. The officers of the company have in contemplation the addition of more stamps, and will enlarge the working capacity of the mine in other respects. Other mines in the district are also showing well, and work is being vigorously pushed.

HAULING ROCK.—Hauling the quartz recently taken from the upper tunnel of the San Bruno mine at Mosquito to Garland's mill has been commenced. There are about 100 tons in all.

MINERAL PATENT.—The Watson Bros. placer mining claim, consisting of 110 acres, located in Township 4 North, Range 11 East, this county, has been sold to Abram Shear.

GARLAND'S MILL.—Garland's new mill at Mosquito has lately been furnished with self-feeders, appliances that save a great deal of trouble, and add to the milling capacity of the battery. Everything works to a charm.

DITCH BROKEN.—The water ditch broke Wednesday, at Cspe Horn, near Rich Gulch Flat. About 20 feet in length of the lower embankment of the ditch, which at that point runs along an exceedingly steep declivity, slid out, cutting off the water supply entirely. A large

NAME OF COMPANY.	IN MINE	HIGHEST SHARES	LOWEST 4 LAST	ADVANCE	DECLINE
WASHOE.					
Alamo Gold and S. M. Co	300	6000	88	52	12
Alpha Consolidated	3000				
Aits		30000	2 1/2	6 1/2	3 1/2
American Flat	1000	30000	2 1/2	4	1 1/2
Arizona and Utah	65	20000	6 1/2	4 1/2	2 1/2
Bacon Mill & Mining Co.	65	54000	90	37	1 1/2
Baltimore Consolidated	1110	104000	76	34	7
Belcher	224	2000	36	24	
Best & Belcher	224	2000	36	24	
Bowers	224	2000	36	24	
Buckeye	16000	30	23		
Bullion	2200	3000	40	10	1 1/2
Caledonia Silver M. Co.	5000	20000	40	30	25
Central	150	10000	10	9 1/2	19
Central No. Two	100	20000	40	37	1 1/2
Chollar-Potosi	2300	20000	76	64	
Confidence	130	24500	15 1/2	11	1 1/2
Cons. Gold Hill Quartz	34 1/2	20000	94	70	
Consolidated Virginia	1160	105000			
Cook & Belcher	1160	24000			
Crown Point G. & S. M. Co.	600	100000	18	103	1 1/2
Daney	2000	24000	3	2 1/2	
Dardanelles	1200	2800	7 1/2	5 1/2	1 1/2
Eclipse	70	25000	7 1/2	5 1/2	1 1/2
Empire Mill & M. Co.	15	50000	7 1/2	5 1/2	1 1/2
Flourmount	400	8000	45	25	
Flowers	3000	12000			
Franklin		20000	2 1/2	1 1/2	
Globe	1200	48000	42	21	2 1/2
Gold & C. S. M. Co.	300	16000	94	52	1 1/2
Hale & Norcross	184	100000	8 1/2	6 1/2	1 1/2
Imperial	2000	30000			
Indus	2000	30000			
Neutracon	3000	30000	1 1/2	4	2 1/2
Julia Little	2000	30000	1 1/2	4	2 1/2
Julia Gold and S. M. Co.	2000	30000	1 1/2	4	2 1/2
Junius	3000	30000	1 1/2	4	2 1/2
Kentuck	95	30000	26	20	11
Knickertucker	1200	24000	9	6 1/2	
Kossuth			7 1/2	5 1/2	1 1/2
Rocky Mtn.	3600	36000			
McNamee	1600	50000	60 1/2	2 1/2	10 1/2
Mint Gold & S. M. Co.	3000	30000	5 1/2	3	1 1/2
Nevada	3600	30000	5 1/2	3	1 1/2
New York Consolidated	800	10000	42 1/2	3	7 1/2
Occidental	800	10000	42 1/2	3	7 1/2
Ophir Silver Mining Co.	1200	16000	112	103	1 20
Overman Silver M. Co.	2000	30000	80 1/2	75 1/2	1 20
Phil. Sheridan	1200	24000	80 1/2	75 1/2	1 20
Pition	2000	30000	80 1/2	75 1/2	1 20
Rock Island	2000	30000	80 1/2	75 1/2	1 20
Savage	500	24000	112	80	3 15
Segregated Belcher	160	8400	175	102	3 15
Segregated Caledonia	10000	1	65 1/2	13 1/2	1 1/2
Sgt. Rock Island	2000	30000	34	25	1
Senator Silver M. Co.	2000	30000	34	25	1
Sierra Nevada	2000	30000	34	25	1
Silver Hill	5000	14	9 1/2		
South Concha	2000	30000			
South Overman	2000	30000			
Sacramento Mill and M. Co.	7600	24000	5 1/2	4 1/2	7 1/2
Sutro	2000	30000	5 1/2	4 1/2	7 1/2
Trench	20	24000	8	1 1/2	1 1/2
Tyler	2200	33000	23 1/2	17 1/2	8 1/2
Union Consolidated	603	20000	25	4	9 1/2
Utah	2000	30000			
Foodville G. & S. M. Co.	1400	24000	35	75	39
Yellow Jacket	1200	24000	35	75	39
NEVADA.					
Adams Silver Mining Co.	500	50000	7 1/2	6 1/2	14
Amador Tunnel & M. Co.	300	30000	63	6 1/2	9 1/2
American Flag M. & M.	300	30000	23	19 1/2	9 1/2
Arkansas	300	30000	23	19 1/2	9 1/2
Bowers	1000	30000	23	19 1/2	9 1/2
Chapman Mill & M. Co.	3000	30000			
Chatter Valley M. Co.	1000	30000	1 1/2	1 1/2	1 1/2
Chief of the Hill	1000	30000	1 1/2	1 1/2	1 1/2
Chief East Extension	36000				
Columbus M. & M. Co.	10000	50000			
Condor	2000	25000	7 1/2	6	
El Dorado South	5000				
Eureka Consolidated	50000	14	11 1/2		
Excelsior	12000				
Farmer Silver Mining Co.	1000	30000	1 1/2	1 1/2	1 1/2
Hayes	1000	30000	1 1/2	1 1/2	1 1/2
Hermes	1000	30000			
Lone Tree	1000	30000			
Huhn & Hunt S. M. Co.	3600	30000	100	13	14
Ingotamr Silver M. Co.	1000	4000	60	55c	
Ivanhoe	30000	35c	30c	10c	
Josephine	5000	50000	6 1/2	5c	10
Kentuck Consolidated	1000	30000	50c	4c	10
Kentucky Gold & S. Co.	1000	30000			
Kinross	1000	30000			
Lehigh	1000	30000			
Lillian Hill	1000	15000			
Lomax	1000	15000			
Momshon	1000	30000			
Marion	1000	30000			
Mendoc Valley M. Co.	2400	30000	14 1/2	15	14 1/2
Mocking-Bird	1200	30000	7 1/2	6	
Monitor-Belmont	2000	60000	7 1/2	6	
Murphy Silver M. Co.	800	30000	4	3 1/2	
Pacific Tunnel & M. Co.	2400	40000	2 1/2	2	
Pase & Panaca S. M. Co.	2400	30000			
Phoenix	1000	30000			
Pioche Silver Mining Co.	1000	20000	8	70	80c
Pioche West Extension	3500				
Pioche-Phoenix	4000				
Portland	6000	30000	9 1/2	4 1/2	
Raymond & Ely	6000	30000	5 1/2	4 1/2	
Ray Patch	1000	30000			
Silver Peak	1000	30000			
Silver West Consolidated	18000	50000			
Standard Mill and M. Co.	6000	20000			
Star Consolidated	2000	30000			
Starlight	2000	30000			
Sterling	2000	30000			
Spring Mount	2000	30000			
Spring Mount	2000	30000			
Ward Beecher	200	20000	4 1/2	3 1/2	5 1/2
Washington and Creole	200	20000	5 1/2	5 1/2	5 1/2
Yellowstone	200	20000	5 1/2	5 1/2	5 1/2
CALIFORNIA.					
Alpine	1200	12000			
Bellevue	8000	20000			
Belvedere Gold M. Co.	3200	20000			
Cedargold Gold M. Co.	2000	24000	4 1/2	4	
Consolidated Amador	2000	24000			
Golden Gate	2000	24000			
Dunderberg M. & M. Co.	1650	20000	17	14 1/2	1
El Dorado Ind. Quartz M.	1500	24000	2	1	1 1/2
Elmore Gold Mining Co.	1500	25000			
Independent Gold M. Co.	1500	24000			
Keystone Quartz	1500	24000			
Los Jackson	1500	24000			
Oakville Quartz M. Co.	1500	24000			
St. Lawrence M. & M. Co.	1800	20000	7 1/2	6 1/2	
St. Patrick	3000	20000			
Monmouth	400	10000			
Ynte Gravel	400	10000			
IDAHO.					
Empire	150	25000	9 1/2	6 1/2	1 1/2
Golda Chitot	730	10000	23	20	5
Ida Elmore	730	10000	5 1/2	5	1 1/2
Mahogany G. & S. M. Co.	730	10000	5 1/2	5	1 1/2
Red Jacket	660	20000	16	13	2
Rock Chitot	1000	20000	3	2	
War Eagle	1000	20000			
WHITE PINE.					
General Lee	1000	20000			
Mammoth Silver M. Co.	1800	30000	1 1/2	40c	10c
Noondy	800	21333	3 1/2	3 1/2	1 1/2
Orig. Hidden Treasure	800	21333	3 1/2	3 1/2	1 1/2
Ward Beecher	2400	30000			
UTAH.					
Deseret Consolidated	2400	30000			
Wellington	2400	30000			
OREGON.					
Virtue	12300	20000			

ASSESSMENTS—STOCKS ON THE LIST OF THE BOARDS

Company.	Location.	No.	Amt.	Levied.	Delinq't.	Sale.	Secretary.	Place of Business.
Buckey G & S M Co	Nev	9	100	Dec 18	Jan 20	Feb 7	J Macquire	419 California street
Danley G & S M Co	Washoe	8	75	Jan 6	Feb 10	Mar 3	G R Spinner	320 California st
Empire M & M Co	Gold Hill	14	100	Dec 18	Jan 26	Feb 16	G R Spinner	320 California street
Globe M. Co.	Gold Hill	5	50	Dec 24	Jan 27	Feb 16	J. Macquire.	419 California street
Hahn & Hunt S. M Co	Ely District	7	100	Dec 17	Jan 19	Feb 16	W L Phillips	409 California street
James M. Co	Nev	8	200	Dec 17	Jan 19	Feb 6	R Wegener	414 California street
Kentucky G. & S. M. Co.	Ely District	7	25	Jan 3	Feb 14	Mar 7	R Goldsmith,	513 California st
Mahogany G & S M Co	Idaho	2	200	Dec 18	Jan 24	Feb 17	T J Owens	Express Building
Mint G. & S. M. Co	Washoe.	23	200	Nov 28	Dec 31	Jan 23	D. A. Jennings.	401 California st
Verman S. M Co	Gold Hill	3	50	Dec 11	Jan 13	Feb 13	W J Stevens	414 California street
Senator S. M. Co	Washoe.	5	50	Dec 3	Jan 6	Jan 26	E. B. Holmes	419 California st
Succor M. & M Co	Washoe	9	50	Nov 26	Dec 29	Jan 19	Henry Boyle,	Stevenson's Bldg
Uish S. M. Co	Gold Hill	7	150	Dec 31	Feb 4	Feb 26	W H Watson,	392 Montgomery st
	Washoe.	4	100	Dec 8	Jan 9	Jan 23	W. E. Desn.	419 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Adams G. & S. M. Co.	Nevada	50	Dec 29	Feb 5	Feb 26	G. W. R. King,	434 California street	
Adams Flag & M Co	Ely Dist.	4	1 00	Dec 16	Jan 21	F. R. Spinnery,	320 California street	
Adams G. & S. M. Co.	Nev.	50	Dec 29	Feb 5	Feb 26	G. W. R. King,	434 California street	
Abercrombie Flat River Gravel M. Co.	Nev.	50	Dec 29	Feb 5	Feb 26	G. W. R. King,	434 California street	
Acadaban M. & M. Co. Esmeralda Nev.	50	Nov 26	Dec 11	Jan 26	B. B. Minor,	611 1/2 California street		
Coal Coal M Co	Cal	50	Dec 16	Jan 23	S. H. Hanson	402 Montgomery street		
Chief Kase Extension M. Co. Ely Dist.	10	Dec 30	Jan 10	Mar 20	R. W. Wenger,	414 California street		
Chico Gravel M. Co. Nye Co.	3	50	Dec 16	Jan 5	Nov 5	C. R. Burroughs,	402 Montgomery street	
Forest Coal M. Co. Santa Cruz Co.	33 1/2	Dec 5	Jan 5	Jan 26	O. A. Pardow,	424 California street		
Gold Canon Cons. M. Co.	Gold Hill	5	Nov 21	Dec 30	Jan 19	A. A. Pardow,	424 California street	
Grant Bline Gravel R. M. Co.	Cal	100	Dec 13	Jan 22	Feb 18	W. A. Watson,	302 Montgomery street	
Gravel Canyon Gravel M. Co.	White Pine	100	Dec 13	Jan 22	Feb 18	D. A. Jennings,	411 1/2 California street	
Ingoners S. M. Co.	Ely District	6	25	Nov 6	Dec 6	C. S. Neal,	419 California street	
Imperial S. M. Co.	Washoe	18	10	Dec 28	Feb 13	W. E. Dean,	419 California street	
Keystone No. 1 & G. & S. M. Co. Cal.	2	25	Dec 16	Jan 21	Feb 13	W. E. Dean,	419 California street	
Keystone No. 2 & G. & S. M. Co. Arizona	2	25	Dec 3	Jan 5	Feb 13	T. L. Kimball,	419 California street	
Lane & Cartwright Carbon M. Co. Brit. Col.	200	Dec 11	Jan 12	Feb 2	B. B. Minor	411 1/2 California street		
Moran Machine Mfg. Co.	S. F.	4	10	Dec 3	Jan 17	F. W. Isaacs,	314 Pine street	
N. S. & F. Gravel Railroad Ass'n	Cal.	200	Dec 22	Jan 26	Feb 13	T. D. Derby,	320 Sanome street	
Newark S. M. Co.	Ely District	5	50	Dec 31	Jan 5	F. H. 4	D. T. Bagley,	401 California street
New York Cons. M. Co.	Washoe	7	20	Dec 17	Jan 15	F. H. 4	C. H. Kibbe,	416 California street
Pocahontas G M Co	Cal	50	Dec 17	Jan 23	Feb 16	D. A. Jennings	401 California street	
Red Jacket M. Co.	Idaho	2	1 00	Dec 17	Jan 26	F. H. 4	D. W. Willie,	419 California street
Sestle Coal & G. Co.	Cal	1	25	Dec 17	Jan 26	F. H. 4	R. B. Boyes,	411 1/2 California street
Shelton & Lawrence M. & M. Co. Placer Co.	4	25	Dec 31	Jan 5	Jan 22	W. Stuart,	112 Liedersdorf street	
Sanderson G. M. Co. Calaveras Co. Cal.	8	23	Dec 31	Jan 31	Feb 23	H. J. Hartin,	531 California street	
Scorpion S M Co	Nevada	10	Dec 31	Jan 31	Feb 23	F. J. Hornsby,	415 California street	
Seismosulphur & Copper M. Co.	Nevada	10	Dec 31	Jan 31	Feb 23	F. J. Hornsby,	415 California street	
Shelton & Lawrence M. & M. Co. Cal.	4	25	Dec 31	Jan 31	Feb 23	J. M. Buttington,	Merchants' Exchange	
Wellington M & S Co	Utah	3	50	Dec 11	Jan 26	R. Wenger	414 California street	
Ward Beecher Con M Co	White Pine	50	Dec 13	Jan 19	Mar 10	D. A. Jennings	401 California street	
Washington M. Co.	Nev.	100	Jan 10	Feb 17	Mar 10	R. W. Wyngard,	318 California street	
Woodville G. & S. M. Co.	Nev.	5	1 25	Jan 8	Feb 11	A. Noel,	419 California street	

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Alpha Coms. M. Co.		Called by Trustees,	413 California st.	Special.	Jan 31st
Catala S. M. Co.		Called by Trustees,	419 California st.	Special.	Jan 27th
Cherry Creek Coms. M. Co.		R. Wegerer,	414 California st.	Annual.	Jan 26th
Crown Point Ext. M. Co.		G. R. Spinnay,	320 California street	Annual.	Jan 26th
Diamond S. M. Co.	Uth.	W. Sherman, Free.	606 Montgomery st.	Annual.	Feb 13th
Harvard H. M. Co.		F. Madge,	Merchants' Ex.	Annual.	Jan 18th
Globe M. Co.	NeV.	J. Maguire,	419 California street	Annual.	Jan 15th
Kossuth M. Co.		Ed F Stone,	419 California st.	Annual.	Jan 15th
Northridge H. M. Co.		H. Boyle,	St. George's Bldg.	Annual.	Jan 16th
Keystone Coms. M. Co.	Storcy Co Nev.	Frank Swift,	416 California street	Annual.	Jan 27th
Lower Comstock M. Co.	NeV.	G. R. Spinnay,	320 California street	Annual.	Jan 27th
Nevada S. & M. Co.		R. Wegerer,	414 California street	Annual.	Jan 27th
Quincy S. M. Co.	Washoe	Called by Trustees.	419 California st.	Special.	Jan 27th
Pioche West. Extension	Ely Dist.	T. L. Kimball,	409 California street	Annual.	Jan 27th
Richter Nevada S. M. Co.	Washoe	R. Wegerer,	414 California st.	Annual.	Jan 27th
St. Raymond & Elv. M. Co.	Ely Dist.	A. J. Souder,	220 Sacramento street	Annual.	Jan 27th
Sierra Nevada M. Co.	Washoe.	H. C. Kibbe,	419 California street	Annual.	Jan 27th

LATEST DIVIDENDS—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable
Black Bear Quartz M. Co.		W. L. Oliver.	316 California St.	30	Oct 1
Black Diamond Coal Co.	Californis.	P. B. Cornwall.	Cor. Harrison & Spear.	5 per cent	Mar. 10
Belcher M. Co.	Washoe.	H. O. Kibbe.	419 California St.	1 00	Jun 10
Crown Point G. & B. M. Co.	Washoe.	C. E. Elliot.	419 California St.	3 00	Jun 10
Edwards G. & B. M. Co.	Californis.	D. M. Kolbe.	402 Montgomery St.	1 00	Oct 2
Con. Amador M. Co.	Osl.	B. Latham.	402 Montgomery St.	50	Dec 1
Derby M. Co.		F. Cunningham.	304 Mont'g's t	50	Nov 25
Diana M. Co.		C. Fawcett.	120 Clay St.	1 00	Jan 25
Eureka M. Co.	Grass Valley, Cal.	R. Wegerer.		1 00	Dec 1
Eastport Coos Bay Coal.	Oregon.	J. L. Pool.	Merchants' Ex.	5 00	Apr. 1
Eureka Consolidated M. Co.	Nevada.	W. W. Traylor.	419 California St.	1 00	Sept 1
Golden Charlie M. Co.	Idaho	L. Kaplan.	Merchants' Ex.	1 00	Oct 2
K. K. Consolidated N. Co.		B. R. Minor.	411 1/2 California St.	25	Oct 1
La Grange Ditch & Mining Co.		R. Abhey.	312 Montgomery St.	1 00	Aug. 1
Minnesota G. & S. M. Co.		M. White.	409 California St.	1 00	Sept 1
Madaw Valley M. Co.	Ely District.	T. Colburn.	409 California St.	1 00	July 1
Mahogany G. & S. M. Co.	Idaho.	E. McCadd.	402 Mont'gry St.	1 50	Aug. 1
Monitor-Belmont M. Co.	Nevada.	B. R. Minor.	411 1/2 California St.	1 00	Dec. 1
Orviden G. & S. M. Co.		J. M. Buington.	419 California St.	1 00	Nov. 1
Raymond & Ely M. Co.	Ely Diet., Nev.	A. J. Moulder.	419 California St.	3 00	Sept 1

Our Weekly Stock Review

THURSDAY, Jan. 15, 1873.

During the past week there has been a heavy decline in the nominal value of mines on the Stock Board, notwithstanding the favorable reports from almost all localities. The market has been in such a feverish state of excitement for some time past and prices have ruled so high, that the sudden decline was not unexpected. On Friday last Ophir, which in the week previous was up to \$315, began to fall and went down to \$143. There seems to have been no cause for the break except the very natural reaction after the unusually high prices. Probably the most natural reason for the fall in Ophir was that the ring who control it were unloading while prices were high. Nearly all the stocks begin to fall and California street was in as much of a state of excitement as when prices were going up.

On Monday the market showed signs of more strength, and stocks were active at an advance in price. The new California stock was put on the market and was in demand at \$40. The Central and Central No. 2, which are absorbed in the California, disappear from the list, and Consolidated Virginia sold at \$78, the stock dividend off, equal to \$101 with the dividend.

On Tuesday the market was again quiet, with weak prices. At the close prices were generally lower. Ophir fell \$15; Gould & Curry, \$4; Best & Belcher, \$5; Savage, \$13; Chollar, \$9; Crown Point, \$7; Yellow Jacket, \$7; Belcher, \$6; Consolidated Virginia, \$1; Segregated Belcher, \$25; Overman, \$11; California, \$1. Alpha was \$6 higher; Confidence, \$1; Empire Mill. \$1 and Hale & Norcross, \$2.

dividend for 1874, of \$3 prr share, on
\$300 000.

The Superintendent of Ophir writes as follows under date of Jan. 10: "Cross-ents on 1,300-foot level continue to improve in appearance. Work was resumed this morning on the 1,465-foot level. On the 1,700-foot level work is suspended until the new engine can be lowered and put in place."

The Consolidated Virginia mine has shipped on this month's account twelve bars, valued at \$34,647.

The Chollar mine turned out 592 tons of ore last week; sent to mill 530 tons, and has on hand at mill 7,900. The ore mined averages per assay \$27 per ton.

By referring to our Stock Tables the several declines from prices of last week will be seen. The advances are few and slight. The dullness general and pretty heavy. Prominent among these declines are Alpha Con. \$12; Best & Belcher, \$7; Bullion, \$14; Central, \$25; Central No. 2, \$6; Chollar, \$19; Crown Point, \$17; Gould & Curry, \$2; Ophir, 70; Overman, \$14; Savage, \$32; Segregated Belcher, \$15; Yellow Jacket, \$39. This is in the Washoe minee alone. Belmont stock, so much in request of late, fell \$9, and Raymond & Ely fell \$4.

FROM PANIMENT.—R. P. Stevens, an old Pioche miner has but recently returned from the Paniment mines in the Telescope mountains, on the west side of Death valley, about 70 miles east of Owens lake. There were only about 30 men at the mines when Stevens left, about two month ago. He says R. P. Stewart, of Havilah, has sold his interests for \$30,000. The formation of the country is limestone, and some of the ledges show for a mile and a half or more, while a larger number can be traced on the surface 400 or 500 yards. As he saw no chance for prospecting he does not think of returning.—*Pioche Record.*

force of workmen was immediately dispatched to the scene of the "break," and the damages repaired as speedily as practicable.

SLUCINO OUT.—The Water Company's big reservoir on Negro Hill is being sluiced out again. The sediment brought down in the ditch from mining claims higher in the mountains accumulates so rapidly as to necessitate the cleaning out of this reservoir once in two or three years. Work is prosecuted day and night, a large head of water, under a heavy pressure, being employed in hydraulizing off the "slam." Mr. S. L. Prindle, Superintendent, informs us that the cleansing of the reservoir will probably be discontinued, shortly, until another rainfall sets in.

SHEEP RANCH MINE.—Messrs. Ferguson & Wallace continue to work their quartz mine at the Sheep Ranch with unprecedented success. The net proceeds from their 5-stamp battery exceed \$200 per day. The condition of their mine is excellent, and its wealth already developed marvelous.

EL DORADO COUNTY.

BREWSTER AND SHEPARD LEDGE.—*Democrat*, Jan. 10: Last Wednesday morning we paid another visit to the above-named recently developed ledge, which is located not a quarter of a mile from the center of our city. On the occasion of our former visit the crest of the ledge was being uncovered, which was found at a depth of 3 to 10 ft. below the surface of the ground, the ledge being what is called a "blind" one—that is, having no surface croppings. It was thus followed, uncovering and stripping to a depth of a few feet, for a distance of over 200 ft. across the point, running nearly due north and south, along the whole distance showing surprising uniformity in size of ledge, character of ore and in the dissemination of gold throughout it. When we were over there on Wednesday we found that the stripping had been continued sufficiently to demonstrate the permanent character and increasing size of the ledge. A tunnel has been commenced about half way down the hill and driven in about 45 or 50 ft., a road commenced from the mouth of the tunnel to the Shepard mill, and about 20 tons of fine ore sacked ready for transportation thereto. Much of the ore taken out during the past week, including some which we personally dug out of the back of the tunnel on Wednesday, can be safely reckoned on for \$1 per lb. As this seems to be the era of big bare, the calculation of Messrs. Brewster and Shepard is to immediately take out and mill not less than 100 tons of average ore, the product of which they propose to run into a bar, to show people what can be done on a ledge in the heart of the city of Placerville which is undoubtedly but a spin of the mammoth ledge not more than forty feet west of it on the surface, which has been traveled over for twenty-five years by thousands of prospectors who little suspected what wealth they were treading on.

STARTER UP.—Operations were re-commenced at the St. Lawrence mine last Monday, after an interval of about a month, during which time they have been shut down, making improvements in machinery and re-timbering portions of the shaft from the 600 ft. level, where the ledge shows larger and richer than ever before, and the mill is now at work on first class ore.

NASHVILLE AND LATROBE.—*Cor. Democrat*, Jan. 10: The old Fort Yuma mine, which is located in Agra mining district, west of Nashville, is again the scene of busy operations. They have recently put up new hoisting machinery and other improvements. The Fort Yuma is now under the superintendency of Sam Lane, an energetic miner and shrewd manager, and the mine bids fair to become highly productive. The ledge or vein is from 3 to 4 ft. wide, with well defined wall, and a large proportion of the rock will average fully \$40 per ton by common mill process. This ledge has been prospected to a depth of 125 ft., with a drift running south 50 ft. from the shaft. Several hundred tons of high grade ore on the dump and in sight, and just as soon as the weather will permit the proprietors will commence erecting a ten stamp mill.

The Lady Emma mine, in Agra district, near Latrobe, Isaac Taber, Superintendent, is putting machinery in running order and will commence work on the 1st of February. There is a 200 ft. shaft in the Lady Emma, with well defined walls, a widening vein and ore that prospects well.

Our correspondent thinks that "with a little more capital judiciously managed, Old El Dorado would set the world agog with her wonderful production of precious metals."

INYO COUNTY.

TO START UP.—*Independent*, Jan. 3d: Belshaws furnace is to start up to-day after quite a resting spell, during which it has been thoroughly overhauled. The others are in full blast.

KERN COUNTY.

Havilah Miner. Edward Henry has made a valuable discovery a few hundred yards below the McKendree mine. Last week, while running a tunnel to a certain lead, he accidentally ran into a very large blind vein of quartz, rich in sulphurets and free gold, and it is the presumption of mining experts that this is the mother of all the leads in the Havilah district. The lead measures 14 ft. from wall to wall. On the hanging wall it has a clay gouge of 4 1/2 ft., and the gouge on the foot wall is 8 inches, which leaves nine feet of the finest character of gold-bearing quartz. This lead shows big

prospects in the horn spoon. The line of the McKendree tunnel as surveyed, crosses nine cropping ledges. The number of blind ledges is unknown, but the presumption is that the mountains are full of ledges that have been covered up by surface ground or decomposed rock.

JOE WALKER MINE.—The new boilers have been started up, and are furnishing plenty of steam to the pumps, which are only 50 ft. from the bottom of the mine. The mine will be entirely cleared inside of a week.

NEVADA COUNTY.

HARVEY MINE.—*Grass Valley Union*, Jan. 9: This is a new mine, located on Clark's ranch, near the North Star mine. But little work has yet been done, but a most splendid showing of richness has been made. The ledge is about 5 ft. in thickness; a portion of it, say 2 ft. in thickness, is of quartz somewhat decomposed. In the decomposed mass are lumps of very rich rock. We saw a fine specimen from the Harvey about the size of an ordinary fist with free gold all through. There were cavities in the lump and they were lined with the brightest and most beautiful gold. The Harvey is showing well.

MAIN STREET is improving very rapidly with the macadamizing process used on it. There are a number of amateur stone breakers who take hold of a hammer and pound up the stone. Yesterday we saw a man who pounded up a piece of stone and who picked up a gold specimen from the rock he had broken. We advise all the idlers in town to break rock so as to find gold.

PLACER COUNTY.

OTA QUARRIES.—*Herald*, Jan. 10: The granite quarries of California are surpassed by none in the world, and those quarries lie principally in Placer county. The granite for the State Capitol was taken from Placer county; the granite for the Government Mint was taken from Placer county; and just now the State quarry and Quinn's quarry, at Rocklin, are engaged in filling a very large contract for the dry-dock at Vallejo. Besides these two quarries, which are at Rocklin, there are the Taylor quarry at the same place; Griffith's quarry at Penryn, and a large quarry at Pino, formerly, and we believe yet, owned by Quinn, of Rocklin. These quarries regularly employ about 200 men, and just now there is a demand for more help than can readily be obtained. The quarries at Rocklin have the contract for furnishing the granite for the Vallejo dry-dock, which will necessarily bring a great many laborers to the place, and consequently make times good for that town for some time to come at least.

SIERRA COUNTY.

AT WORK.—*Mountain Miner*, Jan. 10: Col. Baker has got water in, and the pipes are working his claim at Gardner's Point, above Port Wine. He has not a full head, of course, but enough to make a start.

BALD MOUNTAIN.—The Bald Mountain Co. have been washing out gold by the hundred ounces since water came.

ARASTMA.—Mr. Smith, of Sierra City, has invented and taken steps to secure a patent thereon, a machine for grinding quartz. When in operation one of them will reduce more quartz in a day, and grind it finer, than all the arastmas in Reis' Ravine. It works on the principle of the miller, formerly used by painters to grind paint. It is the intention to erect one in the spring.

FOREST CITY MINE.—*G. V. Union*, Jan. 9: We learn that the Bald Mountain Co., of Forest City, Sierra Co., has made a champion clean up. After drifting out gravel for 13 days and washing 8 days the Co. cleaned up 11,000 ounces of gold. The gold there is worth \$18 an ounce, which gives only \$198,000 for the little run. Yet years ago they said that Bald Mountain was worked out.

TUOLUMNE COUNTY.

GOLDEN GATE MILL.—*Independent*, Jan. 10th: The mill on the Golden Gate quartz mine started up for crushing for the first time at 10 o'clock on the 7th inst.

PATTERSON MINE.—From workmen engaged on the Patterson mine, at Tiptletown, we understand they have struck it very rich, but to what extent we did not learn.

RAYMOND'S CEMENT CLAIM.—At Sonlsby, they are taking out cement-gravel, which will be crushed in the Lander mill. They have just finished fixing up the mill, and a party is now fixing the road from the mine to the mill.

SOULSBY MINE.—In the south shaft, where the recent fire occurred, everything is now in working order, and the contract is let for sinking the shaft deeper. There is some fine looking rock in this shaft. The pumping gear in the Davidson shaft is in good running order. There are two 8-inch force pumps in this shaft, which is down about 500 feet. The level at this depth on the vein, is going through good pay rock. The new mill with all the latest improvements, will be erected on the old mill-site, in the spring. From 25 to 30 men are now employed in and about the mine, which force will be largely increased in the spring, when operations commence on the mill.

RICHES TRAM EVER.—*Democrat*, Jan. 10th: On Wednesday, at a depth of 150 ft. in the Patterson mine at Tiptletown, richer ore than any before taken out was found. Since the present company owned this property it has been successfully worked at a handsome profit.

TRINITY COUNTY.

SLUCINO.—*Journal*: Sluicing has commenced, but the supply of water is limited, the cold nights holding it back. Miners, however, are happy in the knowledge that the ground is thoroughly soaked and there is a great depth of solid snow on the mountains.

More capitalists were here this week looking at the McGillivray mine. No sales have yet been made.

THE RIVENSINK, formerly Telegraph mine, is 5 miles from Italian bar and about three-fourths of a mile above the U. S. Grant mine.

In 1860 this mine was worked successfully by Martin, Kils, Isaac Wright and others, until they sold out to other parties whose labors were not so remunerative, owing to the loss of gold in milling, and the large amount of waste rock put through before a second chute was discovered. By running a tunnel along the vein, by other parties, and leaving the waste rock unworked, good body of ore has been found; also in the old chute upon sinking, it is found to pay as rich as ever. Mr. Casserly has transferred all his right in the mine to Messrs. J. L. Murphy & Co., who will make things lively about this mine in the spring.

Nevada.

ELY DISTRICT.

MEADOW VALLEY.—*Record*, Jan. 4: No. 3 shaft 118 ft. below the 10th station; will start a drift off from the 11th station the latter part of the week. The west drift on the 10th station is in 93 ft. and looks very promising indeed. The east drift on the 9th station is in 414 ft. The east drift on the 8th station is in 428 ft. A winze has been sunk from that drift down to the vein, and is down 64 ft. The east drift on the 520-ft level is in 353 ft. and in about 40 ft. further expect to intersect the body of ore being worked from the 620-ft. level. Summit shaft down 890 ft. Work is progressing satisfactorily throughout the mine. Ore dump full, not having been able to clear it on account of the bad roads.

WASHINGTON AND CREOLE.—Shipped for December \$33,191.58 in bullion. Now sinking the western prospect winze, ore continuing the same. Also raising over both winzes in ore. The want of air for the present prevents further work being done. The Mazeppa shaft, now belonging to the Washington & Creole Co., has been sunk and timbered 100 ft. A contract has been let to sink the shaft 100 ft. further. The number of men employed is 65. Will commence shipping ore again about the 15th inst.

NEWARK.—A specimen taken from the Newark weighs 46 lbs., and will assay but little below \$1,000 to the ton. The dump begins to make a respectable showing of ore. Considering that there has been no stopping done, this presents the mine in a very favorable aspect. The force at work has been increased somewhat during the week.

AMERICAN FLAG.—Shaft now down 900 ft., and will commence putting in the 9th station immediately. Drifting will commence from this shaft to-day to cut the vein. The mill has just got through with ore from the American Flag mine. The dry kiln is undergoing repairs which it will take about ten days to complete.

PISCHE.—Now down 466 ft., and sinking rapidly. It is the purpose of the managers to continue sinking until a depth of 1,000 feet is made. The hoisting works over the new shaft operate entirely satisfactorily. The mine generally looks favorably.

PORTLAND.—Pushing the drift rapidly.

ALPS.—Started a new drift east, from which ore is being taken. The drift south continues in country rock, with indications of cutting the vein soon.

PEAVINE.—Connection has been made with the new shaft, from which ore is being taken. The mine throughout looks promising.

SILVER PEAK.—Incline now down 430 ft., and at this point the ledge is widening and the ore improving in quality.

CAROLINE.—The past week sunk about 25 ft., and sinking continues.

WASHOE DISTRICT.

OPHIE.—*Gold Hill News*, Jan. 10: The cross-cuts made from the main south drift of the 1,300-ft. level have developed the fact that a large body of rich pay ore lies at that point, extending from the first, or north cross-cut, probably to the north line of the old Central, over 300 ft. At the 1,465-ft. level the south drift was carried to within about 40 ft. of the Central line, passing through low grade ore till the last 30 or 40 ft., which was in high grade ore. Being within three or four days of the annual election for trustees, it was deemed expedient to stop work in this direction; therefore the drift was turned at a right angle, in order to get out of it, but after running this drift about 100 ft., it terminated in high grade ore, and finding it impossible to keep out of good ore, work was ordered stopped. The consequence was a sudden drop in the stock, yet nothing is the matter with the mine.

OVERMAN.—Development of a fine body in a winze from the 1,000-ft. level to connect with the main west drift on the 1,200-ft. level has given renewed life. Enough is known to warrant the belief that when the drift on the 1,200-ft. level cuts the ledge, a good pay mine will be developed. As soon as the new air compressor arrives, a small engine, to be driven by compressed air, will be placed at the mouth of the winze on the 1,000-ft. level, to do the hoisting and facilitate the sinking and prospecting.

BELCHER.—Daily yield, 500 tons, extracted from the 1,000, 1,200 and 1,300-ft. levels. A

connection has been made between the drift running north from the shaft and the drift south from the Crown Point on the 1,300-ft. level, giving a good supply of pure air. The 1,400-ft. station has been driven ahead from the inches 12 ft. The new winze, being run from the 1,300 to the 1,400, is down 43 ft. Will commence by extracting ore from the 1,400-ft. level in about 10 days. The mills are all running up to their full capacity.

DATON.—Daily yield 50 tons, the assaying \$40 per ton. This is mostly extracted from the south stopes on the 2d level, and is being shipped to the Weedward mill. The first shipment, consisting of 80 tons that gives average assays of over \$500, was made yesterday to the Auburn mill for the purpose of getting a true working test. The ore chute from the 1st to the 2d level is completed and the extraction of ore from that part of the mine commenced. New boilers are being set for the purpose of supplying steam for the new steam pump. Nothing is done at present on the 3d level on account of a heavy flow of water.

YELLOW JACKET.—Sinking the main incline is still making good progress. Considerable water encountered in the incline during the week. On the 1,500 ft. level, the work of drifting and prospecting is carried forward energetically.

JULIA.—The course of the main southwest drift on the 1,000-ft. level has been changed a little to the left to avoid cutting through a heavy body of tough clay. The main southwest drift on the 900 ft. level is still pushed steadily ahead, running parallel with the ledge, occasionally cutting bunches of ore of a fine quality.

ARIZONA, UTAH AND GLOBE.—The main west drift on the 400 ft. level is still driven vigorously ahead, the face in hard blasting ground. The ore in the up raise from the Globe tunnel has opened out 3 ft. thick and of a fine quality.

TYLER.—A heavy flow of water was encountered in the main west drift on the 200 ft. level on Thursday, stopping all work in the drift. It is expected that the water will be drained in a very short time.

FAIRMOUNT.—Main tunnel cleaned out and repaired into and through the ledge. The ledge at this point is 18 ft. in width, nearly all ore, that assays from \$15 to \$22 per ton. A drift north from the main tunnel has been started, following the line of the ledge and intended to connect with the old shaft at a depth of 170 ft. from the surface.

GOULD & CURRY.—On the 1,500-ft. level the northeast drift is still in the soft formation. On the 1,600-ft. level the east drift is now in hard blasting ground. The east drift on the 1,700-ft. or lowest level is in ground of a soft nature.

THE AUBURN MILL.—As will be seen by an advertisement in another column, the well known Auburn mill at Reno, has again started up, under the management of E. N. Riotte, J. L. Beyea and S. O. Brown. This mill has been idle for a long time but is now well prepared to do reliable work at favorable rates. No charges are made for sampling or reduction. The *Reno Journal*, speaking of this mill, says:

The company have considerable ore on hand, which has been sent them from San Francisco, from Oreana, from Winnemucca, from Salt Lake City and from Virginia City. As is well known, this extensive mill, with its various adjuncts, is to be employed principally in the reduction of rebellious ores, and is the one in which the famous Stetefeldt furnace was first successfully operated on a large scale, and its value as a chloridizing agent fully established; so that to-day, notwithstanding the numerous experiments made with a view to accomplish the same results, the Stetefeldt furnace stands unopposed by any other, as the most expeditious, safe and reliable in use. E. N. Riotte, J. L. Beyea and S. O. Brown compose the company now running the mill, and under their regime we confidently expect to see the mill as popular as ever, and mine owners show their faith in its efficiency.

SMEETING IN SACRAMENTO.—A number of gentlemen propose establishing smelting works in Sacramento, and to further that object a meeting was held on this week of those interested, when various plans were discussed. It is probable that a company will be incorporated for the purpose. About \$6,000 was subscribed among those present, and a committee appointed to solicit further subscriptions.

MINERS' UNION ELECTION.—The Virginia Enterprise gives the following list of officers of the Virginia Miners' Union elected on the 9th inst.: President, James Dockery; Vice-President, O. B. Delany; Recording Secretary, Frank Murphy; Financial Secretary, A. Mott; Treasurer, Denis Nevin; Warden, A. Dey; Conductor, C. B. Gates.

STOCKEEN RIVER MINES.—In Portland, Oregon, the Stickeen gold mine fever shows no abatement, and a rush is expected as soon as the weather settles. It is reported that a well-known gentleman of that city has purchased the steamer *Shoo Fly*, and will immediately commence building another of light draught for use on the Stickeen River.

New Society of Engineers.

DEEP MINES.—The Gould & Curry, Savage, Hale & Norcross and Imperial mines are all down to the Sutro Tunnel level, and exploring at that point. The Yellow Jacket is considerably below it, and the Crown Point has penetrated 200 feet below it.

GOOD HEALTH.

Physical Education.

Perhaps not the least advantage which is derived from muscular, active exercise, as opposed to passive exercise,—by which we refer to a ride in a carriage, or a sail in a vessel, in which latter case the abdominal muscles are the only ones actively exercised—is cleanliness. We mention this, as it has been little insisted on by the advocates of gymnastic training. It belongs rather, perhaps, to a treatise on medicinal than on athletic gymnastics; but the two are at the present day, as we have said, happily incorporated. A microscope will show the millions of drains with which the skin is perforated, for the sake of voiding effete matter. This effete matter can only be thrown off by perspiration, produced by exercise. If it is not thrown off, it is absorbed into the system, and diseases, particularly consumption, and premature death, are the result. The result is produced by the canals of the skin becoming clogged, which not only prevents the refuse matter from coming out, but also prevents oxygen, which is essential to life, from coming in.

We do not breathe with the lungs only, consuming carbon and other matter, and renewing the blood with oxygen as it passes through them. The skin also is a respiratory organ; some animals have no lungs, and breathe entirely with the skin; others with a portion of the skin modified into gills, or rudimentary lungs. In animals of a higher grade, through the lungs are the instruments principally devoted to this function, the skin retains it still to such an extent that to interfere with its pores is highly dangerous; but to arrest their operation, fatal. The breathing of the skin may be easily proved by the simple experiment of placing the hand in a basin of cold water, when it will be soon covered by minute bubbles of carbonic acid. But a more complete and scientific proof is afforded by inserting it in a vessel of oxygen, when the gas will, after a short interval of time, be replaced by carbonic acid. "We all know," says Dr. Breerton, "from daily experience, the intimate sympathy which exists between the skin and lungs, and when we are walking fast, how much more easily we get along after having broken out into a perspiration; if we are riding, our horse freshens up under the same conditions." In these homely words he is indirectly proving the chief sanitary characteristic of medicinal gymnastics.

We have most of us heard of the story of the unfortunate child who, to add solemnity and symbolic happiness to the inauguration of Leo X. as Pope of Rome, was gilded over at Florence, to represent the Golden Age. The career of that child so conditioned was brilliant, but brief. It, of course, died in a few hours. One of the reasons of the greater danger of extensive burns or scalds compared with others, smaller though deeper, is the fact that the former exclude a greater surface of skin from the oxygen of the air. M. Fourcault, a distinguished French physiologist, whose admiration of science appears to have led him to care little for the infliction of torture on other animals than himself, sacrificed a great number of Guinea pigs, rabbits and cats, by varnishing over the whole of their skin, contemplating with satisfaction the inevitable result—death—as a demonstrative proof that the skin breathes. One word more. It has been imagined that gymnastic exercise is exclusively profitable to the young. It is not so; it is of advantage, of great advantage, likewise to the old. Young persons—we include, of course, women, and wish that calisthenics, which we suppose to be a species of female gymnastics, were more systematized and popular—need little exhortation to exercise, since, by nature, motion is their chief desire; but they stand in need of advice and moderation, since, as they do everything immoderately, so they are accustomed to take too much exercise, and of an improper character, a course of proceedings not without danger. On the contrary, with older men, the increasing weight of the body, and the loss of the so-called "animal spirits," induces the desire of repose, and they need an increase of exercise beyond that which inclination enjoins on them. Thus they are brought within the province of the gymnastic code.—*Cornhill Magazine.*

NEW REMEDIES FOR CHOLERA.—French physicians, as a rule, hold to the fungoid theory of cholera, and one of their number has been experimenting with the carbolate of ammonia in cases of cholera, so far, we learn, with encouraging success. One physician (Dr. Déclat), looks upon carbolic acid as a prophylactic, to be used in the ordinary way of diet during epidemics. It is taken in the form of syrup. When a patient is attacked with cholera, the syrup should be administered, and a dilute solution of the acid injected. In severe cases, the doctor employs a syrup of carbolate of ammonia, with subcutaneous injections of the same; and he is so confident as to the efficacy of his remedy that, in cases where dissolution is impending, he injects a solution of the carbolate of ammonia directly into the veins.

ELECTRICITY AND YELLOW FEVER.—A correspondent writing from Fayette, Mississippi, to the *Scientific American*, says, that prior to the breaking out of the fever, and during the prevalence of the epidemic, the rains are unaccompanied by lightning and thunder, which in

other seasons are common. There was only one peal of thunder heard in his county between the middle of September and the latter part of October. In 1855, at a school celebration, a sufficient amount of electricity could not be generated to perform the simplest experiment with the electrical apparatus, and shortly thereafter the yellow fever broke out and raged terribly.

GLYCERINE AND CASTOR OIL.—The *Philadelphia Medical Times* has an article on this subject. It is stated that if castor-oil be mixed with an equal part of glycerine and one or two drops of oil of cinnamon to the dose, it can scarcely be recognized. The writer affirms that he has used this mixture a great number of times, and can confirm all that has been said of it. Children take it out of the spoon without difficulty, and it has been given to doctors without their discovering that they were taking castor-oil. This hint may be well worth acting upon, considering the nauseous character of castor-oil to most persons.

NUTRITIVE PROPERTIES OF APPLES.—It is stated that by a careful analysis it has been found that apples contain a larger amount of phosphorus, or brain food, than any other fruit or vegetable, and on this account they are very important to sedentary men who work their brains rather than their muscles. They also contain the acids which are needed especially for sedentary men, the action of whose liver is sluggish, to eliminate effete matters, which, if retained in the system, produce inaction of the brain, and indeed of the whole system, causing jaundice, sleepiness, scurvy, and troublesome diseases of the skin.

Useful Information.

Wax Flower Making.

The best white wax is required for the art—pure, and free from granulation. The consistency may need to be modified, according to the state of the weather, and the part of the flower to be imitated; it may be made firmer and more translucent by the addition of a little spermaceti, while Venice turpentine will give it ductility. In preparing the wax for use, it is melted with Canada balsam, or some kind of fine turpentine, and poured into flat tin moulds; these give it the form of quadrangular blocks or slabs about an inch thick. These blocks are cut into thin sheets or films, in one or other of several different ways—by fixing them down flat, with a screw and a stop, and slicing off layers with a kind of a spoke-shave; or holding a block in the hand, and passing it along a carpenter's plane, having the face uppermost; or causing the block to rise gradually over the edge of the mould, and cutting off successive slices with a smooth-edged knife.

The coloring of the wax is an important matter, seeing that in some instances the tint must penetrate the whole substance; whereas in others it is better when laid on the surface as a kind of paint. The choice of colors is nearly the same as for other kinds of artificial flowers, but not in all instances. The white colors are produced by white lead, silver white and one or two other kinds; for red, vermilion, minium, lake and carmine; for rose color, carmine, following an application of dead white (to avert yellowish tints); for blue, ultramarine, cobalt, indigo, and Prussian blue; for yellow, chrome yellow, massicot, Naples yellow, orpiment, yellow ochre, and gamboge; for green, verdigris, Schweinfurth green, arsenic green, (the less of this the better), and various mixtures of blue and yellow. For violet, salmon, flesh, copper, lilac, and numerous intermediate tints, various mixtures of some or other of the colors already named. Most of these coloring substances are employed in the form of powder, worked up on a muller and stone with essential oil of citron or lavender, and mixed with the wax in a melted state; the mixture is strained through muslin, and then cast into the flat moulds already mentioned. Or else a muslin bag filled with colors is steeped for a time in the melted wax. The material dealers sell these slabs of wax ready dyed, to save the flower-maker from a kind of work which is chemical rather than manipulative. Some flowers require that the wax shall be used in a purely white bleached state, colors being afterwards applied to the surface at selected spots.

The wax is, of course, the chief material employed in wax-flower making; but it is by no means the only one. Wire bound round with green silk, tinting brushes and pencils, shapes or stencil patterns, moulds and stampers, flock or ground-up woolen rag, and many other implements and materials, are needed.

The building-up of a wax-flower is a work of patient detail. The patterns of leaves and petals are made of paper or of thin sheet-tin, copied from the natural object; and the wax sheets are cut out in conformity with them. Only the smaller and lighter leaves are, however, made in this way; those of firmer texture and fixity of shape are made in plaster moulds. The patterns are laid on a flat, smooth surface of damp sand; a ring is built up round them, and liquid plaster is poured into the cell thus formed. Generally two such moulds are necessary, one for the upper and one for the lower surface of the leaf. Sometimes wooden moulds are employed, into which (when moistened to prevent adhesion) the wax is poured in a melted but not very hot state. The stems are made by working wax dexterously around wires, with or without an inter-

vening layer of silken thread. By the use of flock, down, varnishes, &c., the leaves are made to present a glossy surface on one side and a velvety surface on the other. A singular mode of preparing films of unusual thinness is by the aid of a small wooden cylinder, like a common cotton reel, or rather, ribbon-reel; this is dipped and rotated in melted wax until it takes up a thin layer, which layer, when cold, is cut and uncoiled; the difference of smoothness which the two surfaces present fits them to represent the upper and lower surfaces of a leaf or petal. The combination of all these materials into a built-up flower is a kind of work not differing much from that exercised in regard to textile flowers.—*British Trade Journal.*

Copying Medals.

Copies of medals or other similar articles may be readily made by a very simple piece of apparatus. A cast of the medal is first taken in wax. This is done by moistening the medal or coin slightly, and then pouring the melted wax over it. The object of the moistening is to prevent the wax sticking to the surface of the metal. While the wax is still warm, a piece of copper wire should be imbedded in it to serve as a support, and to connect with the zinc in the decomposing cell. After removing the medal from the mold, the surface of the mold is dusted over with fine plumbago until it appears quite black; all excess of the carbon is then carefully removed with a soft brush. If fine iron filings can be had, a few of them are sifted over the face of the mold, and a solution of sulphate of copper is poured on it. It is then carefully washed; this serves to give a very thin coating of copper, and facilitates further operations, but may be omitted if not convenient. Care must be taken, in putting on the plumbago coating, that it comes in contact with the copper wire. A very convenient way of applying this wire is to bend it into a ring slightly larger than the medal to be copied, lay it on the table around the medal, and pour the wax over both at the same time. Scraping with a knife exposes it completely. The mold being prepared, take an ordinary glazed earthenware basin four or five inches deep, and in it set a small flower pot, having previously plugged up the hole in the bottom of the pot with a piece of wood, a little wax, or other suitable material. The flower pot is to be filled with a weak solution of common salt. The outer basin is then filled with a strong solution of sulphate of copper, and a little bag holding crystals of sulphate of copper is hung in it to keep it saturated. Add a few drops of sulphuric acid to both solutions, place a piece of zinc in the flower pot, and connect it with the wire of the mold. The mold being now put in the outer solution, a coating of copper soon shows itself. The mold may be left in the solution two or three days, if a thick coating is desired.—*Boston Journal of Chemistry.*

Polishing Wood With Charcoal.

We extract from the *Cabinet-Maker* the following description of the method of polishing wood with charcoal, now much employed by French cabinet-makers:

All the world knows of those articles of furniture of a beautiful dead black color, with sharp, clear cut edges, and a smooth surface, the wood of which seems to have the density of ebony; viewing them side by side with furniture rendered black by paint and varnish, the difference is so sensible that the considerable margin of price separating the two kinds explains itself without need of any commentary. The operations are much longer and much more minute in this mode of charcoal polishing, which respects every detail of the carving, while paint and varnish would clog up the holes and widen the ridges. In the first process they employ only carefully selected woods of a close and compact grain; they cover them with a coat of camphor dissolved in water, and almost immediately afterward with another coat composed chiefly of sulphate of iron and nut-gall. The two compositions in blending penetrate the wood and give it an indelible tinge, and at the same time render it impervious to the attacks of insects.

When these two coats are sufficiently dry, they rub the surface of the wood at first with a very hard brush of couch-grass (*chiendent*), and then with charcoal of substances as light and friable as possible, because if a single hard grain remained in the charcoal this alone would scratch the surface, which they wish, on the contrary, to render perfectly smooth. The flat parts are rubbed with natural stick charcoal, the indented portions and crevices with charcoal powder. At once, almost simultaneously, and alternately with the charcoal, the workman also rubs his piece of furniture with flannel soaked in linseed oil and the essence of turpentine. These pouncings, repeated several times, cause the charcoal powder and the oil to penetrate into the wood, giving the article of furniture a beautiful color and perfect polish, which has none of the flaws of ordinary varnish. Black-wood, polished with charcoal, is coming day by day to be in greater demand; it is most serviceable; it does not tarnish like gilding, nor grow yellow like white wood, and in furnishing a drawing-room it agrees very happily with gilt bronzes and rich stuffs. In the dining room, too, it is thoroughly in its place to show off the plate to the greatest advantage, and in the library it supplies a capital framework for handsomely bound books.

DOMESTIC ECONOMY.

Roast Turkey.

After drawing the turkey, rinse out with several waters, and in next to the last mix a teaspoonful of soda. The inside of a fowl, especially if purchased in the market, is sometimes very sour, and imparts an unpleasant taste to the stuffing, if not to the inner part of the legs and side bones. The soda will act as a corrective and is moreover very cleansing. Fill the body with this water, shake well, empty it out, and rinse with fair water. Then prepare a dressing of bread crumbs, mixed with butter, pepper, salt, thyme or sweet marjoram, and wet with hot water or milk. You may, if you like, add the beaten yolks of two eggs. A little chopped sausage is esteemed an improvement when well incorporated with the other ingredients. Or, mince a dozen oysters and stir into the dressing; and, if you are partial to the taste, wet the bread crumbs with oyster liquor. The effect upon the turkey-meat, particularly that of the breast, is very pleasant.

Stuff the craw with this, and tie a string tightly about the neck, to prevent the escape of the stuffing. Then fill the body of the turkey, and sew it up with strong thread. This and the neck-string are to be removed when the fowl is dished. In roasting, if your fire is brisk, allow about ten minutes to a pound; but it will depend very much upon the turkey's age whether this rule holds good. Dredge it with flour before roasting, and baste often; at first with butter and water, afterwards with the gravy in the dripping-pan. If you roast in an oven, and lay the turkey in the pan, put in with it a teacup of hot water. Many roast always upon a grating placed on the top of the pan. In that case the boiling water steams the under part of the fowl, and prevents the skin from drying too fast, or cracking. Roast to a fine brown, and if it threatens to darken too rapidly, lay a sheet of white paper over it until the lower part is also done.

Stew the chopped giblets in just enough water to cover them, and when the turkey is lifted from the pan, add these, with the water in which they were boiled, to the drippings; thicken with a spoonful of browned flour, wet with cold water to prevent lumping, boil up once, and pour into the gravy-boat. If the turkey is very fat, skim the drippings well before putting in the giblets.

Serve with cranberry sauce. Some lay fried oysters in the dish around the turkey.—*Ez.*

Boiling Potatoes.

The lady authoress of "Uncle Tom," and divers other popular publications, has been writing a homily on cooking potatoes. I should like to know if Mrs. Stowe does really boil potatoes herself? I do, and I have long since known better than to pare my potatoes raw and then douse them naked into water red-hot—boiling at two hundred and ninety horse-power. That is one way to boil potatoes certainly, but not the proper one, by a very long way. Philosophy, common sense, and a month or two of practical experience over the dinner pot, teach us great deal better than that.

My dear madam, don't you know fifteen sixteenths of all the starch that a potato affords is deposited so near the surface, that however carefully we may pare the tubers in a raw state, we are sure to throw away the greater portion of that very material that we eat potatoes for? Then, if we toss our potatoes into boiling water, unprotected by their overcoats, we have set in a second, and hopelessly incorporated with the mass, that semi-volatile principle which gives the ill-cooked potato its slightly acid, something insipid, and always objectionable flavor.

Any thoroughly potato-hred Irish woman would as soon think of committing suicide, as boiling her potatoes undressed, in the manner recommended by our literary lady cook. And there are no better potatoes, or potato cooks, any where in this world than there are in Ireland.

I tell you, fellow-housekeepers everywhere, that the correct way to cook a potato in any country, provided boiling is the determination, is to wash it clean, first—let it lie in clean cold water two hours—then is all the better—place it in cold water in the pot, without paring, boil moderately until the test fork goes smoothly through the potato without encountering a mite of core. Then drain off the water, set the pot over the fire uncovered, for five minutes, after which wipe off Mr. Potato's jacket in a hurry, and send him to the table in a close cover, piping hot—or if you are not over-fashionable and fastidious, it is preferable to serve "murphy" in his coat.

Please follow this formula a few times, and if you shall find it a pernicious practice, you shall be at liberty to consider Madeline as competent to write a readable romance, as she is to cook a potato.—*Saturday Evening Post.*

BEAN PORRIDGE.—Boil a fresh beef bone (I think salt beef would answer, if sufficiently freshened, though I never tried it), in a large quantity of water, and use the meat for anything you choose. Let the liquor become cool, and remove all the grease. Boil a teacupful of beans in three quarts of this liquor until thoroughly soft and in pieces; add a little rice, the necessary amount of salt, and just before taking from the stove, a little thickening of some kind of meal. We use it about the thickness of gruel or gravies and add a little milk when we eat.

MINING SCIENTIFIC PRESS

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Powder and Fuse in Mining.

An item of interest in connection with the mining industry of the Pacific slope is the immense amount of different kinds of powder used in mining. Powder and quicksilver are two important items in all mining operations. On inquiry at the offices we learn that the amount of Giant Powder manufactured during 1873 was 600,000 pounds. The Comstock mines consumed about 100,000 pounds of this amount. This powder, well known for its powerful effects and reliability, is sold at the price of seventy-five cents per pound for No. 1 and fifty cents per pound for No. 2. The quantity manufactured here, as stated above, was all sold in California, Virginia and the Territories where it is going on. The sales have increased about thirty per cent. over 1872.

The California Powder Company, who sell Hercules powder as well as common black powder, have also disposed of large quantities of each. These sales have increased very much during the last year. The black blasting powder is made in Santa Cruz, in this State, and as they seldom have more than two months stock on hand, the powder is strong and not deteriorated by time. It is preferred on account of its freshness. Most of this class of powder is used in gravel mines, though some is used in quartz. Of Hercules powder they have probably sold some 18,000 or 20,000 pounds per month during the year, and sales of this product have also very much increased as its merits are becoming known.

Fuse, of which large quantities used to be imported to this Coast, is now nearly all made here, the California fuse factory, alone, having turned out over 7,000,000 feet this year. Several other factories are in operation. The best article of fuse in the world is turned out in California and large quantities are in use.

The Mining Interests in 1873.

The mining interests of the Pacific Coast have never before been in such a prosperous condition as during the year which has just closed. They have had a season of unprecedented prosperity, and, in consequence, more attention has been turned to them than in former years. We are glad to be able to note the fact that the financial success of prominent mines has induced many people to invest money in legitimate mining rather than in stock speculation. A glance at the figures we give below will indicate to any one the importance of the mining industry to the nation and the world, as well as to the Pacific States and Territories. Many people carelessly consider that the business of mining is merely one of speculation and should not meet with encouragement. The practices of a few unscrupulous men have created a distrust of all mining enterprises among a certain class of people, who look upon the business as being closely connected with horse racing and gambling.

If these people could only make a visit to some of the prosperous mining towns of the Coast, and see the great numbers of people who earn their daily bread by this very business, and see the immense traffic occasioned by the prosperous condition of a few good mines, they might change their opinions. The business is not only important in itself, but stimulates every other business in the country. We in California are always crying out about "building up manufactures," and yet many of us decry mining, which fosters mainly the manufacturing enterprise already in our midst. We have in San Francisco a great number of foundries and machine shops, employing several thousand skilled artisans, and their heavy and most profitable business is making mining machinery. If this branch of the business were taken from them, half of these foundries would be closed and the men turned out of employment.

But how any thinking man can deny the vast importance of the mining industry in the face of the figures we give in this article, we do not see. The miners are as great producers as the farmers, and much greater in proportion to their number. Why all producers should not receive every encouragement we do not understand, yet even the Government recognizes in a very slight degree the benefits of mines. When one class of men in a few States and Territories can produce in a year a sum of over seventy-two millions of dollars, taken from out of the ground itself, they surely deserve every encouragement possible to renewed exertions. We talk a great deal about the immense wheat producers of California and its importance to the state and the nation. Of course every one will acknowledge the importance of that, but many deny that mining is of half the consequence. Now this year the exact value of the wheat of this State was \$21,337,534, and the gold product of the State was \$18,025,722. When we consider that there are without doubt at least five farmers to one miner, the production *per capita* is greatly in favor of the miner.

Bullion Product of 1873.

The most reliable figures obtainable of the bullion product are those given by Wells, Fargo & Co.'s Express, as the greater proportion of the bullion passes through their hands; nevertheless it must be borne in mind that although all the statistical tables are made upon the basis of these figures of Wells, Fargo & Co., they are always below the real product. The reason is very simple. Wells, Fargo & Co. can of course only account for what passes through their hands. Numbers of men ship their bullion through private hands, and are thus not called upon to account for it to the public; the amounts thus shipped are not taken into consideration. When we remember how many small claims send a few thousand dollars by private individuals, and that the individual owners of some large claims bring their dust to the mint, whenever they find it necessary to visit San Francisco, it is easily seen that the estimate of Wells, Fargo & Co. is always below the real figure.

Mr. Valentine, General Superintendent of Wells, Fargo & Co., publishes the following statement showing the amount of precious metals produced in States and Territories west of the Missouri River, during 1873:

WELLS, FARGO & CO.'S EXPRESS,
GENERAL SUPERINTENDENT'S OFFICE,
SAN FRANCISCO, December 31, 1873.
DEAR SIR: We hand you herewith a copy of our annual statement of precious metals pro-

duced in the States and Territories west of the Missouri River, including British Columbia, during 1873. A comparison with the statement for 1872 will show that the aggregate exceeds that of 1872 more than \$10,000,000. Arizona, California, British Columbia, Oregon, Washington, Idaho, and Montana decrease. Nevada, Utah, and Colorado increase. The increase in Nevada alone is nearly \$10,000,000, the total product of which about equals all the others. As stated in our report for 1872, we only touch the borders of Arizona; therefore the figures given do not furnish a correct basis for estimating the product of that Territory; but it is inappreciable as compared with the others. Mexico is represented in silver only, and the amount named will not give a correct idea of the product of the Pacific or West Mexican Coast, as the Pacific Mail Steamship Company carry, independent of Wells, Fargo & Co., in addition to which large amounts are conveyed by British war vessels to Panama or San Francisco, of which we make no record.

The combined product of all shows—for 1872, \$62,236,913; for 1873, \$72,258,693—undoubtedly the largest yield for one year in the history of the Pacific Coast. Yours truly,
JNO. J. VALENTINE, Genl. Supt.

STATEMENT.

Territories and States.	Gold Dust and Bullion by Express.	Gold Dust and Bullion by other Conveyances.	Silver Bullion by Express.	Ores and Base Bullion by Freight.	TOTAL.
California.....	\$15,709,956	\$1,570,995	\$294,771	\$480,000	\$18,055,722
British Columbia.....	1,041,696	208,380	1,250,078		2,500,154
Mexico (West Coast).....			4,038,268		4,038,268
Arizona.....	1,116,991	43,828	3,376,883		4,537,702
Washington.....	1,171,991	229,398	3,070,883		4,472,272
Oregon.....	1,171,991	229,398	3,070,883		4,472,272
Nevada.....	1,171,991	229,398	3,070,883		4,472,272
Idaho.....	1,171,991	229,398	3,070,883		4,472,272
Montana.....	1,171,991	229,398	3,070,883		4,472,272
Utah.....	1,171,991	229,398	3,070,883		4,472,272
Colorado.....	1,171,991	229,398	3,070,883		4,472,272
Grand Total.....	\$15,709,956	\$1,570,995	\$294,771	\$480,000	\$18,055,722

The following is a comparison with the bullion product of 1872:

	1872.	1873.
California.....	\$15,709,956	\$18,055,722
British Columbia.....	1,041,696	2,500,154
Mexico (West Coast).....		4,038,268
Arizona.....	1,116,991	4,537,702
Washington.....	1,171,991	4,472,272
Oregon.....	1,171,991	4,472,272
Nevada.....	1,171,991	4,472,272
Idaho.....	1,171,991	4,472,272
Montana.....	1,171,991	4,472,272
Utah.....	1,171,991	4,472,272
Colorado.....	1,171,991	4,472,272
Total.....	\$62,236,913	\$72,258,693

This statement is a most favorable one, showing an increase of over ten millions of dollars, in the bullion product. The yield in 1871 was \$58,284,029, about \$4,000,000 less than in 1872. There in two years the increase is over \$14,000,000. During the past three years the mines of the Pacific Coast have produced in the aggregate the enormous sum of \$192,779,035.

This year California, Oregon, Washington, Montana, Arizona and British Columbia show a decrease in production, but the increase of ten millions in Nevada brings up the figures above the total of last year. Properly British Columbia and Mexico should not be included in this estimate but the bullion shipped by private parties amounts to more than the combined yield of both of them.

The monthly receipts of coin and bullion at San Francisco through Wells, Fargo & Co.'s Express for the year is as follows:

	Silver Bullion.	Gold Bullion.	Coin.
January.....	\$236,261	\$892,477	\$917,197
February.....	323,375	585,325	621,152
March.....	312,677	653,915	663,979
April.....	1,238,128	795,404	614,544
May.....	1,342,223	855,470	687,133
June.....	970,462	976,513	692,204
July.....	1,158,758	1,176,288	914,243
August.....	1,218,393	1,208,133	671,850
September.....	1,643,596	831,587	722,629
October.....	1,820,306	773,616	1,145,760
November.....	865,476	702,107	589,308
December.....	879,072	565,193	723,651
Totals.....	\$12,177,598	\$10,052,123	\$9,515,385

The source whence this treasure was received are indicated as follows:

From northern and southern mines.....	\$26,675,721
From northern coast route.....	2,224,015
From southern coast route.....	751,234
From Mexico.....	2,101,234
Total.....	\$31,752,204

The kinds of bullion produced is given comparatively as follow:

	1872.	1873.
Gold Bullion.....	\$30,429,758 95	\$27,707,059
Silver Bullion.....	24,196,719 94	34,315,750
Base bullion.....	7,610,439 00	10,235,884
Total.....	\$62,236,913 89	\$72,258,693

The production in gold declined \$2,721,693, of which \$1,000,000 was in California.

The coinage at the San Francisco mint for the year was unusually large, the total being \$22,075,400. The total gold coinage was \$21,154,500 and the silver \$920,900. The total coinage at the Mint for the past five years compares as follows:

	Gold.	Silver.	Total.
1869.....	\$13,859,050	\$481,000	\$14,340,050
1870.....	19,848,000	507,000	20,355,000
1871.....	18,905,000	1,136,775	20,041,775
1872.....	16,000,000	380,600	16,380,600
1873.....	21,154,500	920,900	22,075,400

Mining Dividends.

After showing the product of the mines the next question is that of profit—one difficult to answer. There are no means of learning the profits made by mining companies, except those which are incorporated in this city and called on the Stock Board. The greatest misapprehension exists generally on this subject, for people suppose that because the companies do not publish statements that they are making no money. This is far from being the case, as those familiar with the subject are aware. We have compiled a statement of the mining dividends declared by companies whose offices are in this city, which differs, however, from similar statements published in other journals. Our figures are compiled in relation to those companies who advertise their dividend in the public press of this city. Numbers of "close corporations" keep these figures to themselves, and it would be difficult even to name half of such companies. The following statement of the dividends is compiled as stated above.

Belcher.....	\$6,762,000
Crown Point.....	5,100,000
Caldenberg.....	24,000
Consolidated Amador.....	150,000
Eureka.....	300,000
Meadow Valley.....	180,000
Monitor-Belmont.....	75,000
Raymond & Ely.....	300,000
Black Bear Quartz.....	45,000
Eureka Cons.....	200,000
Golden Chariot.....	150,000
E R Cons.....	60,000
Minnesota.....	60,000
La Grange.....	12,500
Total.....	\$13,356,000

In 1872 the total dividends paid by mining companies, was \$6,732,100, and 1871 it was \$4,837,950. The companies that paid dividends in 1872, and not in 1873, were the Oshalla-Potosi, \$56,000; Keystone Quartz, \$30,000; Mahogany, \$15,000; North Star, \$27,000; Pioche, \$40,000; Providence, \$3,100, and Yule Gravel, \$10,000.

In summing up the dividends as above, we only named those mines who have advertised their dividends in this city. The Diana mine paid \$1,181 as a dividend in January last, and the Idaho (Grass Valley), which is not called on our Stock Board, has paid the handsome sum of \$682,000 this year. The Keystone Consolidated has also paid dividends this year, none of which are taken into account, not being on the Board lists. The Eastport Ocos Bay Coal Company has paid \$10,000, and the Black Diamond Coal Mining Company has paid \$125,000 to its stockholders during 1873. If it were possible to obtain a full list of the dividend-paying mines, a much better showing could be made. It must be remembered, however, that the above list comprises those mines which are listed on the Stock Board. Thousands of mines scattered over the Pacific coast pay out large sums to the owners of which the public know nothing. The hydraulic mines of this State, some of which are paying very handsomely, never publish any statements, and, as a consequence, we know nothing of them. The United States Mining Commissioner never is made to produce any other list of dividend-paying mines than that published in this article. In view of these facts any one must see that the dividends are always understated.

The Assessments

For the year were levied on 148 claims and amount in the aggregate to \$6,729,743. The whole number of assessments on these 148 claims, according to the *Bulletin*, was 300. This of course does not show the number of assessments much better than the other list shows the number of dividends; but as it more necessary to advertise assessments than dividends; the list is probably fuller. In comparing these assessments with the dividends above, we find that there has been a profit to stockholders of \$6,626,257, over \$500,000 a month during the year. This was without doubt much larger, though the real sum is not easy to obtain. The total mining dividends in 1872 were \$6,731,100 and in 1873 \$13,356,000, showing an increase of \$6,614,900, or about 50 per cent. When we remember that in 1871 the total dividends were only \$4,837,950, we can appreciate the result of this year's operations. The mining interests of

California.

This year have been unusually prosperous, although the decrease in bullion product would make it appear otherwise. Quite a number of new quartz mines have been opened in this State this year, and more attention is turned to them at present than perhaps ever before. This is a move in the right direction, as there are many hundreds of good quartz claims in California which only want the aid of capital to develop into good paying properties. It is a significant fact to mention that the majority of the good quartz mines of the State are in private hands and pay well enough in themselves, without the necessity of the owners having recourse to stock jobbing operations. Several of the California street operators own quartz mines and mills in this State which pay them steady profits from one year's end to the other, and they are shrewd enough to keep such properties in their own hands. Even when they are incorporated the stock is held by a few owners who have no desire to sell. It is only when there are indications of poor rock or "petering out," that these men care to tell what the mine has paid,

and then they are ready to sell. We might mention a dozen or so cases of this kind where the mines pay reasonable profits, but the owners keep the amounts to themselves both literally and figuratively. The Eureka (Grass Valley) mine paid \$300,000 in dividends this year; is on the Stock Board and is a California mine. So is the Consolidated Amador which paid \$150,000, the Black Bear which paid \$45,000, and the La Grange paying \$12,500. The Idaho mine in Grass Valley is one of the many paying mines which are held by a few owners, and which have no stock quotations. It is an example of a mine which pays handsome profits without stock jobbing operations. During the year ending December 1st, 1873, it worked 27,624 tons of rock, which yielded \$37.91% per ton, or \$1,024,591.89. The average cost of milling and mining was \$8.61% per ton. The receipts for the year were \$1,010,612.20, and after all disbursements were made, including dividends, a balance of over \$10,000 was left in the Treasury. The dividends for the year 1873 aggregate \$682,000 or 220 per cent. on the capital stock. During the past five years the dividends from the mine were as follows:

1869.....11 Dividends, or 55 per cent.	\$170,500.
1870.....8 Dividends, or 12 per cent.	\$71,200.
1871.....12 Dividends, or 75 per cent.	\$22,000.
1872.....11 Dividends, or 52% per cent.	\$62,750.
1873.....12 Dividends, or 220 per cent.	\$682,000.

41% \$1,284,950.

This shows that 53 dividends have been paid in five years, aggregating 41% per cent. of capital stock and amounting to the sum of \$1,284,950. There are, probably, many other mines which could make as good a proportionate showing if they chose to make their affairs public; but as the owners of such mines seldom care to sell stock in them, the accounts are private. The California quartz interests instead of being "played out," are in a more prosperous condition than they have been for many years. The Idaho mine is owned by practical men who worked the mine and mill on economical business principles and not in the wasteful manner some mines are managed. The result is that they make money out of it. When people spend their own money they take better care of it than when they spend that belonging to others.

Gravel Mining.

In gravel mining, which is the principal kind of mining carried on in California, the yield for the year has been very good, when we take into consideration the scarcity of water during 1873. The old systems of gravel mining formerly in vogue have given way to more extensive methods by which more ground is worked in less time than formerly. With heavy heads of water under high pressure and all the improved mechanical appliances one of our first-class gravel claims is well worth seeing. With the new systems and an abundant supply of water many old claims long since abandoned have been made to pay handsome profits to their owners. There are no means of ascertaining the comparative yield of the gravel and quartz mines of the State, but some of the gravel mines are turning out immense amounts of bullion. Some of the yields of these claims are wonderful and prove how rich the soil of the mining counties of California is in gold. For instance, only a week or so since the Bald Mountain Co. of Forest city, Sierra county, after drifting out gravel for thirteen days and washing eight days, in all cleaned up 11,000 ounces of gold, or \$198,000. The Spring Valley Canal and Mining Co. of Cherokee Flat, Butte county, not long since sent down one single bar—the largest ever made, which was \$71,273. This was the result of 35 days' actual run with 1,000 inches of water, but only from a partial clean up. The gold obtained was from 800 feet of head flume and 14 undercurrents; while the company has 2½ miles of flumes and 28 undercurrents. The flumes had been run so full that it was almost as rich where they left off as at the head of the flume. This claim is yielding about \$50,000 per month or \$600,000 a year in gold. The gravel mines in Calaveras county have made rapid advancements during the past two years, and operations this year are larger than ever. The Calaveras Chronicle says that there are within a radius of two miles of Mokelumne Hill half a dozen hydraulics, that in scope of operations, facilities for working and yield, equal the more famous mines of the northern counties, and there is still opportunity for further locations. We have not room to mention in detail the different companies operating in California, but are confident that the coming year will be a more prosperous one than ever before.

One great point in our favor is the advent of English capital to California for investment in our gravel claims. The English investors have been badly taken in, in many instances in quartz, and they have found out that the gravel claims are surer pay than any other class of mining property. Several large claims have been sold to them this year, and many other sales are now pending. There are countless millions of dollars in the gravel banks of California, only waiting for industry and capital to bring them to light. There are in California 780 mining ditches, having an aggregate length of 4,888 miles, and supplying 220,187 inches of water per day. Nevada county alone has 76 mining ditches, which are 707 miles in length and use 33,000 inches of water daily in mining. Many more new ditches are being built and others being extended. According to the Assessors' reports for 1873, there are 243 quartz mills in California.

Quicksilver.

California, which has always been famous for her quicksilver production, is likely in the

future to become more so. A large number of new claims have been discovered this year, the majority of them in Napa and Sonoma counties. Monterey, Santa Clara, Colusa, Solano, Lake, San Luis Obispo and Fresno all contain deposits of ore containing this metal, and many of the mines are producing. Quite a number of the mines discovered this year are not producing anything as yet, as time and money are required to develop them. On many of them the owners are working away, prospecting and getting their mines ready for capital to take hold of. The producing quicksilver mines of the State are the New Almaden, New Idria, Redington, Great Western, St. John, Phoenix, Washington, Manhattan, California, Missouri, Epperson, Whittou, etc. Owing to the reticence of most of the owners, it is difficult to obtain reliable figures as to the quicksilver product. The exports of this metal for the year were as follows:

	Flasks.	Value.
New York, per rail.....	10	\$65
Mexico.....	3,324	\$74,488
Australia.....	1,000	\$8,450
China.....	700	\$3,082
Central America.....	412	\$8,714
Totals.....	5,636	\$94,799
Totals 1872.....	14,721	\$75,414

It is stated that 1,100 flasks per month are consumed in Nevada alone, about 800 flasks being used at the Comstock Lode. The price of this very necessary article has steadily risen during the year; but while it has had the effect of stimulating the development of new mines the product is said to have fallen off.

Nevada.

The State of Nevada has eclipsed all others in its bullion product this year, owing to the immensely rich bodies of ore discovered in the lower levels of the Comstock lode. The mines there are turning out immense quantities of ore and immense quantities of bullion. An idea of the business may be gained by noting the ore shipments during 1873 over the Virginia and Truckee Railroad, which according to the Virginia Enterprise amounted to 191,492½ tons. This ore was shipped from the following mines on the Comstock lode: Belcher, Crown Point, Hale & Norcross and the Consolidated Virginia.

Of this ore 100,063 tons was from the Belcher mine, 62,684 tons from the Crown Point, 23,334 tons from the Hale & Norcross, and 5,480 tons from the Consolidated Virginia mine. The ore was sent to and reduced at the Mexican, Morgan, Brunswick, Merrimac, Franklin, Vivian, Santiago and Eureka mills, on Carson river, and at the Bacon and French mills, Silver City. The Eureka mill reduced 49,342 tons, 1,450 pounds; the Brunswick, 32,454 tons, 510 pounds; the Mexican, 26,514 tons, 1,160 pounds; the French, 23,565 tons, 1,700 pounds; the Santiago, 21,790 tons, 330 pounds; and the other mills from 3,000 up to 11,000 tons each. Much ore was sent by teams to mills not accessible by rail, and some mines, as the Chollar Potosi, sent all their ores to mills in the cautious by means of teams.

The Comstock Mines are attracting the attention of the world by the immensity of their products. We have noticed from time to time the progress of work in that quarter, and deem it unnecessary to particularize here. Improvements in those mines are daily apparent, and the question with them all is probably only one of depth. A glance at our list of dividends will show the importance of two of the mines—the Belcher and Crown Point.

In speaking of the future bullion product of the State, the Enterprise says: The shipments of bullion from the Comstock mines will soon far exceed (will more than double) the largest that have ever been made in even the most productive of former years. Owing to late developments along nearly the whole length of the Comstock, the amount of ore that can be extracted is almost unlimited. Even now more ore could easily be raised than all the mills in the country would be able to reduce. We shall soon see several new mills erected. These, or several of them at least, will be put up on the Comstock a short distance below the mines to which they belong—water for running them being furnished from the new works of the Virginia and Gold Hill Water Company. For the first time in some years the supply of ore in sight in the mines is in excess of the crushing capacity of the mills now in use. There is now ore, ore, ore everywhere, and in case it shall be taken out and worked as expeditiously as has heretofore been the rule in our mines, such a stream of silver will pour out

from the State as has never before been seen. Ely district has not been as fortunate this year as last, on account of the embarrassment of its principal mine the Raymond & Ely. It is the opinion of many that the camp will receive a new impetus soon. The Pioche Record states that the amount of bullion shipped from Pioche by express during the past year was \$3,467,561.47. This is equal to \$288,963.65 each calendar month, \$66,683.87 per week, \$9,526.27 per day, \$396.92 an hour, \$6.61 a minute, and at every tick of the clock 11 cents. The total amount would coin 6,935,123 half dollars, and if these were placed in a straight line would reach 240,869 yards, or nearly 137 miles, sufficient to enclose, with half dollar pieces, a body of land 3¼ miles square.

The aggregate shipments of bullion from Eureka district the current year, is laid down at \$3,907,000. The yield last month was very large—\$350,000 or about \$1,200,000 per annum. They are reducing there some 350 tons of ore daily with prospects of a steady increase.

White Pine district, which has been in the shade for some time, is picking up a little. The News gives the statement of silver bullion shipped from that county during the last three quarters as follows: Quarter ending March 31st, 1,851 tons of ore produced \$33,425; quarter ending June 30, 4,904 tons produced \$178,832; quarter ending September 30, 5,384 tons produced \$165,737.

This is a fair showing for a county so dull as White Pine. We may expect an increase during the succeeding three months, the Eberhardt mill being in full blast and producing large quantities of bullion.

We have not the space to particularize other than the leading districts of Nevada, but the immense bullion yield for the year—\$35,254,507 speaks for itself. This is about ten millions more than last year.

Utah Territory.

Has made more rapid advances in mining this year than ever before. Some of the leading mines are turning out immense amounts of bullion, and the exports in the last month of the year alone from Salt Lake City amount to 1,637,791 pounds of ore, 1,241,000 pounds of bullion and 380,000 pounds of lead. Utah ranks third on the list of bullion producers, her product being nearly a million in excess of Colorado, rather a startling fact considering that Colorado has had so much the start of her. Utah has had to fight against the effects of several bad mining swindles, and had to meet the reaction consequent on a too sudden inflation of values. The financial panic also affected the mining interests of the Territory greatly. Few well developed mines are yet to be found in Utah, most of them being only partially developed, but so much attention is paid to the industry at present that a great

increase in the number of paying mines, and in the amount of bullion production may be looked for next year.

Arizona, Montana and Idaho.

Arizona, though a rich mining Territory, still suffers from its Indian fighting, and its isolated locality. Some exceedingly rich ore has been shipped to this city from there this year, most of which was from new or partially developed mines. With the opening of a railroad through this Territory the mines will be opened, and new districts prospecting.

Montana shows a falling off in her bullion product, owing to the decadence of the shallow placers. Several new and promising mining districts have been opened this year, which may change the state of affairs in 1874. The long winters of Montana are detrimental to the gravel mining interests, but the Territory has done a great deal even this year, towards swelling the bullion product of the United States.

In Idaho the bullion product for the year also shows a slight falling off from that of 1872, yet they have had prosperous times this year. The bullion product of the principal mines about Silver City alone was \$1,000,000 in 1873, and they claim to be able to double it in 1874. The Golden Chariot, one of Idaho's prominent mines, has made good dividends this year.

Oregon has turned out \$1,376,369 this year, all of which has been gold. Some of the new mines recently discovered ought to bring this amount still higher in 1874.

The Washington Territory product was also nearly all gold, only \$3,054 out of \$209,395 being in silver.

Colorado shows an increase of over \$1,000,000 from its bullion product of 1872, and its mining interests are in a prosperous condition.

Croft's Life Protector.

Geo. A. Croft, of Croft's Western World, while in this city last week showed us an invention of his which is intended, in case of fire, to protect the eyes from heat and smoke and the respiratory organs from the effects of suffocation. This "Life Protector," of which an illustration is given herewith, is a new invention, and it is claimed that it will entirely justify the opinion of practical men who have seen it, and who agree that it will prove of incalculable benefit, needing but a simple trial to convince one of its utility and value. As shown in the cut, the invention consists of a shield or guard of hard rubber, with flexible edges, which fits the conformations of the head and face so nicely that no smoke can enter, while the exhalations of the breath are at the same time excluded. While thus shielded, the eye-sight is kept unimpaired by strong pieces of glass. The nostrils and mouth are protected from smoke, heat, vapor or gases, by a curtain of suitable material, depending from the rubber frame-work, and fastened closely around the throat and at the sides. The whole is confined by a band which passes over the head. To increase the efficiency of the "Protector" as a respirator, a wet sponge is placed inside the curtain which covers the mouth.

It is quite simple and cheap, \$5 at retail, and may be rolled up and put in the pocket easily. With fire-extinguishers they are very convenient, as the use of one will enable a person to carry an extinguisher into places where he could not otherwise go. It will greatly increase the value of the extinguishers, now so generally used. There are many uses to which it will be put. Persons living in hotels will keep them for their own safety, remembering that suffocation often causes death where escape would otherwise have been easy; for miners and others it will obviate danger from noxious gases; with it apirians can live their bees without danger; and the ways indicated suggest but a tithe of those in which the "Protector" will prove beneficent in the salvation of life and property.

Beers' Patent Gold Crowns.

While it is the province of the skillful operator to save and not destroy, yet he is often called to extract the ruins of a once fine molar, or other organs of mastication, that have been so broken down by decay, or whose walls are so fragile as to be beyond the reach of all former modes of restoration; in such cases, especially, this invention must be hailed with delight, for if skillfully applied it restores them again to usefulness and beauty. These caps or crowns are made of 20 carat gold, highly finished, of assorted sizes, and in shape, exact representations of the natural teeth.

Our cuts explain themselves. In applying the new process, the operator first removes the decayed portion of the old tooth, until nothing is left but a sound and firm basis on which to build. The stump is then filed in the usual manner. A crown is next selected of approximate size and shape, and it is accurately fitted and trimmed, care being taken to obtain a close articulation with the natural tooth, or what is left of it. Into the gold filling a small gold screw is inserted, and its head is made to project, so that when the crown, or shell, is filled with cement, of oxichloride of zinc, or other suitable material, the whole will form a compact and lasting tooth.

The advantages of this process over the old method, of building up by hammering on gold foil, as in ordinary fillings, until a sufficient size has been obtained, are the increased stability secured, and the greater ease in working. This latter point is an important one, as frequently and usually the old tooth is not firm enough to bear the incessant hammering which is required to solidify the mass.

Dr. Beers has, in this invention, added largely to the scope and utility of the science of dentistry, which is shown in many other ways to be a truly progressive one. New and improved tools are daily making their appearance, and the tendency is to shorten the duration of operating, and to lessen pain, while in every respect the workmanship of dentists is far superior to that of years past. One thing remains to be discovered, and many are now engaged in its search, and that is, a composition which shall be as satisfactory as the material of which false teeth are made, which can be easily applied, and which will not require heat to fix and glaze it. When this is found, sugar, acids and old age may be defied, and society will be perpetually on a broad grin.



LIFE PROTECTOR.



TOOTH CROWNS.

Scenes in the High Sierras.

[Written for the Press by J. G. LEMMON.]

Leaving Yosemite.

Down from cloud-land, out from Paradise and on the dusty road again. So transcendent has been the scenery of the last two weeks that we are quite unwilling, though compelled, to turn our footsteps homeward, there to digest the mental pahnulm garnered. The reflection that, according to all accounts, we never shall look upon a fairer scene, caused us to gaze to the last opportunity over the rim of the receding Yosemite—one of the last objects reeting upon the retina of the eye, and thence preserved indelibly on memory's tablet, being the ever-lovely, shining, leaping fall of Po-ho-no, tearfully waving us a last adieu, but as sweetly inviting us back to view the Great Gallery again, at any future day.

After Yosemite, what can arrest attention or command description? We have no first-class volcano, like Kilauea, within easy reach, no Mammoth Cave; but we have one of the most extensive and stupendous works of man. Let us make a slight detour and add the mines of the Comstock lode to our other unrivalled "scenes."

Hastily glancing, on our return by the upper road, at Sonora,—the queen of California cities, enthroned among fruit-orchards and vineyards,—curiously examining the singular lime-stone natural bridges over Coyote creek, we approach again the Calaveras grove of big trees.

These great sequoias—monsters among the monsters—ever have power to arrest attention. Here we rest for a night, glad of the chance, ere evening shadows fall, of again roaming through the grove, mounting the stile to the upper side of the "Father of the Giant," gaze, wonder and adore. Great preachers are these big trees, preaching great truths. They tell of power, of wisdom, of far-reaching plans, but, best of all, they argue immortality for man. When we reflect that they have lived three thousand years, and that as there is no natural limit to the life of the *exogenous*, or outside growing plant, it is not unreasonable that man, with powers of infinite imagination, of limitless conception, of boundless aspiration, of universal belief and hope; it is not unphilosophical that the spirit of man is fitted for and will exist throughout eternity.

Gathering cones, sprays of foliage and several rare flowers, and adding to our already plethoric baes, we pursue our journey up to Hermit Valley, where the road to Lake Tahoe northward comes in, which we do not return upon but continue up the excellent turnpike eastward toward Silver Mountain.

The first part of the road is a long, tortuous climb up a crooked cañon to a pass at the great elevation of 9,000 feet. Except the sublime scenery of terraced mountains of lava on all sides, with dim stretches of valley between, and glistening peaks of snow in the far south, there was little to enliven the journey. Slowly the weary miles were added to the 500 already passed. So crooked was the road that often our camping place at night was in sight of that of the previous night, and the camp-fire of noon half sent its curling smoke through the pines on the last spur below.

Silver Mountain.

At the dilapidated county seat of Alpine County—well named—my comrade suffering a violent attack of toothache, was deprived of a much coveted chance to scale the rough and difficult side of Silver Peak, 11,060 feet high, one of the highest in central California. Alone, in the still ether, I stood upon the splintered summit, above the clouds that rifted through the passes below. Chief of the splendid views from this lofty perch was the group of peaks around Yosemite, fifty miles away to the south.

Among them shone Cloud's Rest, and, ever conspicuous if in any country, the mysterious South Half-Dome, a monument at the head of an empty colossal grave, or better, a shining land mark telling where is given to man a second Eden.

Northward John Brown's monument, and beyond, lying around the hidden Tahoe, were plainly seen John's Crystal and Tinker's Peaks; while 20 miles, farther across the railroad, nrope the dim triple turrets of Castle Peak. Nearer at hand northeastward across Carson Valley reposed the lower but most important peak in a financial view, in the known world—the silver-boweled Mt. Davidson. In the deep cañon leading to it and scattered over its east side glinted the cities of Silver, Gold Hill and Virginia. This view filled up an important interval in the observed topography of the high Sierras.

A year before I stood upon the lofty Laesen's peak in the far north; a year before that upon the gold-hearted Downieville Buttes; six months ago upon Castle Peak, near the railroad; a month ago upon John Brown's monument, near Hope Valley; last week upon Cloud's Rest, above Yosemite; and to-day, this lofty Silver peak between the two last, commands a fine view of many of the rest. On this sum-

mit among the splendid rocks of lava a "poor Piccola" was found. It belongs to the *Crassulacea* order, and is so sensitive that it rose up from my accidental tread, expanded its leaves all dripping with expressed juice and tremblingly warned me not to wound it again.

Carson Valley.

Carson valley is one of the largest and most fertile of mountain valleys, apparently, on this coast, but its thrift is retarded by a monopoly of its irrigating waters held at so high a figure that only the wealthiest farmers can buy—a matter for the Granges to look after.

Carson City is making substantial progress, owing to the establishment of the State buildings; the branch U. S. mint, and lately, by the locations of car shops there. We were kindly conducted through the mint—space forbids its description.

Passing up a deeply rutted road eastward, telling of heavy freight wagons, we heard first, the measured thump of a quartz battery, then came into view of Empire, a new town built up near two very large quartz mills on the Carson river, reducing ore brought from the distant Comstock lode by railroad, and also by the old-time big quartz wagon with its 10 mone-ter mules and one or two "hack actions."

A Noisy Canon.

Passing over a low divide, we were saluted by a tumultuous roar from pounding batteries, grinding machinery, and busy workmen, all swelling up from a narrow deep cañon below—probably the noisiest in the world. Twenty-five or thirty quartz mills—some with 40 to 60 stamps—are pounding away there nearly every day in the year, reducing by the nicest and costliest machinery the silver raised from the deep mines beneath Mt. Davidson. Around these mills are placed the boarding houses, shops, saloons, etc., resting one side against the mountain, the others upheld by posts and walls. One street threads the bottom of this cañon, and the buildings on each side form nearly a continuous wall. Though by their proximity forming one community, this densely peopled cañon has two names, Silver City and Gold Hill. Beyond, over another divide, lay terraced along the slope of Davidson the prodigy of mining towns, Virginia City—5,820 feet above the sea level; and, until the founding of Hamilton, another mining town in the same State—the highest of its size in the world.

We were assured that, large as were these towns, aggregating over 10,000 souls, the mines on the Comstock lode beneath, contained more than twice as much building material, and this information but increased our anxiety to descend to the shafts of the most extensive, most expensively worked and best paying mines ever known. By the kindness of Alfred Doten, editor of the *Gold Hill News*, letters of introduction were given to us to mine superintendents, and we prepared to make the decent the next day.

In the morning, reflecting that the officials would not heed duty until late, we climbed the husby side of Davidson, 7,825 feet high, and enjoyed for an hour a view of the cities below, the valleys around, the peaks, beyond and the great alkali desert stretching away to the east, recalling the many stories of suffering in the days of caravans. Descending the south side into the noisy cañon again, we seek the mining officers, readily obtain permission and a guide, and are prepared for our further descent by changing our clothes to a suit of heavy woolen. We were then led into the lofty building where the monster hoisting works stand near the deep shafts from which the hot and smoky air rises in a swift column.

MINERAL PRODUCE OF RUSSIA.—The "*Tableaux Statistique de l'Industrie des Mines de Russie en 1871*," which was published by M. Skalkowsky in connection with the Vienna exhibition, contain the following data with regard to Russian mining industry. In 1871 the number of mines owned by Russia, and producing gold was 979, platinum 6, silver-lead 21, copper 76, iron 1,174, zinc 6, cobalt 1, tin 1, coal 326, pyrites 1, chrome 6, rock salt 4, besides 697 naphtha pits. Their yield was from 17 million tons of gold sand, 86,400 lbs. of gold, from 168,000 tons of platinum sand, 4,504 lbs. of platinum, 35,120 tons of silver lead ore, 100,365 tons of copper ore, 820,000 tons of iron ore, 42,400 tons of zinc ore, 10½ tons cobalt ore, 8,000 tons pyrites, 817,000 tons of coal, (black coal and brown coal) 22,000 tons of naphtha, 7,000 tons of chrome iron ore, and 455,000 tons of rock salt. The smelting works of Russia produced from these raw ores, silver 29,000 lbs., lead 1,740 tons, copper 4,200, tin 8, spelter 2,700, pig iron 354,000, iron castings 30,000, wrought iron 241,500, steel 7,000, copper sheets 350, and zinc sheets 500 tons, and material for 11,255,000 roubles. The works gave employment to 266,300 men.

HOW TO TREAT BURNS.—The less that simple cuts, bruises and burns are meddled with, the better. If they are kept clean and excluded from the air, nature will take care of the healing process. The salves and lotions so commonly used are generally irritating rather than beneficial, and hinder rather than hasten the cure. For cuts, a little court-plaster to keep the edges of the skin together; for bruises, wet cloths; for burns, a covering of dry wheaten flour are usually all the treatment, and the very best, that can be used. If from an unhealthy state of the body or from external irritation, inflammation is produced, something more may be required, the remedy varying with the special case.

Salted Mines.

The article of Mr. Henry Sewell's in Sunday's *Tribune*, and his criticism upon the salting of mines, together with the remark that he had waited for citizens to contradict the absurd nonsense about salting lead and silver ores, has called the attention of miners to the fact that such a contradiction was and is necessary. The patent absurdity of seriously talking about it is well known to Mr. Sewell, and all others at all posted about mines or ores. The outside world has heard of loading a short gun with placer gold, and shooting it into the clay and gravel banks of exhausted placers to deceive some eager miner with a pan or two, into paying a few hundred dollars *poco mas amanos*. That the same thing might be done on a large scale with a mine, hearing lead, and silver, is merely a waste of breath. But let us go a little more into detail than Mr. Sewell has seen proper to go, for the very reason, as I conceive, that he had not the patience to talk or write about it. If it is true that such men as Joab Lawrence and Mr. Whitney have been arrested, hand-cuffed, and spirited out of our midst on no better ground than that the Eureka mine was salted, it is time to post the new mining world with some of the reasons why we say that no sane man would attempt such a thing. As Mr. S. says it would require the extracting of hundreds of tons of worthless rock, and the space to be filled with pay ore, and when the mine happens, like the Eureka, to be the best and leading mine, it would be exceedingly awkward and troublesome to transport and put this ore in place. Most people would prefer to sell the mine from which the salt came and let the other go, and then after all the laborer, who would he deceived? Certainly no capable mining engineer, or any honest miner. Ores or rock of any kind cannot be excavated and the space filled with other ores without the miner knowing it the moment he strikes a pick into the disturbed mass. Men and miners may imitate many things, but a mine with its ore, casing, etc., in places as God put them, cannot be imitated. The result of a few tons of crushing or smelting may be easily falsified, but to say that the mine was salted to deceive the eyes of any honest expert, is twaddle. If men buy mines upon a few pounds of rich specimens, with the hope of large gains, and do not double their money the next day, does it justify the employment of the terms, swindler, humbug, salted pocket, to every person who has received a dollar of their money; and this, too, when the mine is worth all, and, for anything they know, far more than they paid? But their enthusiasm has cooled; they have not made a fortune out of a few hundreds or thousands invested, and if they hope to compel a return of their money by this kind of cackling, it is unscrupulously resorted to. Last spring the owners of the Emma were going to disincorporate and abandon that mine as worthless. A few people here and in Alta would have relocated that mine without unnecessary delay; but they seem to have reconsidered the motion. The Eureka mine may have been sold for more than it was worth; I know nothing of the business. But that it is a mine that needs salting, or was salted, I do not believe. And if it is not a large and valuable mine, that fact will be news to many who have examined it and believe it to be one of the great mines of the Territory. Messrs. Lawrence & Whitney may have done something of which complainants can justly complain. But if Ward *et al.*, have nothing better than salted Eureka to rely on, we think they will get pickled, if not thoroughly salted, before this case is ended.—*Cor. Salt Lake Tribune.*

IMPROVED FIREPLACE.—Fredrick Proudfoot, Toronto, Canada, has an invention which consists of a fireplace, provided with an open front and back and a single fuel or fire chamber to enable it to be inserted into partition walls of rooms for heating two adjacent compartments, and so arranged that it can be readily converted into a single or one-front fireplace. The invention further consists in the provision of a suspended fire or fuel basket located in the chamber of the fireplace, and possessing a tubular shank adjustable on a stationary tubular post, said basket being also provided with counter-balance weights to cause the same to be elevated into the chimney when the fuel is removed. The invention also consists in the use or combination with such a fireplace of a steam generating boiler or tank, and pipes to convey steam to the fire-basket for aiding the combustion of the fuel, while the surplus steam is conveyed to the dome of radiation, and finally to the chimney.

HOMINY CROQUETTES.—To a cupful of cold hoiled hominy (small grained) add a table-spoonful melted butter and stir hard, moistening, by degrees, with a cupful of milk, heating to a soft light paste. Put in a teaspoonful of white sugar, and lastly, a well-beaten egg. Roll into oval balls with floured hands, dip in beaten eggs, then cracker crumbs, and fry in hot lard.

An immense deposit of shale filled with oil has been discovered on the line of the Union Pacific Railroad, about 300 miles west of Cheyenne, Wyoming. The shale burns freely, and can be used as fuel in manufacturing the oil.

Frame Buildings.

We in America, if we would secure ourselves from the repetition of wide and overwhelming conflagrations, must be governed by Old World examples, and abandon that extensive use of timber which has characterized American structures of all kinds. Whole cities of frame buildings are altogether too unsafe to tolerate. Planks are entirely too perishable, too frail, too combustible, for houses; and their use, excepting for flooring or interior trimming, ought to be prohibited. Many of our towns of large size are composed entirely of frame buildings; fires of frightful extent continually occur in them, and they rest ceaselessly under the danger of total extermination.

It is surprising how largely timber is used in our architecture. Sometimes handsome and costly churches erect on their stone towers epines of timber. Brick and stone buildings have often wooden cornices, and a more effective device than this for encouraging the progress of a conflagration could hardly be conceived. In large cities like New York the erection of frame buildings is prohibited, and it has become a question whether a similar restriction should not extend to all congregations of buildings, however small. It has become a fashion in this country to admire frame buildings. Large, and even pretentious villas, in suburban places, are, by choice, constructed like big tinder-boxes, the perishable and the frail seeming to be preferred to the substantial and the lasting. The houses that are erected in such numbers in the villages and towns outlying our great cities are built as if on purpose to supply, at some day, the material for a tremendous bonfire. A single match might ignite them. In no other country are the rates of insurance so heavy as in ours, in none others is the insurance business so extensive, and in none others is it rendered so precarious in consequence of extensive conflagrations. We burn up in every decade enough property to enrich half the population. We spare no expense in ornamenting and beautifying our structures, and yet seem to grudge the cost of rendering them stable and secure. What is needed in order to prevent disastrous conflagrations is far less of ornamental trickery and very much more of substantial strength in the buildings than now mark any of our frail and dangerous commercial centers.—*Am. Builder.*

Mining Sales in Utah.

In a letter to the *Salt Lake Tribune*, a correspondent writing from Bingham City says:—Within the last two weeks no less than five cash sales of mining property in this cañon have been consummated.

The Last Resort Mine, in Bear Gulch, was lately sold to an Eastern company for the sum of \$25,000.

The sale of the Montreal mine and tunnel, to Chicago parties, has just been effected at a large figure. They will commence the immediate shipment of 30 tons of ore daily.

The Utah Mining Company, composed of some of the wealthiest and most influential men of Buffalo, N. Y., completed their organization last Saturday, with a capital stock of \$300,000. They have purchased a group of 15 mines in Black Jack Gulch, embracing an aggregate of 9,400 feet, the character of the rock being milling ore. In all probability, a mill at the mouth of Butterfield Cañon will be an early result of their energy and enterprise.

The Oquirrh Silver Mining Company, was incorporated a few days since, for the purpose of working and developing the Seaman and Nahot lodes, and four as fine looking prospects as have yet been struck in this district. This constellation is situated in Carr Fork, a tributary of Bingham Cañon. Capital stock, \$875,000, with a working capital of \$187,500.

The Moose mine was purchased by San Francisco parties, and Mr. Kidd, of Dundee, Scotland, last week, for a good round sum. It is believed to be an A 1 property.

WOMEN'S OCCUPATIONS.—The last census returns show the existence of more trades and professions among women than one would suppose possible. Besides women farmers there are forty-five female stock herders, five barbers, twenty-four dentists, two hostlers, three professional hunters and trappers, five lawyers, 535 physicians, ninety-seven clergymen, seven sextons, ten canal women, 195 day women, one pilot, four gas stokers, thirty-three gunsmiths, seven gunpowder makers, sixteen ship riggers, with a large number of artisans, mechanics, inventors, telegraph operators, and teachers of navigation.

The presence of good quality of bituminous coal, and in great abundance, in Montana Territory, is no longer a question of doubt. The people of Helena and other towns in the Territory, after having given the matter thorough tests heretofore, have this winter made definite arrangements for substituting coal for their pine wood in a practical use as fuel.

MINT CHOW-CHOW FOR ROAST LAMB.—Take one third onions, two thirds cucumbers; add pepper, green pepperc, and mustard; chop altogether, finely; put into a jar and add strong vinegar and salt; work it up, and in a few days it will be fit for use.

The largest mining ditch in the State is that of the Amador Canal and Mining Company, which is ten feet on top, six feet on the bottom and three feet deep.

Paying for Mineral Lands.

On December 15, 1873, the following bill was introduced into the House of Representatives by Hon. J. D. Ward of Chicago, and now before the Committee on Public Lands:

A bill supplemental to and amendatory to the Act entitled "An Act to promote the development of the mining resources of the United States," approved May 10, 1872.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that any person, association or corporation, qualified under existing laws to receive a patent from the United States for mineral land, who claim mining locations upon veins or lodes of quartz or other rock in place, bearing gold, silver, cinnabar, lead, tin, copper, or other valuable deposits, or placer claims, situate upon the public domain, upon which the sum of not less than \$500 has been expended in labor or improvements, shall, within one year from the date of the passage of this Act, file with the Register and the Receiver of the proper Land District, in manner prescribed by the Act to which this is supplemental and amendatory, an application for a patent for the mine, mining ground, land and premises so claimed; and if no adverse claim be filed during the publication of the notice thereof, such claimant shall, within three months from the date of such filing of his application, make the final proof required under said Act, and pay for the land, included in his claim at the rate of ten dollars per acre.

Sec. 2. That in the case of mining claims which now are, or may hereafter be located, and upon which the sum of \$500 has not been expended in labor or improvements, the claimants thereof shall make application for patent therefor, in manner prescribed by law, within one year from the time when such \$500 shall have been expended in labor or improvements thereon, and shall make final proof and payment therefor, in manner and at the rate aforesaid, within three months from the date of such application, if no adverse claim be filed during the publication of the notice: *Provided*, That nothing herein contained shall be considered as releasing the holders or claimants of unpatented mining locations from the obligation to expend the amount in labor or improvements thereon during each year such mining claims remain unpatented, as now required by law.

Sec. 3. That where an adverse claim is filed, and the right of possession shall be determined by judicial decree, in manner provided by the seventh section of said Act of May 10, 1872, the party in whose favor such final judgment shall be rendered shall, within six months from the date of the rendition of such judgment, make the filing required in such cases by said seventh section, and pay for such claim at the rate of ten dollars per acre.

Sec. 4. That where, under existing laws applications for patents for mining claims have been made, and due notice thereof given, without the appearance of an adverse claimant, and in which cases no further proceedings have been had for the purpose of perfecting title, the applicant, his heirs, successors or assigns, shall make final proof and payment, at the rate herein fixed, within six months from the date of the passage of this Act.

Sec. 5. That all affidavits required to be made under this Act, or the Act to which this is supplemental or amendatory, may be verified before any officer authorized to administer oaths, and all testimony and proofs may be taken before any such officer, and, when duly certified by the officer taking the same, shall have the same force and effect, as if taken before the Register or the Receiver of the District Land Office.

Sec. 6. That upon the failure of the claimants of any mine, mining-ground, claim or location, to comply with the provisions of this Act, the mine, claim, or location upon which such failure occurred, shall be open to relocation by other parties in the same manner as if no location of the same had ever been made: *Provided*, That the said claimants, their heirs, successors, assigns, or legal representatives, have not made application for a patent for such claim after such failure and before such relocation.

Sec. 7. That all Acts or parts of Acts inconsistent herewith are hereby repealed.

SILVER BRICKS FOR SCHOOL PRIZES.—Patrick Keys of Virginia, Nevada, has just had molded thirteen beautiful little silver bricks which he intends presenting to the public schools of that city and Gold Hill as prizes to be awarded to the best scholars. Each brick, according to the *Evening Chronicle*, has a ring attached to one end, and through this is passed a blue ribbon to be tied around the neck of the little child to whom it may be awarded. The sight of these beautiful and valuable prizes will most certainly excite the ambition of the little ones and stimulate them to renewed efforts to excel, and thus will the interest of education be promoted and the laudable end aimed at by Mr. Keys accomplished.

CONNECTIONS will be made within a few days which will thoroughly ventilate the 1,300-foot level of the Belcher mine, and afford them the long desired opportunity of hoisting their ore through their own shaft.

SEVENTY-ONE mining claims were recorded in the Ely mining district last year.

Vein Formation.

An article on this subject which was written for the *MINING AND SCIENTIFIC PRESS*, by J. R. Morton, has called forth the following from J. E. Clayton, in the *Utah Mining Gazette*.

In the *Mining and Scientific Press*, of December 27th, is published a very able and interesting article on the 'origin of veins and the formation of mineral lodes,' by J. R. Morton. To regard to the manner in which fissures are formed, his statement of the facts are so clear and conclusive that I can only give my cordial approval. He then comes to the question as to how the fissures were filled, and says: "This is not always readily answered. The theory which holds good in one instance, may be utterly at fault in another. Thus in the copper mines of Lake Superior, the metal is so closely associated with dikes of undoubted igneous origin, that injections of the metals and enclosing trap, at the same operation, at once suggests itself." To this conclusion I must take exception. I do not think the facts point to the conclusion that the native copper was ejected with the trap rock in a molten state, the facts show the reverse to be the case. Most of the copper, especially that in the cavities of the amygdaloid trap, is beautifully crystallized, and chemically pure, whilst in many instances, crystals of native silver are formed in the same cavities, and sometimes interlaced with the copper crystals, and both pure.

Besides these significant facts, crystals of calcite, agates and other minerals are found so associated with the crystallized metals as to preclude the possibility of their purely igneous origin. Any theory that holds good in one instance and is utterly at fault in another, cannot be a true theory, and should be abandoned as a mere speculation based upon an improper examination of the facts. If the copper and silver in the mines of Lake Superior had been ejected with the trap, in a molten state, the metals should have been run together in the form of an alloy, instead of each being pure, and in actual contact with each other. Besides this, it is well known that the crystals of agate, quartz and calcite, could not have been formed until the trap became sufficiently cooled to allow water, or at least hot steam to penetrate the mass of porous trap rock. The metals, copper and silver, must have penetrated the fissures and cavities of the igneous rocks, in a state of solution, with the steam and hot water; the chemical reagents being such that they were deposited in the metallic state, instead of sulphides, or other forms of the ores of those metals.

Copper is much more easily soluble than gold, yet we find gold deposited in the metallic state in such positions and associations, as to preclude the possibility of its igneous origin. The statement of Mr. Morton that 'the same phase of vein formation of Little Cottonwood Cañon, Utah,' as that referred to at Lake Superior, is certainly something new to mining men and scientists that have devoted much time and study to a proper understanding of the vein formation of Little Cottonwood District. There can be but one true theory of the formation of ore deposits. Local conditions control the operations of the law in so far as results may be considered, but as no two localities have ever presented precisely the same conditions, we cannot expect to find the same results wrought out in any two places just alike. Nature has produced just what the materials and the conditions under which they have been brought together would warrant. She never comes short of, or over steps the limits of law.

MINING ACCIDENT.—Despatches from Austin, Nevada, dated the 6th inst., says: James Teesider, a native of Cornwall, was killed in the 3,000-foot level of the North Star mine, Lander Hill, this afternoon, by a large rock falling upon him.

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SHAREHOLDERS.

TRUSTEES, and SECRETARIES of

ALL MINING COMPANIES,

Should see to it that their Notices are advertised legally in the MINING AND SCIENTIFIC PRESS, at much less cost than the usual rates of daily publications. Every person interested in the prosperity of legitimate mining enterprises should favor each practical economy. Send for circular of convenient dates for advertising, free blanks, and a copy of the New Code Corporation Assosom ent Law.

Mining and Other Companies.

Order to the time necessary to mail the present large edition of the M. & S. Press, we are obliged to go to press on Thursday evening—which is the very latest hour we can receive advertisements.

Diamond Silver Mining Co.—Notice.

A meeting of the stockholders of the Diamond Silver Mining Company, of Tintic District, Juah County, Utah Territory, will be held on Wednesday, the 18th day of February, 1874, at one o'clock p. m., at Sherman's Building, No. 606 Montgomery street, Room 12, for the election of Trustees for the ensuing year. The subject of levying an assessment upon the capital stock of the company will also be determined.

By direction of the Board of Trustees,
Wm. Sherman, President.
San Francisco, Cal., January 12, 1874.
ja-6t

Commercial Coal Mining Company, of San Francisco. Principal place of business, City and County of San Francisco, State of California. Location of works, Santa Cruz County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 16th day of December, 1873, an assessment of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at his office, No. 402 Montgomery street, room No. 23, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 25th day of January, 1874, will be delinquent. Notice is hereby given, that at a meeting of the Board of Directors, held on the 16th day of January, 1874, an assessment of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at his office, No. 402 Montgomery street, room No. 23, San Francisco, California.

Office, No. 402 Montgomery street, room No. 23, San Francisco, California. de29

Cupel and Tiger Silver Mining Company. Principal place of business, San Francisco, Cal. Location of works, Wallapai Mining District, Mohave County, Arizona Territory.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 25th day of October, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J P Ridgeway.....	86	1000	\$200 00
J P Ridgeway.....	87	1000	200 00
J P Ridgeway.....	88	1000	200 00
J P Ridgeway.....	89	1000	200 00
J P Ridgeway.....	90	1000	200 00
J P Ridgeway.....	91	1000	200 00
J P Ridgeway.....	92	1000	200 00
J P Ridgeway.....	93	1000	200 00
J P Ridgeway.....	94	1000	200 00
J P Ridgeway.....	95	1000	200 00
J P Ridgeway.....	96	1000	200 00
J P Ridgeway.....	97	1000	200 00
J P Ridgeway.....	98	1000	200 00
J P Ridgeway.....	99	1000	200 00
J P Ridgeway.....	100	1000	200 00
William Miller.....	49	500	100 00
William Miller.....	50	500	100 00
William Miller.....	51	500	100 00
William Miller.....	52	500	100 00
William Miller.....	53	500	100 00
William Miller.....	54	500	100 00
William Miller.....	55	500	100 00
William Miller.....	56	500	100 00
William Miller.....	57	500	100 00
William Miller.....	58	500	100 00
William Miller.....	59	500	100 00
William Miller.....	60	500	100 00
William Miller.....	61	500	100 00
William Miller.....	62	500	100 00
William Miller.....	63	500	100 00
William Miller.....	64	500	100 00
William Miller.....	65	500	100 00
William Miller.....	66	500	100 00
William Miller.....	67	500	100 00
William Miller.....	68	500	100 00
William Miller.....	69	500	100 00
William Miller.....	70	500	100 00
William Miller.....	71	500	100 00
William Miller.....	72	500	100 00
William Miller.....	73	500	100 00
William Miller.....	74	500	100 00
William Miller.....	75	500	100 00
William Miller.....	76	500	100 00
William Miller.....	77	500	100 00
William Miller.....	78	500	100 00
William Miller.....	79	500	100 00
William Miller.....	80	500	100 00
William Miller.....	81	500	100 00
William Miller.....	82	500	100 00
William Miller.....	83	500	100 00
William Miller.....	84	500	100 00
William Miller.....	85	500	100 00
William Miller.....	86	500	100 00
William Miller.....	87	500	100 00
William Miller.....	88	500	100 00
William Miller.....	89	500	100 00
William Miller.....	90	500	100 00
William Miller.....	91	500	100 00
William Miller.....	92	500	100 00
William Miller.....	93	500	100 00
William Miller.....	94	500	100 00
William Miller.....	95	500	100 00
William Miller.....	96	500	100 00
William Miller.....	97	500	100 00
William Miller.....	98	500	100 00
William Miller.....	99	500	100 00
William Miller.....	100	500	100 00
W H Smith.....	24	25	5 00
W H Smith.....	25	25	5 00
W H Smith.....	26	25	5 00
W H Smith.....	27	25	5 00
W H Smith.....	28	25	5 00
W H Smith.....	29	25	5 00
W H Smith.....	30	25	5 00
W H Smith.....	31	25	5 00
W H Smith.....	32	25	5 00
W H Smith.....	33	25	5 00
W H Smith.....	34	25	5 00
W H Smith.....	35	25	5 00
W H Smith.....	36	25	5 00
W H Smith.....	37	25	5 00
W H Smith.....	38	25	5 00
W H Smith.....	39	25	5 00
W H Smith.....	40	25	5 00
W H Smith.....	41	25	5 00
W H Smith.....	42	25	5 00
W H Smith.....	43	25	5 00
W H Smith.....	44	25	5 00
W H Smith.....	45	25	5 00
W H Smith.....	46	25	5 00
W H Smith.....	47	25	5 00
W H Smith.....	48	25	5 00
W H Smith.....	49	25	5 00
W H Smith.....	50	25	5 00
W H Smith.....	51	25	5 00
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W H Smith.....	66	25	5 00
W H Smith.....	67	25	5 00
W H Smith.....	68	25	5 00
W H Smith.....	69	25	5 00
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W H Smith.....	77	25	5 00
W H Smith.....	78	25	5 00
W H Smith.....	79	25	5 00
W H Smith.....	80	25	5 00
W H Smith.....	81	25	5 00
W H Smith.....	82	25	5 00
W H Smith.....	83	25	5 00
W H Smith.....	84	25	5 00
W H Smith.....	85	25	5 00
W H Smith.....	86	25	5 00
W H Smith.....	87	25	5 00
W H Smith.....	88	25	5 00
W H Smith.....	89	25	5 00
W H Smith.....	90	25	5 00
W H Smith.....	91	25	5 00
W H Smith.....	92	25	5 00
W H Smith.....	93	25	5 00
W H Smith.....	94	25	5 00
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W H Smith.....	105	25	5 00
W H Smith.....	106	25	5 00
W H Smith.....	107	25	5 00
W H Smith.....	108	25	5 00
W H Smith.....	109	25	5 00
W H Smith.....	110	25	5 00
W H Smith.....	111	25	5 00
W H Smith.....	112	25	5 00
W H Smith.....	113	25	5 00
W H Smith.....	114	25	5 00
W H Smith.....	115	25	5 00
W H Smith.....	116	25	5 00
W H Smith.....	117	25	5 00
W H Smith.....	118	25	5 00
W H Smith.....	119	25	5 00
W H Smith.....	120	25	5 00
W H Smith.....	121	25	5 00
W H Smith.....	122	25	5 00
W H Smith.....	123	25	5 00
W H Smith.....	124	25	5 00
W H Smith.....	125	25	5 00
W H Smith.....	126	25	5 00
W H Smith.....	127	25	5 00
W H Smith.....	128	25	5 00
W H Smith.....	129	25	5 00
W H Smith.....	130	25	5 00

And in accordance with law, and an order of the Board of Directors, made on the twenty-fifth day of October, A. D. 1873, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, room No. 12, Express Building, San Francisco, California, on Saturday, the twentieth day of December, A. D. 1873, at the hour of 12 o'clock m. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

Office, room No. 7 Express Building, San Francisco, California. oc29

POSTPONEMENT.—The above sale is hereby postponed

until Saturday, January 17th, 1874, at the same hour and place. By order of the Board of Trustees.
O. J. EATON, Secretary.

Ida and Rhoda Lewis Consolidated Mining Company. Principal place of business, San Francisco, California. Location of works, Wallapai Mining District, Mohave county, Arizona Territory.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the twenty-seventh day of October, A. D. 1873, the several amounts set opposite the names of the respective shareholders as follows:

T D Dement.....	306	25	2 50
T B Wingard.....	313	200	20 00
L Elser.....	314	50	5 00
L Elser.....	315	50	5 00
L Elser.....	316	50	5 00
L Elser.....	317	50	5 00
L Elser.....	318	50	5 00
L Elser.....	319	50	5 00
J E Slinkey.....	341	25	2 00
Joseph Sharon.....	342	250	25 00
Joseph Sharon.....	343	250	25 00
Joseph Sharon.....	344	250	25 00
Joseph Sharon.....	345	250	25 00
F Chappellet.....	348	1000	100 00
F Chappellet.....	349	100	10 00
N Steiner.....	350	100	10 00
John Clarey, Trustee.....	73	200	20 00
John Clarey, Trustee.....	77	200	20 00
John Clarey, Trustee.....	78	100	10 00
John Clarey, Trustee.....	81	50	5 00
John Clarey, Trustee.....	90	50	5 00
John Clarey, Trustee.....	91	50	5 00
John Clarey, Trustee.....	82	25	2 50
John Clarey, Trustee.....	83	25	2 50
John Clarey, Trustee.....	86	25	2 50
John Clarey, Trustee.....	87	25	2 50
John Clarey, Trustee.....	100	20	2 00
John Clarey, Trustee.....	352	25	2 50
John Cody, Trustee.....	117	50	5 00
G P Martinoal, Trustee.....	262	100	10 00
G P Martinoal, Trustee.....	263	25	2 50
G P Martinoal, Trustee.....	264	25	2 50
G P Martinoal, Trustee.....	265	25	2 50
G P Martinoal, Trustee.....	266	25	2 50
J Cohn, Trustee.....	357	1000	100 00
J Cohn, Trustee.....	358	1000	100 00
J Cohn, Trustee.....	359	1000	100 00
J Cohn, Trustee.....	360	500	50 00
J Cohn, Trustee.....	361	313	31 30
W J McDonald, Trustee.....	318	200	20 00
William Welsh.....	362	307	36 70
J T Bradley.....	363	133	13 30
J T Bradley.....	364	37	3 70
J M Thompson.....	365	100	10 00
J M Thompson.....	366	97	9 70
L A Johnson, Trustee.....	132	100	10 00
L A Johnson, Trustee.....	133	100	10 00
L A Johnson, Trustee.....	134	100	10 00
L A Johnson, Trustee.....	135	100	10 00
L A Johnson, Trustee.....	152	100	10 00
L A Johnson, Trustee.....	276	25	2 50
L A Johnson, Trustee.....	278	25	2 50
L A Johnson, Trustee.....	279	25	2 50
L A Johnson, Trustee.....	280	25	2 50
L A Johnson, Trustee.....	282	25	2 50
L A Johnson, Trustee.....	284	50	5 00
L A Johnson, Trustee.....	285	50	5 00
L A Johnson, Trustee.....	286	50	5 00
L A Johnson, Trustee.....	287	50	5 00
L A Johnson, Trustee.....	288	50	5 00
L A Johnson, Trustee.....	289	50	5 00
L A Johnson, Trustee.....	290	50	5 00
L A Johnson.....	269	187	18 70
F A Lukin, Trustee.....	295	100	10 00
F R Lewis, Trustee.....	158	100	10 00
F R Lewis, Trustee.....	161	100	10 00
F R Lewis, Trustee.....	163	50	5 00
F R Lewis, Trustee.....	164	50	5 00
F R Lewis, Trustee.....	168	25	2 50
F R Lewis, Trustee.....	169	25	2 50
F R Lewis, Trustee.....	170	25	2 50
F R Lewis, Trustee.....	171	25	2 50
F R Lewis, Trustee.....	172	25	2 50
F R Lewis, Trustee.....	173	20	2 00
F R Lewis, Trustee.....	174	30	3 00
F R Lewis, Trustee.....	175	20	2 00
F R Lewis, Trustee.....	176	20	2 00
F R Lewis, Trustee.....	177	20	2 00
J de Sta Marina, Trustee.....	31	500	50 00
J de Sta Marina, Trustee.....	32	500	50 00
J de Sta Marina, Trustee.....	33	500	50 00
J de Sta Marina, Trustee.....	40	100	10 00
J de Sta Marina, Trustee.....	42	100	10 00
J de Sta Marina, Trustee.....	43	100	10 00
J de Sta Marina, Trustee.....	45	100	10 00
J de Sta Marina, Trustee.....	53	50	5 00
J de Sta Marina, Trustee.....	206	20	2 00
J de Sta Marina, Trustee.....	217	100	10 00
J de Sta Marina, Trustee.....	221	1000	100 00
A C Morse, Trustee.....	187	50	5 00
A C Morse, Trustee.....	198	500	50 00
Charles Spencer.....	370	5000	500 00
Charles Spencer.....	230	100	10 00
Charles Spencer.....	244	500	50 00
Charles Spencer.....	245	500	50 00
Charles Spencer.....	246	500	50 00
Ambrose Sorha.....	104	40	4 00
Ambrose Sorha.....	111	100	10 00
Ambrose Sorha.....	112	100	10 00
Ambrose Sorha.....	116	100	10 00
Ambrose Sorha.....	117	50	5 00
Ambrose Sorha.....	118	50	5 00
Ambrose Sorha.....	121	50	5 00
Ambrose Sorha.....	126	25	2 50
Wm. H. Sharp.....	367	10,000	1,000 00
P. C. Lander, Trustee.....	371	3,600	350 00

And in accordance with law, and an order of the Board of Trustees made on the twenty-seventh day of October, 1873, so many shareholders each parcel of such stock as he sold to the public at the public auction at the office of the Company, Room No. 12 Express Building San Francisco, California, on Wednesday the twenty-fourth day of December, 1873, at the hour of 12 o'clock, said day, to pay delinquent assessments thereon, together with costs of advertising and expense of the sale.

C. J. EATON, Secretary.

Office, Room No. 7, Express Building, San Francisco, California.

POSTPONEMENT.—The above sale is hereby postponed until Monday, January 26th, 1874, at the same hour and place, By order of the Board of Trustees.

C. J. EATON, Secretary.

Machine Builders.

ESTABLISHED 1851.

PACIFIC IRON WORKS,

First and Fremont streets,

SAN FRANCISCO

IRA P. RANKIN. A. P. BRAYTON.
GEO. W. FOGG, Superintendent.

Steam Engines and Boilers,

MARINE AND STATIONARY,

IRON AND BRASS CASTINGS

Mining Machinery of Every Description,

And all other classes of work generally done at first-class establishments, manufactured by us at the lowest prices, and of the best quality.

Particular attention paid to Jobbing Work and Repairs.

N. B.—Sole Agents for sale of HUNTOON'S OCEAN-BRATED PATENT GOVERNOR.
18v20-3m GODDARD & CO.

FULTON

Foundry and Iron Works.

HINKLEY & CO.,

MANUFACTURERS OF

TEAM ENGINES,

Quartz, Flour and Saw Mills,

also Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard street, San Francisco. 1-47

THE RISDON

Iron and Locomotive Works.

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....\$1,000,000.

LOCATION OF WORKS:
Corner of Beale and Howard Streets,
SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors: Jesse Holladay, O. E. McLane,
Joseph Moore, Wm. H. Taylor, J. B. Haggins,
Wm. Norris, James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
24v17-47

UNION IRON WORKS, Sacramento.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS,

CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston
PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,
SACRAMENTO CITY.

PACIFIC

Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of
RAILROAD AND OTHER IRON
AND
Every Variety of Shafting,

Embracing ALL SIZES of
Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames

HAMMERED IRON

Of every description and size.

Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention.
The highest price paid for Scrap Iron.

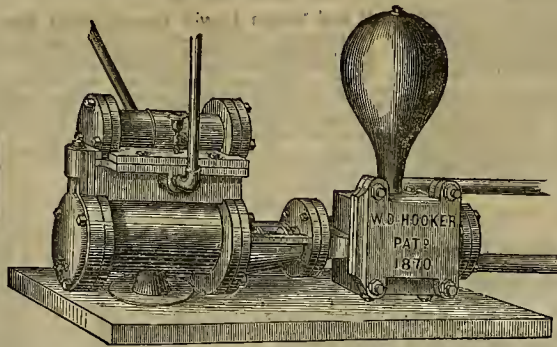
Miners' Foundry and Machine Works,

OO-OPERATIVE,

First Street, bet. Howard and Folsom, SAN FRANCISCO

Machinery and Castings of all kinds.

Hooker's Patent Direct Acting Steam Pump.



N. B.—Also manufacturer of Hooker's Deep Well and Double-Acting Force Pump. Received the Silver Medal awarded at the last Mechanics' Fair in San Francisco.

SIMPLE, CHEAP AND DURABLE.

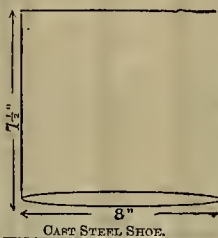
Adapted for all purposes for which Steam Pumps are used. Manufactured by the inventor and patentee, at Hooker's Machine Works, No. 13 Fremont st., San Francisco

SEND FOR CIRCULAR.

CAST STEEL SHOE AND DIE COMPANY,

OFFICE—Room 28, Hayward's Building, 419 California St.,

SAN FRANCISCO.



CAST STEEL SHOE.

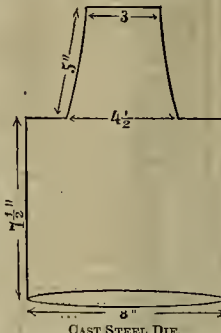
PATENTED CAST STEEL SHOES AND DIES for Quartz Mills.

An improvement greatly needed—being Stronger, more Durable and Economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as hot steel.

—ALSO—

Cast-Steel Tappets, Cams, Hammers, Gearing and Castings

OF ALL KINDS, A SPECIALTY.]



CAST STEEL DIE.

CAMERON'S

MINING STEAM PUMPS.

DAVID STODDART,

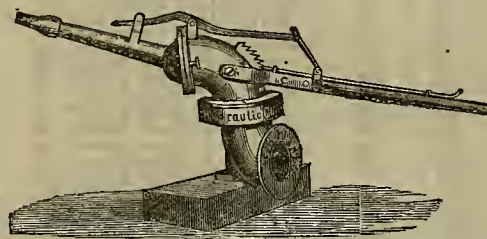
114 Beale Street,

SAN FRANCISCO.

HYDRAULIC CHIEF.

FISHER'S KNUCKLE JOINT AND NOZZLE

IS THE
Cheapest and Best
Hydraulic Machine
in use.



The only reliable party in the Hydraulic business who protects his patrons.
9v23-tf

Address F. H. FISHER, Nevada, Cal.

HYDRAULIC MINERS, TAKE NOTICE—I hereby caution Miners and Manufacturers against making, buying, selling or using a Hydraulic Machine or Joint known as the Little Giant, manufactured and sold by R. R. & J. Craig and Richard Hoskin, as the same is an infringement upon the invention of the machine known as FISHER'S HYDRAULIC CHIEF, secured by Letters Patent, No. 110,222, dated Dec. 20, 1870. All parties participating in such infringements will be rigorously prosecuted. Nevada, Jan. 13th.

F. H. FISHER.

Murtha's Patent Chimney Tops OR VENTILATORS.



RECOMMENDED BY ARCHITECTS GENERALLY.
W. O. MURTHA,
No. 16 Tyler street, San Francisco.
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MONTGOMERY'S HOTEL.

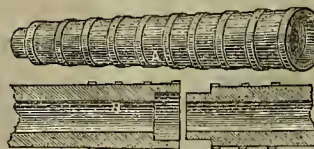
227 and 229 Second street,SAN FRANCISCO.

This Hotel has been newly furnished, and is situated in a central and healthy location, and is one of the few Hotels in San Francisco conducted on Temperance Principles.

BOARD, PER WEEK, \$3.50. BOARD AND LODGING, \$4 TO \$5.
SIX MEAL TICKETS FOR \$1.

CHAS. MONTGOMERY, Proprietor.
Passengers and Baggage taken to the Hotel free. -28

SOMETHING NEW.



Wooden Pipe of all Sizes.

From one to twelve-inch bore, suitable for water or gas, that will stand as much pressure and last as long as iron, for half the cost.

Send for descriptive catalogue and price list to

H. F. WILLIAMS,
331 Montgomery st., S. F.
11v27-awhp

AVERILL'S

CHEMICAL PAINT

Of any desired Shade or Color,

Mixed ready for application, and sold by the gallon.

It is Cheaper, Handsomer, more Durable and Elastic than the best of any other Paint.

Office, corner Fourth and Townsend streets, San Francisco. Send for sample card and price list.
15v23-3mcowhp HEALY & JEWELL, Agents.

SACRAMENTO FOUNDRY,

N. E. corner N and Front streets.....SACRAMENTO,

Steam Engines—all kinds of Mining Machinery.

SHIP, AGRICULTURAL, STOVE, RANGE AND HOUSE CASTINGS.

Iron Railings and Ornamental Work of every description

At the Lowest Rates.

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WM. GUTENBERGER.

OCCIDENTAL FOUNDRY,

137 and 139 First street.....SAN FRANCISCO.

STEIGER & BOLAND,

IRON FOUNDERS.

IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Rolling Pan and Callahan Grate Bars, suitable for Burning Screenings.

Notice.—Particular attention paid to making Superior Shoes and Dies.
20v26-3m

CALIFORNIA BRASS FOUNDRY,

No. 125 First street, opposite Minna,
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ALL KINDS OF Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Belts and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch.

PRICES MODERATE.
J. H. WOOD, V. KINGWELL.

THOMPSON BROTHERS,

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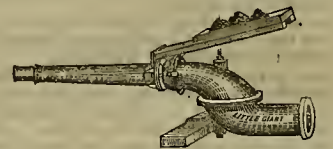
125 and 131 Beale street, between Mission and Howard,
San Francisco.

LIGHT AND HEAVY CASTINGS,

of every description, manufactured. 24v16qr

Machinery.

TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

All persons infringing on either of those patents

WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under Craig's, Rice's, Macey's and Hoskin's patents.

I Guarantee Full Indemnity to all my Customers.

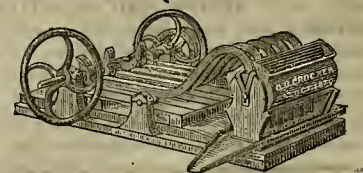
Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an Improved LITTLE GIANT.

For further particulars apply to

R. HOSKIN, Dutch Flat.
R. & J. CRAIG, 304 Montgomery st., S. F.
OR WILLIAMSON & CORY, Marysville.
Dutch Flat, August 1 1873. 6v27-2m

CROCKER'S PATENT TRIP HAMMER QUARTZ BATTERY.



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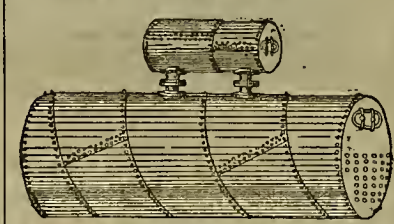
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A SWIMMING BATH.

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THE OFFICE OF THE OPHIR SILVER MINING Company has been removed to Rooms 1 and 2 Hayward's Building, 419 California street. ja10-1f

JOSEPH MARKS, Secretary.

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THE OFFICE OF THE EOLIPSE, WINTERS AND PLATO Consolidated (Gold Hill) Mining Company has been removed to Room 3 Hayward's Building, 419 California street. ja10-1f

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THE FAR WEST,
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All about its Resources, Mines, Railroads, Lands, Indians, Climate, and Developments Illustrated and Described in
CROFT'S WESTERN WORLD,
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free to each subscriber.
Two sample WOUNDS sent for 10 cents. Agents wanted.

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Globe Iron Works, Nos. 143 and 145 Fremont street, between Mission and Howard, S. F. 1v28-6m

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and Progressive Industry.

BY DEWEY & CO.,
Patent Solicitors.

SAN FRANCISCO, SATURDAY, JANUARY 24, 1874.

VOLUME XXVIII
Number 4.

Beach Mining.

The mining operations carried on at Gold Bluffs, where the auriferous sand is gathered from the beach, are something peculiar to California, but very little seems to be known concerning these mines and the way they are worked. The deposit of auriferous gravel is on the coast line of Klamath county, Cal. In 1850, when this portion of the coast line was still in undisturbed possession of the Indian tribes, a party of adventurers traveled from Trinidad up, seeking for the mouth of Trinity river, which instead of being in reality an affluent of the Klamath, was supposed to have a separate mouth. One of this party was J. Johnson, now a resident of Crescent city. At a favorable spot on the beach they saw glittering particles in the sand, which on examination proved to be gold. After collecting some of this gold they went back greatly excited to Trinidad to procure provisions, etc.

On their return, however, they found nothing but a bed of gravel, a change in the direction of the surf having carried away or covered up the gold. It may be remarked that when the direction of the wind is such that the surf breaks square on the beach, it rolls up masses of coarse gravel and no black sand is visible; but when it cuts the beach at an angle the gravel is washed into heaps in certain spots, and in others black sand is deposited, more or less rich in gold. After the discovery mentioned above ensued the famous "Gold Bluff excitement," well remembered by many early Californians. The first mining claim taken up was located by Bertrand and Nordhamer in that year. The beach sands were worked in rockers and sluices. From that time to the present these beaches have been steadily worked, the highest amount taken out in one year up to the present being said to be \$25,000 for the lower claim. The proprietors have, however, labored under the disadvantage of a scanty supply of fresh water, not being able to keep their sluices running more than one-third of the time.

At the last meeting of the California Academy of Sciences Mr. A. W. Chase, of the United States Coast Survey, read a paper descriptive of these bluffs, and presented at the same time drawings showing a general view of the mining ground and sections of the bluff. He describes the coast line, coming from the north after leaving the Klamath river, as being extremely broken and rocky. At a point about four miles south of the river, banks and deposits of sand appear, although the commencement of the bluffs proper is at the mouth of the Ossega creek and seven miles from the Klamath. Then for nine miles there is an almost unbroken line of cliffs, varying from one to five hundred feet in height. Many of the bluffs are absolutely vertical, and in some instances are overhanging. At low water there is a narrow beach, but when the tide is full the sea washes directly against the base of the cliff, the beach being then impassable. A view of the beach is shown in Fig. 1 of our engravings.

The mountains back, of which the bluffs form the sea escarpment, are all one immense mass of gravel, of varying size and distinctly marked layers or stratifications. This gravel can be traced across the country northeastwardly to a point on the Klamath river, about thirty miles distant, where the same form of deposit makes its first appearance as you descend the river.

As the bluffs are similar, or nearly so, in stratification, we give a cut (Fig. 2), made from drawings by Mr. Chase, showing the section of the cliff. The height of this cliff from low-water mark is about 227 feet, the sketch showing a vertical section. The thickness of different strata are by estimation, as Mr. Chase had no available means of determining them with exactness. Commencing from the top, there is first a section of ten feet of loam and then twenty feet of yellow clay.

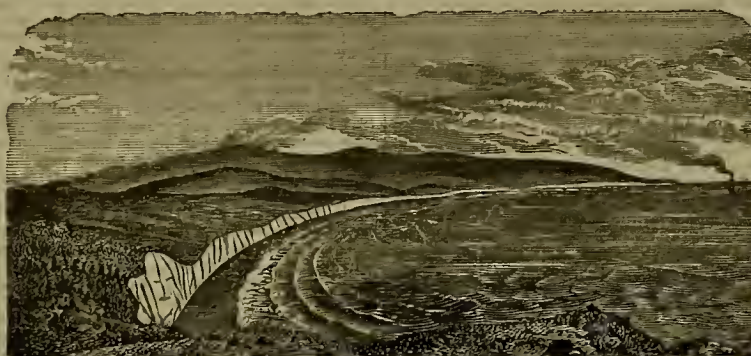


FIG. 1.—The Beach at Gold Bluff, Looking South.

Then forty feet of coarse yellow gravel, which covers a stratum of sandstone of brownish color, 10 feet in thickness. Next in order is forty feet of red-and-yellow gravel. Then comes five feet of a blue-colored sandstone. Project-

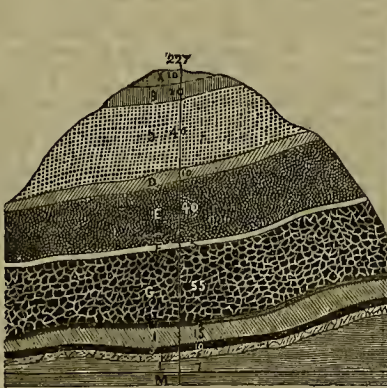


FIG. 2.—Section of Bluff.

In Fig. 2, A is loam; B, yellow clay; C, yellow gravel; D, sandstone; E, red and yellow gravel; F, sandstone with wood lignite; G, coarse red gravel; H, very fine bluish gravel; I, indurated sand; J, gravel with iron cement; K, sandstone with lignite; L, beach; M, low water mark.

tiating from this layer are numerous stumps and other portions of trees partially transformed into lignite. Then there is fifty-five feet of very coarse red-and-yellow gravel, and immediately beneath it five feet of very fine blue-colored gravel. Under this is fifteen feet of indurated sand, covering a stratum of ten feet of gravel, stained a deep red, probably from the presence of oxide of iron. Beneath this is another stratum of sandstone, five feet, blue in color, with pieces of the lignite before referred to, projecting from it. Then five feet more of blue sandstone without any lignite. Then seven feet of gravelly beach to low-water mark.

The cliff described is at the lower end of the bluffs and near the mining works. The strata all dip to the north, at an angle of about 15 degrees; while that at the north end, although much broken, seems to dip towards the south. Mr. Chase presented specimens of stratum, No. 10, from the top, in which, on examination, mica and fine gold can be detected with a mi-

croscope. The specimen was a concretion, cemented together by the oxides of iron on a large boulder. Mr. Chase believes that it is from this stratum that the largest amount of fine gold is obtained.

In describing the method of working the mines, he says that he rode up the beach with the Superintendent of the lower claim, just as the tide was turning to go out. The practiced eye of the Superintendent of the claim noted every indication of the presence of black sand.



FIG. 3.—Black Sand Mine.

Alighting at a spot at the base of the cliff, he scraped away the loose gravel, and taking up a shovel-full of the sand lying beneath, he panned it out in the little pools of water left by the receding tide. On finding a "good prospect"

the first discoverers. So exceedingly fine, however, is the character of the gold that it requires a much larger quantity of these particles to make a cent in value than one not familiar with the subject would suppose. After the sand had been shoveled into little piles, the canvas sacks were taken from the mules and filled. With a word from the driver each mule walked up gravely between his sacks. On their being placed on his back he would start off on a trot for the works. The animals had to pass several points where the sea was breaking pretty well upon the bluff. When they saw a heavy breaker coming in, they would face the cliff like veterans with firmly braced feet and drooping ears, and allow the water to dash over them. When the swell receded they would start again on their way. During the time Mr. Chase was present these mules made three trips, carrying up over six tons during a single tide.

On arrival at the works the sand is placed in an enclosure called the "sand corral." A large lagoon near by supplies the water for separation. A small stationary engine and force pump is in use. The washing is done in "Long Toms" with copper plates. The plates are first coated with a layer of silver before the quicksilver is applied. During the week Mr. Chase was in the vicinity of the works they cleaned up a six or seven days' run and retorted \$1,000 from the washing of two machines. The succeeding week they cleaned up \$1,700. This yield comprised the gold from a portion at least of the rich deposit spoken of.

As the experience of the successive proprietors of this extraordinary gold mine goes to prove that immediately after a heavy cave or slide of the banks, the beaches are richer and its gold coarser, it seems strange that up to the present time no artificial means have been resorted to in the way of blasting down the cliffs or undermining them by hydraulic process to increase the yield of gold. The sea working ceaselessly night and day, is the great natural separator, and man has but to gather the results of its tireless work. Many ideas have been advanced as to the possibility of gold in quantities and coarser in character, being found beyond the line of surf. Predicated on the fact that it, in conjunction with black sand, has been said to have been brought up from the bottom by the leads of sailing vessels. Several expeditions have been fitted out from this port to procure this sand by means of diving apparatus, etc., but none of them were successful.

Two or three facts can be taken in conjunction to form an idea on this subject. The first is, that the gold evidently comes from the bluffs. This no one can doubt after once viewing them. The second, that after caves, the gold obtained is much coarser in character. The third, that it is only after a continued succession of swells that cut the beach at an angle, that the rich sands are found. When the surf breaks square on, let the storm be ever so heavy, it simply loads the beaches with gravel. The fourth, that no one witnessing the power of the surf, breaking as it does, with no rocky headlands, points or rocks to deaden it, can doubt that it must have an immense grinding force. From these facts Mr. Chase believes that the gold follows the first two or three lines of breakers, and will never be found in paying quantities beyond.

Mr. Chase sent to Prof. J. D. Dana specimens of the sands of Gold Bluff, and that gentleman, in speaking of the sands says: "The red grains in the sand are garnets. It is altogether probable that the deposit dates partly from the close of the glacial era; that is, the time of melting of the ice in the early part of the Champlain period when floods and gravel depositions were the order of the day, and partly from the later part of the Champlain period, when the floods were but partially abated, yet the depositions were more quiet.

The top gravel being stripped off, the underlying sand was gathered into little piles. While the men were thus engaged the Superintendent invited Mr. Chase's attention to the appearance of the bed-rock, which glittered with particles, and he could well believe the stories of

California Quicksilver.

The following is the quicksilver product of this State in 1871, 1872 and 1873, as computed by the *Commercial Herald*:

	1871.	1872.	1873.
FLASKS.	FLASKS.	FLASKS.	FLASKS.
New Almaden mine.....	13,783	17,763	12,000
New Idria mine.....	9,227	8,691	7,600
Redington mine.....	2,128	2,456	4,200
And sundry other mines...	1,763	1,500	4,800
Totals.....	31,881	30,806	28,600

The exports to the different countries for 1872, and the three previous years, were as follows:

To	1870.	1871.	1872.	1873.
New York.....	1,000	800	1,202	1,900
China.....	4,050	7,900	4,810	1,900
Mexico.....	7,088	3,081	6,038	3,761
South America.....	1,900	2,200	1,800	508
Australia.....	300	1,100	648	105
British Columbia.....	9	6	2	11
Other countries.....	41	118	103	74
Total flasks.....	13,788	15,205	13,098	6,359

And our exports previously have been:

	FLASKS.	FLASKS.
In 1869.....	24,415	9,448
In 1868.....	44,606	9,399
In 1867.....	28,859	24,142
In 1866.....	30,287	27,262
In 1865.....	42,469	23,740
In 1864.....	36,927	27,155
In 1863.....	26,014	20,963
In 1862.....	33,747	12,737
In 1861.....	35,996	900

During the year 1873 the market has presented many unexpected features. The price opened in January at 90c., was advanced in February to 92½c., in March to 95c., at which figure it stood on the first of April, 1873, at which date the combination expired which had for a long time kept under one control the entire product of the three largely producing mines, viz., the New Almaden, the New Idria and the Redington. The sales had for some time been sharply up with the total production, and there was at that date no surplus stock whatever on either the home or any foreign markets. The parties who owned the New Idria mine were also the parties who enjoyed the combination contracts for so long a period, and they were of course desirous of making fresh contracts for a new term, whereby they could continue to enjoy the profits of handling the product of all these mines on a commission basis. The Redington Company, however, refused to make any such arrangement, preferring to handle their own product and realizing that there was no longer the least need of any combination to protect them from competition in price, but that, on the contrary, every flask of quicksilver would be needed for local consumption quite as soon as produced.

Thus from the 1st of April, 1873, there has been no commotion whatever among the three large mines above mentioned, but the market has regulated itself by the laws of supply and demand, as is the case of any other commodity. The price continued 95c. lb. until June 24th, 1873, when it was raised to \$1.00, advancing in August to \$1.10 lb., and still again on the 18th of November, 1873, to \$1.20 lb. in gold, cash, at which figure it closes the year, with a demand for export considerably in excess of the ability of the market to supply. It is easy to see the causes which have led to this large advance, and impossible not to recognize their legitimacy. Briefly stated, the whole solution lies in the fact of the very large decline in the product of the New Almaden mine, which, in the years of its prime, used to produce fully 3,500 flasks per month, but which, during the year 1873, has not produced as much as 1,000 flasks per month, and, indeed, in the last half of the year, has not averaged, it is said, 750 flasks per month. In the meantime, the New Idria and the Redington have no more than held their own, and all the newly opened mines together have not made a total product to exceed an average of 400 flasks per month for the whole year. The deficit of the production of the New Almaden being thus 2,500 flasks per month, there having been substantially no gain of product from either the New Idria or the Redington, and only a total gain from all the new mines together of not over 400 flasks, the market has heretofore been at least 2,100 flasks per month short of its supply in previous years, a decline of over one-half in available stock. The first effect of this was to cut off all shipments to China and Mexico, and these markets, which have heretofore drawn from California as much as 20,000 flasks per year, were forced to send to London for their supplies, where they met with a market only moderately well stocked, and totally unable to supply so large a demand thus suddenly precipitated upon it.

The natural effect of such a large increase of demand in London was speedily followed and much aggravated by the internal commotion in Spain, where is situated the famous Almaden mine, the largest producer of quicksilver in the world, and, in point of fact, the only considerable source of supply out of California. This mine is controlled, under a thirty years' contract, by the Rothschilds, and though still undoubtedly rich in ore, is now so deep (having been worked upwards of 1,000 years), and is operated with so crude and primitive a system, under Government control and by convict labor, that it is believed not possible to increase its product materially, even in time of peace and tranquillity, while in the present period of internal commotion in Spain, it is at any moment liable to be stopped altogether. Such being the condition of matters, the London market has been a constantly advancing one, reaching in November, 1873, the enormous

price of £21 per flask, with none whatever left in first hands. It has now settled to £20 per flask, and it is not probable the price will vary from this, although it is by no means sure that the supply in first hands may not again entirely give out. At this price, it costs to lay down the quicksilver in New York, from London, at least \$1.45 gold lb. Such being the facts with reference to the supply of quicksilver; now, when we consider the demand for consumption, we find that such has been the development of mining industry on this coast that our mills now consume fully 50 per cent. more than they did two years ago, and it is today a fact that the local requirements of the Pacific States and Territories for mining purposes is so nearly equal to our total present production of quicksilver as to leave none whatever to spare for foreign export, and not to exceed 250 or 300 flasks per month available which can be spared for the New York demand. This last-named market calls for 500 or 600 flasks per month, and has, until within four months past, drawn fully two-thirds of its supply from London. This they will no longer do; for at £20 per flask in London, it costs, as before stated, \$1.45 gold to lay in New York. There being no probability of a decline in London, it follows that with this market at \$1.20, New York will draw her full supply hence, thus introducing a new element of competition for the already limited product, which must force the price up here to equal the London price, or result in a diversion from this market of some of the supply needed for local milling wants. More especially is this likely to be the case, for the reason that quite recent mining developments on the coast point most unmistakably to another quite considerable increase in the consumption requirements for the year 1874. Should New York thus draw on us, and should the milling requirements of the coast thus increase, we should need at least 1,000 flasks per month more than is now produced to meet the demand.

As to the probability of such increase supply, it would appear, from the best obtainable information, that the New Almaden does not promise to yield as much as last year, and may not safely be counted on to produce over 750 flasks per month. The New Idria promises no increase, and can not be estimated at over 750 flasks. The Redington mine, which has during the past year been unable to reduce all its ore, by reason of the partial giving out of its old furnace, has for the past six months been constructing two new furnaces, on the Knox & Osborne Patent plan; and will, in the course of January, 1874, place them in operation. They have been very carefully constructed, at large expense; and are claimed to be by far the best quicksilver reduction works yet constructed. When in operation they may be counted on to increase the yield of the Redington mine from 350 flasks per month—its yield for the past year—to say 600 flasks per month; and this may be counted on as a permanent increase, as they have already mined, and on the surface 10,000 tons of ore, and the daily out-put of the mine is fully equal to the capacity of the new furnaces. The Redington will thus make good the deficit over last year's production of the New Almaden, so that the three principal mines together will produce the same aggregate as they did last year. This would still leave an unfilled requirement of at least 1,000 flasks, on the consumption figures before given, and this can only be made up by new mines coming into production.

It will be strange, indeed, if among all the new localities now being worked there should not prove to be some permanent mines; still, it can not be overlooked that quicksilver mining has proved heretofore very delusive and uncertain, for during the years prior to 1873, scores of quicksilver locations were prospected and mines partially opened, but only the three before mentioned ever proved continuously productive, or in any considerable way productive to their owners. It is true that the present very high price offers great incentives and facilities to the development of new mines, but it cannot be overlooked that the development and proper equipment of a quicksilver mine, with suitable reduction works, costs a large sum of money, and parties going into the business without large capital may fail of success even on what might prove a reasonably good mine, were there sufficient capital in hand to work the mine through the doubtful stages which invariably attend cinnabar deposits, and thoroughly equip it with reduction works. It is to be hoped, nevertheless, that some of the new mines which are now claiming attention may prove permanently productive. Without some such aid, there will be an absolute and very considerable inadequacy of supply for local needs and a consequent still further enhancement of price.

RICH QUARTZ.—A gentleman residing out in Washington county brought to Mr. Fisk, the assayer, last week a small quantity of gold bearing quartz. On testing the rock, Mr. Fisk discovered that it contained a very large percentage of gold and silver. The rock assayed, averaged about \$1,700 per ton, which is regarded as a very rich yield. The person who brought the quartz in, refused to tell the precise locality from where the rock came. He said it was obtained about 150 miles from this city, and was found in the Cascade mountains.

IMMIGRANTS swelled our population by 70,162 last year. 25,792 arrived by sea, and 44,370 overland. 18,000 of the arrivals were Chinese.

Railroad Engineering in the Andes.

ENGINEER'S CAMP, RIO HUALLATA,
AREQUIPA & PUNO RAILROAD.
PERU, October 15, 1871.

DEAR SIR: I obtained employment immediately on my arrival in this country, and commenced operations as resident engineer of the Arequipa section of the Arequipa and Puno road. Close to the town a bridge, 1,500 feet in length, was being built where the line crosses the Rio Chile. Attending to the foundations, etc., of this bridge was about all I had to do for some two months. The height of the bridge above the bed of the stream is 60 feet; span across the river, 125 feet; the rest in spans of 30 feet. A temporary wooden trestle bridge has been put up. The bridge finally will be of iron. Style, plain girder and brace; built by the Baltimore Bridge Company.

As soon as the temporary bridge was completed, I was sent up here as division engineer to locate the "middle" or "summit division" of the line, nearly eighty miles in length. We have got through with the worst part of the work, and I think in another month will have all the field work done. We commenced at an elevation of 13,400 feet. Our grade line yesterday evening was 14,510 feet, and the greatest elevation on the division and on the line will be about 14,600 feet above the sea level.

This is one of the roads being built by Mr. Meiggs under contract with the Peruvian Government, and is considered to be at present the road of the country. It will terminate at Puno, on the shore of Lake Titicaca, on the eastern slope of the Cordillera. Distance from Arequipa to Puno, 220 miles. Arequipa being already connected with the coast by a road, completed and in operation, 100 miles long. The style of the road is 4 ft. 8 in. gauge; 14 ft. road-bed; rails about 70 lbs. to the yard; fish-plate joint; sleepers, two feet in the clear; engines, 6-wheeled (Rogers manufacture), weight from 35 to 40 tons.

Our limits for location are 4 per cent. grade (211 feet per mile) and 6-degree curves. [He afterwards speaks of 16-degree curves.] The grades here are counted by so much per cent. or rise in a hundred feet. With these limits, the country is so rough that we have some very heavy work. The First Division has the heaviest work, where the cuts and fills of 100 feet and over are of no uncommon occurrence. One fill alone was 175,000 cubic yards. I saw a place on the Lima and Arroyo road where, according to the located line, there was to be a fill of 225 feet. So far, our heaviest work is from 35 to 40 feet; but we changed the line from the preliminary in one place, and escaped two fills that were estimated at half a million yards. Sixteen-degree curves looked very sharp when I first commenced locating, but I have got used to them now.

Up to the present date I am not very favorably impressed with the country. I have not yet been to Puno, and don't know what the resources of that part of the country may be; but a more desolate, barren waste than that through which we are now locating could scarcely be conceived, and the climate is the worst I ever experienced. The nights are extremely cold, and during the day we have a wind that cuts the skin off your nose, lips and cheeks as effectively as if it had been done with a keen razor. My face got so bad at one time that I had to go to Arequipa and stay there several days to give it a chance to heal up. This only applies to the extreme elevations where we are now. In Arequipa and nearer the coast the climate resembles very much some parts of California. —*Railroad Gazette.*

From Troy.

The latest news from the mines of the Troy mining company is most favorable. The first connection ever made underground was made on Christmas day, when the two shafts in the main tunnel were connected by a drift, at a depth of seventy-seven feet below the tunnel, exposing a solid breast pay ore one hundred feet in width, assaying in value up to \$230 per ton, and running from the tunnel to the bottom of the shafts. The main tunnel is now in eight hundred feet, and will strike the ledge three hundred feet from the surface. The smaller tunnel is in two hundred feet in a different direction, and will strike the ledge about one hundred feet from the surface. From fifty to sixty men are working steadily, and take out about twenty-two tons of pay ore per day. It is confidently expected that when these tunnels strike the ledge, which will be in a very short time, a large and valuable mine will be exposed.

Capt. Roberts has made a great success in separating the silver from the copper—both silver and copper bars being turned out of their works for shipment—the silver bars being 800 fine. The entire management of this fine property, since coming under the control of Mr. Edward Davis, a gentleman of thirty years experience in mining, has been most successful, and the assistance of our old friend and former resident of this place, Capt. J. C. Edwards, who for the past eight months has had charge of the working of the mines under Mr. Davis, the developments already made, and future prospects of the mining interests of the company, could not be more favorable, the ledge now being, where exposed, from seventeen to twenty feet in width, and with every appearance of a true fissure vein. —*News.*

Dry Crushing and Dry Concentration of Ores.

The Salt Lake Tribune, of Jan. 9th, says:—Yesterday quite a number of gentlemen who are interested in Utah mining, paid a visit to the Concentration Works being erected by J. R. Nichols, of this city, about one mile north of the U. C. R. R. The building is located in the 19th Ward, and is built of brick, 60x80 feet, five stories, with the basement, eleven feet in the clear. The main floor fifteen feet; second story, fifteen feet; third, eighteen feet; fourth, or attic, nine feet in the clear, and eighteen feet, to the peak. Each floor is 60x80 feet, except the fifth or attic, which is 36x80 feet, and the whole building is the most solid and substantial in Utah.

Last May and June, the Tribune gave a full description of the operation of the Krom dry concentrating mill at Dry Cañon, Nevada, which, in brief, was that the ore of that district, treated by water jiggers, stamp mill and blankets, all combined, resulted in a loss of 75 per cent. of the assay value of the ore, and that results by the Krom concentrating process over 90 per cent. was saved.

Accompanying the party who visited Mr. Nichols' works, was Mr. J. P. Lawson of San Francisco, who, during the past year, has been operating in mining at Wallapai, Arizona, but the ores being low grade and complicated, he was sent by the company he represented to Star City, in October last, to examine the Krom Dry Concentration. Mr. Lawson says that they work perfectly satisfactory, saving 95 to 97 per cent. of the assay value of the ore and all the dust is saved, (assaying \$150 to \$400 per ton,) and the mill kept clean and free from dust. The crushing rolls, up to October, had crushed 8,000 tons of ore of a very hard quartz, yet the wear upon the rolls was barely perceptible.

Mr. Lawson says the Krom process and machinery is the only thing he has seen that will practically and economically treat the great bulk of ore in Utah, Nevada, Montana and Idaho.

We learn that Mr. Nichols expects to have his Concentration Works completed and in running order by the first of April next. He has machinery for fifty tons per day capacity ready to set up, but his building will have a capacity for holding five hundred tons per day; and additional machinery will be added as fast as required.

This will greatly encourage the miners of Utah, as such works will create a market for the low grade rebellious ores, however complicated, rebellious or refractory, as his tests and experiences during the past three years have demonstrated that he can successfully handle any of them.

French Guiana Mines.

The Salt Lake Tribune publishes some extracts from a letter, received by a gentleman in this city, from a friend now in French Guiana. The writer was a former resident of Utah, and his statements are considered in every respect reliable. The letter was written the latter part of October, and gives no very encouraging account of the gold mines in that country.

"This is a penal colony, under French rule, and Cayenne City is the principal place. French only is spoken, except back in the country, where the language is a mixture of French and the native tongue. Some mines, about thirty miles back of Cayenne, are owned by a French company, which, after an outlay of \$180,000, are working its claims with hydraulics and other improvements, and make clean nps every three months, counting the result by pounds. This looks large, but is no more than many claims, now worked in California, are doing.

"Outside of this, there are companies working claims by hand, that is by sluicing, rocking, etc. They average about \$2.50 a day to the man. One party of my acquaintance, who has been up in the country since last June, has not made expenses up to this time, yet hopes that better ground may be found by going inland.

"On arriving at Cayenne, every one must undergo a close inspection and examination as to their intentions. After much delay, they get a permit by paying \$50 in coin, to go inland and prospect. This takes from six weeks to two months, and the prospector then must return to Cayenne, and upon the payment of \$300 more in coin to the proper officials, a surveyor with a squad of cavalry is sent out, to lay out the location, paying all expenses, when the miner must again return to Cayenne and get the papers and permit to work the ground. Until all this delay and expense is gone through with, no man can work a foot of ground. Now, after packing your tools from thirty to seventy miles, and perhaps months of labor to open your ground and find water to work with, your claim pays you only \$3 a day, as this is the average yield. It will cost at the lowest estimate \$750 coin to reach this country and get a title to ground. The climate is sickly, as the rate of mortality in the French army and among the convicts proves. There may be paying mines further inland, but until they are found, I would not advise any one to come out here, unless they have at least \$2,000, which they wish to expend in taking chances, which are not as good at present as in many camps to be found in the United States."

MECHANICAL PROGRESS.

Steam Carriages for Common Roads.

It appears that at present an exceptional degree of attention is being given both in England and America to the use of steam as a motor on highways. For agricultural purposes the use of this power has already become a fixed fact in the successful introduction of steam ploughs, and of steam reaping and mowing machines, as well as of threshing machines capable of being moved from farm to farm by their own steam power. To military uses steam is already applied on the Continent and in England with substantial success. During the late Franco-Prussian war road locomotives were employed by the Germans to some considerable extent, and the early capitulation of Metz prevented a very interesting test of their value on a road constructed by the besieging army skirting the fortifications of that city. In England the late rapid success in the number of road locomotives for the transportation of goods has claimed the special attention of Parliament, and the result of the deliberations of a committee appointed to inquire to the effect of steam traffic on common roads appears in an exhaustive report, printed in August last. In an able and interesting paper read before the Polytechnic Club of the American Institute in November of last year, Prof. R. H. Thurston gives the results of various trials of Messrs. Aveling and Porters' locomotive road rollers at Orange, N. J., and also a sketch of the "Past, Present and Future of Steam on the Common Road." The result of his experiments is embraced in the following abstract: "The expense account when doing heavy work on the common road, under the described conditions by steam power, is therefore less than 25 per centum of the average cost of horse power as deduced from the total expenses of such power in New York State, while if we take for comparison the lowest estimate that we can find data for in our whole country, we still find the cost of steam power to be but 29 per centum of the expense of horses. We may state the fact in another way: a steam traction engine capable of doing the work of 25 horses, may be worked at as little expense as a team of six or eight horses."

When we add to this view of the economy of steam power, the fact also set forth by Prof. Thurston that "the working time of the traction engine may therefore be stated to be ordinarily 20 per centum greater than that of the dry horse and to be capable of indefinite extension when required," it is not unsafe to predict in this country as in England the speedy substitution, at least in a great measure, of steam for animal power in the transportation of goods. The discussion of the use of road locomotives for passenger traffic is more of a mooted question. As a matter of course the same principles of economy argue in its favor. But on the other hand special causes combine against it other than the general oppositions to steam locomotion on common roads.

The causes which oppose the road locomotive are now being closely examined as to their foundation in fact or in fancy. They are various, but are chiefly comprehended in the supposed danger to horses and carriages, the alleged injury to roads and bridges, the opposition of special interests and adverse legislation. The first objection is now nearly exploded. It has been found that the introduction of steam on street railroads, so far as it has been tried, has resulted in very trifling inconvenience to owners of horses. In the main, horses soon become accustomed to steam machinery, although there are, of course, some that will always be frightened by this as by other objects. Any danger to carriages by collision can be, and in England is, readily obviated by proper laws enacting due care from the persons in charge of the road locomotive. As concerns roads and bridges, it is undoubtedly true that the general introduction of steam traffic thereon would necessitate the construction of tolerably good roads. It is not pretended that in some sections of the country it would not be inexpedient, and perhaps impossible to fit the common roads for steam motors. But such instances are exceptional. Generally the highways might be adapted thereto without increased expense over the amount in most cases now imperatively demanded by the necessity of better causeways for existing means of motion, and it is found in England that the constant wear of locomotives on properly constructed highways tends to make them better, the broad wheels and heavy weight of traction engines constantly operating as rollers to make a smooth, fine road bed. In the parliamentary committee's report above referred to, the use of road locomotives is commended for this very reason. As to bridges, the weight of the road locomotive does not give a greater strain than a well-built bridge should sustain with safety, the weight of a light steam carriage ranging from three to seven tons when loaded and that of a heavy traction engine from nine to fourteen tons.

In this country very little has so far been done to facilitate the introduction of steam motors. Sufficient experiment, has, however, been made to prove their availability, not merely on level ground, but also on the ordinary country road. It is, therefore, not only in vast level regions of the West and South, which Prof. Thurston considers "the natural

habitat of this motor," but throughout the entire country, that the demands of the public will soon necessitate the practical consideration of this subject, and probably open to American manufacturing enterprises a new and wide field of industry. The design of this article is mainly to suggest that fact.—*American Manufacturer.*

Cast Steel Railway Axles.

A writer in the *Annuaire*, a French periodical, strongly advocates the use of cast steel axles, on the ground that, when it is of good quality, such material will safely stand twice the strain of wrought iron, and its bending and breaking moments will be in the same proportion. Calculating from these data, he says that the diameter of a steel axle compared with that of a wrought iron one, will be as four to five, and it weighs only five-eighths of that of the other. Another advantage enumerated of employing this material, is that the diameter of the journal may be diminished in the ratio of 0.706; and a steel journal will also bear a greater pressure per square inch of surface, without heating, than one of iron. The result of using a smaller sized journal is to diminish the haulage, which in every vehicle varies directly as the proportion between the diameter of the journals and that of the wheels. The weight of a steel journal is about three-quarters that of an iron one. By the adoption of steel axles there is also no necessity for making the wheel bed, and consequently the nave of the wheel so long. The length of this part of the axle has not much influence upon the strength of it, provided the diameter be increased slightly in excess of that immediately behind it, and that the junction between the wheel and the axle be thoroughly well secured. The fixing of the wheel on the axle has, also, a very considerable influence upon the strains. If the nave be short, and no keys be used in connection, the tension must be proportionately great per square inch of surface of contact. Again, the "grinding" of the flanges of the wheels occasions a particular pressure on this part of the axle, and tends to shear it with a force inversely as the length of the bearing, but this may be mitigated by rounding the exterior edges of the nave of the wheels.

Bracket Chairs.

At a meeting of the members of the Institution of Mechanical Engineers, at Birmingham, England, a paper was read by Mr. Sheriff, on a "Description of the Bracket Chairs for suspending Double-headed Rails," in which he said that these chairs are each made in two separate halves, fixed one on each side of the rail, the bearing of which is on the under side of the upper head; and there is no portion of the chair underneath the bottom of the rail, which is suspended by the head, with the bottom just clear of the sleeper. When turned over, therefore, after the top face has been worn out, the bottom head of the rail presents a perfect face, altogether free from the injury that occurs in the ordinary chairs, in which the bottom face of the rail becomes more or less indented by bearing on the bottom of the chair. The two halves of the chair are secured together by a bolt passing through the rail, which is fixed to the sleeper by screwed spikes. On one side the spike passes through a slot in the chair, to allow that half the chair to slide inwards when the spike is slackened, for removing or turning the rail; the slot is blocked by a washer, which fits in a recess at the end of the slot, and is kept down by the spike head. The chair, of which a specimen is exhibited, is believed to have been designed by Mr. Brunel in 1853, and introduced by him on lines in South Wales; it was afterwards adopted on the West Cornwall Railway, where it has now been in use for eleven years with complete success. In no case has the lower head of the rails when turned over been found to be injured; and the result has been thoroughly satisfactory as regards durability, safety and economy of maintenance; there is an important saving in first cost, the bracket chairs being less than half the weight of the ordinary chairs. The construction is also free from the risk of a rail getting displaced by the loss or slackness of a key; and also from liability to fracture of the chair in driving the wood keys used with the ordinary chairs.

Tin or block plates are now being manufactured in England by a new process, consisting in the preparation of the iron used in their manufacture. A number of refining furnaces are employed, into the first of which the pig or cast iron is submitted to the melting process, and from thence run into other "lumping" refineries. Instead of using charcoal, as is commonly the case, the fires are fed with tan. This process has proved very satisfactory, and is meeting with popular favor by those engaged in this branch of industry.

NOTHING NEW UNDER THE SUN.—In the museum of the United Service Club, in London, specimen No. 1,160 is worthy of attention. It is a pistol, which history authentically proves is two hundred years old. If we except the lock, this pistol is almost a counterpart of our improved Colt's revolver. The chambers, even in number, are brought under the hammer by the action of the trigger. It has but one barrel, and, of course, six of the chambers are always open, and can be charged at once.

SCIENTIFIC PROGRESS.

Analysis of Galena.

Storer's process consists in decomposing galena hydrochloric acid in contact with zinc, sulphuretted hydrogen being evolved and metallic lead separated. The action of the zinc consists simply in decomposing the chloride of lead formed, and preventing the hydrochloric acid from becoming saturated with this salt.

Lead is generally included among those metals whose sulphides, as precipitated by sulphuretted hydrogen, are insoluble in acid liquids; this is incorrect. Recently precipitated and washed sulphide of lead is immediately, even in the cold, converted into chloride of lead with evolution of sulphuretted hydrogen. It is well known that lead cannot be detected by sulphuretted hydrogen in presence of excess of sulphuric or hydrochloric acid.

Galena, even in mixed ores, can be completely extracted by hydrochloric acid, and the lead thrown down from the solution. Copper pyrites does not yield a trace of copper to boiling hydrochloric acid, but merely a small quantity of iron. Zinc, iron, and manganese, even if present, are not precipitated by zinc from an acid solution. It is possible to dissolve and throw down the lead alone; Storer's condition that no other heavy metal be present, is not essential, with the possible exception of antimony. Lead is most accurately determined as sulphate. The process is the following, whatever other metals are present in the ore with the exception of antimony:—the galena is finely pulverized; two grammes are weighed off, placed in a small porcelain pan provided with a handle. It is dripped with hydrochloric acid covered with a convex glass, heated till sulphuretted hydrogen is evolved and lastly boiled. A large quantity of chloride of lead separates. When the hydrochloric acid is saturated with chloride of lead, zinc is added in the form of a small ball. Brisk evolution of hydrogen sets in and the lead is deposited upon the zinc. By the application of a gentle heat fresh quantities of chloride of lead are dissolved and decomposed, until the liquid is clear and colorless, and no more sulphuretted hydrogen is evolved. The liquid is decanted off, and the metallic lead completely washed with pure water in the original vessel. The density of the lead makes this process safe and easy. Dilute nitric acid is poured upon the lead while still moist, and heat is applied till all is dissolved. Nitrate of lead crystallizes out, if there is not a sufficiency of water. This nitrate of lead is dissolved in boiling water, filtered, and the filter is washed with hot water. The lead in the filtrate is precipitated by means of pure sulphuric acid in large excess, and heated for some time, to let the precipitate settle in a dense form. When cold it is filtered, washed with dilute sulphuric acid, and afterwards with a little alcohol, dried and weighed after incinerating the filter. The filtrate, on saturation with ammonia and sulphuretted hydrogen, gives scarcely a trace of brown coloration. The filter is freed from the precipitate and burnt alone; then the main mass of the precipitate is introduced into the crucible, and heated not quite to redness.

It was observed that the oxalate of lead is practically insoluble in pure water, and perfectly so in free oxalic acid. Neutral chromate of potash and phosphate of soda are both more sensitive reagents for lead than sulphuretted hydrogen. Attempts were made to dispense with the precipitation with zinc, and decompose the chloride of lead directly by means of sulphuric or oxalic acid. No good results were obtained.—*Iron.*

New Mode of Liquefying Gases.

By the application of cold and pressure in suitably contrived machines, all of the gases with the exception of six, nitrogen, hydrogen, oxygen, marsh gas, carbonic oxide and nitric oxide, have been reduced to a liquid condition. This liquefaction was first performed by Faraday and served to prove the fact that gases and vapors are not distinct in their nature. It may be remembered that the simple apparatus used during these initial experiments consisted of a bent glass tube, having a long and a short leg at right angles. Into the open end of the longer portion was placed a substance from which gas could be obtained by heat, after which the tube was hermetically sealed. The shorter limb was then plunged into a freezing mixture, and heat applied to the larger portion, generating large quantities of gas, upon which, being confined in a small compass, the pressure gradually increased, finally condensing the same into liquid form in the smaller receptacle. The facts thus recalled will indicate the importance of a recent experiment made by M. Melsens, a celebrated chemist of Brussels, who, it is stated, has lately succeeded in obtaining wood charcoal in an absolutely pure state. So great is the absorbent power of this substance that it will concentrate in its pores a quantity of gas equal to its own weight. This has been used by Melsens in an apparatus similar to that of Faraday above described; and through its agency, he has succeeded in liquefying gases with great readiness. The charcoal, it seems, is placed in the long leg and allowed to absorb as much gas as possible. The tube is then sealed and enclosed in a tin pipe heated to 212° by a current of steam.

The gas in the charcoal is thus disengaged and caused to compress itself into the short limb, passing almost immediately into a liquid state. It is stated that from one to one and a half cubic inches of liquefied gas can be quickly obtained.—*Sci. Am.*

Solar Light and Heat.

In a recent lecture on the Sun, delivered in Boston, Mr. R. A. Proctor said: "We will next consider the sun's light. This we may compare with the oxy-hydrogen light, which has but 1-146 of its intensity, or with the electric light, which is but one-third as intense. The heat radiated by the sun is also comparable. The estimates of its total heat are very variable, but that which it furnishes to the earth we are able to measure, and to arrive at exact results. Sir John Herschel has found that the heat which falls upon one square mile, when the sun is in the zenith, is capable of melting in one hour 26,000 tons of ice. There are 50,000,000 square miles on the surface which the sun shines upon, and the heat which it receives would be sufficient to raise an ocean sixty-six miles deep in one year from the freezing to the boiling point. That received by the earth is but a small part of the light emitted, for 57,000 earths could be placed in the earth's orbit. The planets receive only the 227-millionth part of it. What then becomes of the rest? The stars, which are also suns, are giving out a large amount of heat, only a portion of which falls upon their planets. What becomes of all this heat which is radiated into space? That is a question which is yet unanswered. But to return to the sun. The heat which is actually given out by one square yard is estimated to be equal to that evolved by six tons of coal burnt in one hour. The light and heat of the sun travel at the same rate, and probably the magnetic power also. Yet it takes eight minutes for it to pass the space between us. If the sun gives out sound, and it undoubtedly does give out sound, it would take thirteen and one-half years to bring it to us. But there is, strangely enough, a gap which it can not pass. If those old heathen, who prayed to the sun, could have known how many years would have elapsed before their petitions would have been heard, if it was possible for the sound to have passed that gap, they might have desisted from their devotions. If a rod of metal were connected between the earth and sun, it would take three hundred days for a sound to be transmitted from one to the other. There was a very nice illustration of the distance between us which had been given by an American whom he did not know, but which is based upon the rapidity with which a sensation is transmitted in the body. He said if a baby at its birth had an arm so long that it could touch the sun, that even if it lived to threescore years and ten, it never would know that its fingers were burnt."

Dr. Marcy, says *Les Mondes*, has recently demonstrated that the heart acts like all mechanical motors in that the frequency of the pulsations varies according to the resistance which it meets in driving the blood through the vessels. When the resistance becomes greater, the throbs diminish; they accelerate, on the contrary, if the opposition becomes less. During life, the action of the nervous centers makes itself felt on the heart, of which it renders the pulsations slower or quicker, whatever may be the resistance experienced. Dr. Marcy eliminated this nervous influence by removing the heart of an animal, and causing it to work under purely mechanical conditions. The heart of a turtle was arranged with a system of rubber tubes representing veins and arteries. Calf's blood, defibrinated was caused to circulate, and a registering instrument noted the amplitude and frequency of the movements of the organ. When the tube containing the blood leaving the heart was compressed, the liquid accumulated in the rear of the obstacle and the heart emptied itself with greater difficulty, the pulsations weakening perceptibly. On relaxing the pressure, thus allowing free course to the blood, the throbs accelerated rapidly.

NEW PHOTOMETER.—A simple arrangement, which may be exceedingly useful for many purposes, has been devised by M. Yvon. A piece of paper or card is folded in the middle, and placed upright on a table in such a manner that the two halves form right angles. In the line bisecting the angle thus formed, and at some little distance from its apex, is placed a tube, blackened in the interior, through which the observer looks at the edge of the paper or card. The sources of illumination to be compared are placed at opposite sides of the card. So long as the two surfaces are unequally illuminated, the observer has a perception of relief; when, however, the light is perfectly equalized, he sees what appears to be a plane surface.—*Iron.*

PREVIOUS to the Franco-Prussian war, the St. Laurent, of the French line, was fitted with electric lights of great power, which were plainly discernible for many miles at sea. At the beginning of the war this light was taken from the steamer and used by the Government for harbor defence, and has not since been used at sea. The managers of the French line are now considering the propriety of providing all their ships with lights of this description, which would, except under circumstances most unusual, render a collision impossible. The substitution of life-boats for life-boats is also under consideration.

Weekly Variations in Stocks.

(Based on Regular Sales of all Stocks in the San Francisco Stock and Exchange Board.)
For 6 days ending Wednesday, Jan. 21, 1874.

NAME OF COMPANY.	PRICE IN MIN.	SHARES IN MIN.	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.						
Alamo Gold and S. M. Co.	300	6000	6	4	18	
Alpha Consolidated	3600	30000	8	6	2	
Alta	190	3400	2	2		
American Flat	150	30000	6	4	2	
Arizona and Utah	150	3400	6	4	2	
Bacon Mill & Mining Co.	150	3400	6	4	2	
Baltimore Consolidated	1040	10400	11	9	2	
Belcher	3225	3225	26	26		
Best & Belcher	20	20	1	1		
Bowers	250	2500	2	1	1	
Buckeye	250	2500	2	1	1	
Bullion	250	2500	2	1	1	
Caledonia Silver M. Co.	250	2500	2	1	1	
California	250	2500	2	1	1	
Chollar-Potosi	250	2500	2	1	1	
Confidence Silver M. Co.	139	2499	15	14		
Cons. Gold Hill Quartz	241	2400	2	2		
Consolidated Virginia	116	16000	15	15		
Cook & Geyer	1600	2400	11	10		
Crown Point G. & S. M. Co.	60	4000	3	2		
Daniels	1200	2400	6	1		
Dardanelles	60	4000	3	2		
Eclipse	7	2500	1	1		
Empire Mill & M. Co.	7	5000	1	1		
Eschscholtz	40	8000	3	2		
Farmout	3000	12000	1	1		
Flowers	3000	12000	1	1		
Franklin	2000	20000	2	1		
Globe	1200	48000	22	22		
Gould & Curry S. M. Co.	400	18000	17	16		
Hale & Norcross	181	100000	9	8		
Imperial	2000	20000	1	1		
Insurance	2000	20000	1	1		
Jacob Little	2000	20000	1	1		
John G. Leland S. M. Co.	2000	20000	1	1		
Justice	2000	20000	1	1		
Kentuck	95	3000	2	1		
Knickerbocker	2000	20000	1	1		
Kosuth	2000	20000	1	1		
Lady Bryan	3500	35000	1	1		
McMeans	1600	30000	1	1		
Mint Gold & S. M. Co.	3000	30000	1	1		
Nevada	3000	30000	1	1		
New York Consolidated	3000	30000	1	1		
Occidental	3000	30000	1	1		
Ophir Silver Mining Co.	1400	18000	25	25		
Orphan Silver M. Co.	1200	24000	1	1		
Phil. Sheridan	2000	20000	1	1		
Piton	2000	20000	1	1		
Rock Island	800	16000	12	12		
Savage	160	6100	12	12		
Segregated Belcher	10000	10000	13	13		
Segregated Caledonia	2000	20000	1	1		
Segregated Globe	2000	20000	1	1		
Senator Silver M. Co.	2000	20000	1	1		
Sierra Nevada	2000	20000	1	1		
Silver Hill	5400	5400	11	11		
South Comstock	2000	20000	1	1		
South Overman	2000	20000	1	1		
Succor Mill and M. Co.	7600	25000	3	2		
Sutter	2400	24000	1	1		
Tyler	200	3000	8	8		
Union Consolidated	803	20000	12	12		
Utah	1100	20000	25	12		
Woodville G. & S. M. Co.	1200	24000	68	81		
Yellow Jacket	1200	24000	68	81		
NEVADA.						
Adams Hill	5000	50000	1	1		
Alps Silver Mining Co.	300	30000	1	1		
Amador Tunnel & M. Co.	3000	30000	1	1		
American Flag M. & M. Co.	3000	30000	1	1		
Arkansas	300	30000	1	1		
Belmont	300	30000	1	1		
Bowers	3000	30000	1	1		
Chapman Mill & M. Co.	3000	30000	1	1		
Chatter Oak S. M. Co.	3000	30000	1	1		
Chief of the Hill	3000	30000	1	1		
Chief East Extension	3000	30000	1	1		
Columbus M. & M. Co.	10000	50000	1	1		
Condor	2000	20000	1	1		
El Dorado South	2000	20000	1	1		
Enoka Consolidated	5000	50000	1	1		
Excelsior	12000	12000	1	1		
Harper Silver Mining Co.	3000	30000	1	1		
Hayes	1000	30000	1	1		
Hormes	1000	30000	1	1		
Home Tacket	1000	30000	1	1		
Huhn & Hunt S. M. Co.	3600	30000	1	1		
Ingomar Silver M. Co.	1000	30000	1	1		
Ivanhoe	1000	30000	1	1		
Jackson	1000	30000	1	1		
Josephine	1000	30000	1	1		
Junata Consolidated	5000	50000	1	1		
K. K. Consolidated	1000	30000	1	1		
Kentucky Gold & S. Co.	1000	30000	1	1		
Kinston	1000	30000	1	1		
Lehigh	1000	30000	1	1		
Lillian Hill	1000	30000	1	1		
Louise	1000	30000	1	1		
McMahon	1000	30000	1	1		
Marion	1000	30000	1	1		
Meadow Valley	2400	30000	1	1		
Mocking-Bird	1200	30000	1	1		
Monitor-Belmont	2000	30000	1	1		
Murphy	2000	30000	1	1		
Nevada Silver M. Co.	300	30000	1	1		
Pacific Tunnel & M. Co.	2400	40000	1	1		
Pago & Panaca S. M. Co.	1000	30000	1	1		
Pearline	1000	30000	1	1		
Phoenix	1000	30000	1	1		
Pioche Silver Mining Co.	1000	20000	7	6		
Pioche West Extension	3500	35000	1	1		
Pioche-Phoenix	4000	40000	1	1		
Portland	1000	30000	1	1		
Raymond & Ely	5000	30000	1	1		
Rye Patch	1000	30000	1	1		
River Peak	1000	30000	1	1		
Silver West Consolidated	1000	30000	1	1		
Standard Mill and M. Co.	1000	30000	1	1		
Star Consolidated	1000	30000	1	1		
Starlight	1000	30000	1	1		
Sterling	1000	30000	1	1		
Spring Mountain	1000	30000	1	1		
Spring Mount	1000	30000	1	1		
Ward Beecher	1000	30000	1	1		
Washington and Creole	200	30000	1	1		
Watson	1000	30000	1	1		
Yellowstone	1000	30000	1	1		
CALIFORNIA.						
Alpine	1200	12000	1	1		
Bellevue	8000	20000	1	1		
Calaveras Gold M. Co.	3200	20000	1	1		
Cederberg Gold M. Co.	2000	20000	1	1		
Chariot Mill	2000	20000	1	1		
Consolidated Amador	2000	20000	1	1		
Cottonwood Creek	2000	20000	1	1		
Dunderberg M. & M. Co.	1650	20000	1	1		
El Dorado Ind. Quartz M.	1650	20000	1	1		
Eureka Gold Mining Co.	1650	20000	1	1		
Gillis	1650	20000	1	1		
Independent Gold M. Co.	1650	20000	1	1		
Koyotons Quartz	1650	20000	1	1		
Mt. Jefferson	1650	20000	1	1		
Oakville Quartz M. Co.	1650	20000	1	1		
St. Lawrence M. & M. Co.	1650	20000	1	1		
St. Patrick	1650	20000	1	1		
Teomesset	1650	20000	1	1		
Yule Gravel	400	10000	1	1		
IDAHO.						
Empire	25000	25000	8	4		
Golden Chariot	1800	10000	8	2		
Ida Elmore	720	10000	6	5		
Mahogany G. & S. M. Co.	720	10000	6	5		
Red Jacket	720	10000	6	5		
South Chariot	720	10000	6	5		
War Eagle	720	10000	6	5		
WHITE PINE.						
General Lee	1000	26000	1	1		
Mammoth Silver M. Co.	1000	26000	1	1		
Noondy	1000	26000	1	1		
Orig. Hidden Treasure	1000	26000	1	1		
Silver Wave	1000	26000	1	1		
Ward Beecher	1000	26000	1	1		
UTAH.						
Deseret Consolidated	2400	20000	1	1		
Wellington	5000	50000	1	1		
OREGON.						
Virtue	2500	20000	1	1		

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

NOTE.—In the Stock Board an assessment is delinquent thirty days from the date of levy, exclusive of that date. The delinquent dates given in this list are those of the mining offices.

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Delinq't. Sale.	Secretary.	Place of Business.
Buckeye G. & S. M. Co.	Nev	9 1 00 Dec 18	Jan 20	J. Maguire	419 California street
Caroline M. Co.	Ely District	4 1 00 Jan 17	Feb 27	C. E. Elliott	419 California street
Daney G. & S. M. Co.	Washoe	3 15 Jan 8	Mar 3	G. R. Spinnery	320 California street
Emmire M. & S. Co.	Gold Hill	1 00 Dec 18	Jan 25	G. R. Spinnery	320 California street
Globe M. Co.	Gold Hill	5 50 Dec 24	Jan 27	J. Maguire	419 California street
Hale & Norcross M. Co.	Washoe	42 5 00 Jan 10	Feb 24	J. F. Lightner	438 California street
Hahn & Hunt S. M. Co.	Ely District	8 2 00 Dec 17	Jan 19	R. Wegener	419 California street
Justice M. Co.	Nev	7 25 Jan 3	Feb 14	R. Goldsmith	513 California street
Kentucky G. & S. M. Co.	Ely District	7 25 Jan 3	Feb 14	R. Goldsmith	513 California street
Mahogany G. & S. M. Co.	Idaho	2 00 Dec 18	Jan 24	T. J. Owens	Express Building
Overman S. M. Co.	Gold Hill	28 2 00 Dec 18	Jan 25	S. H. Kinnally	419 California street
Pioche S. M. Co.	Ely District	6 1 00 Jan 19	Mar 5	C. E. Elliott	419 California street
Savage M. Co.	Washoe	5 00 Dec 13	Jan 6	E. B. Holmes	419 California street
Succor M. & M. Co.	Gold Hill	7 1 50 Dec 31	Feb 4	W. H. Watson	302 Montgomery st
Utah S. M. Co.	Washoe	4 1 00 Dec 31	Jan 9	W. E. Dean	419 California street

OTHER COMPANIES.—NOT ON THE LISTS OF THE BOARDS.

Adams G. & S. M. Co.	Nevada	5	50	Dec 22	Feb 5	Feb 26	G. W. R. King,	434 California st
American Flag M. & M. Co.	Ely Dist.	4	1 00	Dec 16	Jan 21	Feb 13	G. R. Spinyee,	320 California st
Cherokee Flat Blue Gravel M. Co.	Cal.	5	50	Dec 22	Feb 5	Feb 26	H. Picbaird,	603 Washington st
Columbus M. & M. Co.	Esmeralda Nev.	50	50	Jan 10	Feb 16	Mar 6	H. Picbaird,	603 Washington st
Com Coal M. Co.	Cal.	50	50	Nov 28	Dec 31	Jan 26	B. B. Miner,	419 California st
East Buena Cons. M. Co.	Ely Dist.	10	50	Dec 3	Jan 8	Feb 7	S. H. Kinnally,	419 California st
Forest Coal M. Co.	Santa Cruz Co. Cal.	33	33	Dec 8	Jan 5	Feb 7	R. Wegener,	414 California st
O. Hidden Treasure M. Co.	White Pine Nev.	1	00	Dec 18	Jan 27	Feb 11	A. Noel,	419 California st
Imperial M. Co.	Washoe	18	1 00	D-26	Jan 28	Feb 19	C. R. Brongbros,	402 Montgomery st
Keystone No. 1 & 2 G. & S. M. Co.	Ariz.	2	25	Jan 10	Feb 16	Mar 5	W. E. Dean,	419 California st
Lane & Kertz Caribou M. Co.	Brit. Col.	4	30	Dec 11	Jan 17	Feb 10	T. E. Jewell,	507 Montgomery st
Moreau Machine Mfg. Co.	Washoe	18	1 00	Dec 3	Jan 17	Feb 23	B. B. Miner,	419 California st
N. S. P. Homestead & Railroad Assn.	Cal.	2	26	Dec 3	Jan 13	Jan 26	W. B. Isaac,	304 Pine street
North Bloomfield M. Co.	Cal.	29	1 00	Dec 22	Jan 25	Jan 26	A. D. Smith,	314 California st
North Star T. & G. Co.	Cal.	10	10	Jan 14	Feb 13	Feb 26	T. Derby,	320 Sansome street
Starck S. M. Co.	Ely District	5	15	Dec 31	Jan 8	Mar 11	P. O. Riley,	511 Washington st
Newark S. M. Co.	Ely District	5	15	Dec 31	Jan 8	Feb 4	D. T. Bagley,	401 California st
New York Cons. M. Co.	Washoe	7	50	Dec 12	Jan 15	Feb 4	H. C. Kibbe,	419 California st
Ohio Cons. M. Co.	Cal.	20	20	Dec 17	Jan 17	Feb 7	W. A. Knapp,	115 Laidlaw street
Pocahontas G. M. Co.	El Dorado Co. Cal.	2	1 00	Dec 17	Jan 25	Feb 16	D. A. Jennings,	401 California st
Red Jacket M. Co.	Idaho	2	1 00	Dec 17	Jan 26	Feb 21	W. W. Willie,	419 California st
Seattle Coal & T. Co.	W. T.	1	00	Dec 11	Jan 22	Feb 19	H. L. Hutchinson,	537 Market street
Sanderson G. M. Co.	Calaveras Co. Cal.	8	25	Dec 30	Jan 19	Feb 10	W. H. Smith,	113 Laidlaw street
Scorpion S. M. Co.	Nevada	10	10	Dec 31	Jan 31	Feb 23	F. J. Martin,	534 California st
Teacumess G. S. & Conner M. Co.	Cal.	50	50	Jan 2	Feb 7	Feb 10	J. J. Hermann,	419 California st
State of Maine M. & M. Co.	Cal.	5	50	Jan 14	Feb 16	Mar 10	J. M. Buffington,	Merchant's Ex
Wellington M. & S. Co.	Utah	3	50	Dec 11	Jan 22	Feb 12	R. Wegener,	414 California st
Ward Beecher Con M Co.	White Pine Nev.	1	00	Dec 13	Jan 19	Feb 10	T. B. Wingard,	318 California st
Washington M. & M. Co.	Cal.	10	10	Jan 10	Feb 17	Mar 3	T. B. Wingard,	318 California st
Woodville G. & S. M. Co.	Nev.	5	123	Jan 8	Feb 11	Mar 3	A. Noel,	419 California st

ledge has been opened on top for a distance of 200 ft., and varies from 1 to 8 ft. from the surface; is about one ft. in thickness, and is very rich in the whole length, and the deeper it goes down upon the richer it grows. A run is now being made of some 60 or 70 tons of this ore, at the old Shepherd & Witsen mill, a good road having been graded from this mine to this mill, which is only about a quarter of a mile distant, and a clean up will be made next Saturday, which we believe, will show a greater production from this time work was commenced upon the mine—about six weeks—than anything heretofore experienced in the State. We saw rock, lots of it, taken from different localities in the ledge, that would go one dollar to the pound, and several selections were made that actually went from \$2.50 to \$3.00 to the pound.

MINE generally throughout the State are complaining of a scarcity of water. There is a big supply in the mountains, in the shape of snow, which they will get soon, but a few days' steady rain just now would be worth untold thousands to them.

INYO COUNTY.

FURNACE FOR SYLVANIA.—Inyo Independent, Jan. 10th: Samuel Halsey and Thomas Coates, of Gold Mountain, have made a conditional sale of their interest in the famous Oriental mine of that district to the Manhattan company, and propose to turn their attention to Sylvania, where they have some valuable interests. They design to erect a furnace there if things progress favorably.

KERN COUNTY.

VENTURA MINE.—*Miner*, Jan. 10: Work has been commenced on this mine, situated in Hot Spring Valley, by the company lately incorporated in San Francisco, in good earnest, and we shall look for developments soon, which will give an impetus to prospecting and mining in our region. The Ventura lode is a continuation of the famous Big Blue, and its owners here are Messrs. E. R. Borke, H. D. Bequette and T. A. Stontenburgh.

STOCK TAKEN.—Articles of incorporation of the Havilah Mining Tunnel have been drawn up. Considerable enterprise in the project has been shown already, and the majority of the twenty-five thousand shares have been taken by parties in the county.

A rich silver strike was made in the St. John mine last Wednesday. It is estimated to go \$1,000 per ton.

NAPA COUNTY.

WASHINGTON.—*Register*, Jan. 17: Monday the annual meeting of shareholders in the Pope Valley mine took place, and the following officers of the company were re-elected, viz: President, W. W. Stillwagon; Secretary, E. N. Boynton; Treasurer, A. Y. Easterly; Trustees, Jacob Ellsbury and Daniel Patten. Though this company's furnaces are stopped for repairs, still work in the mine is being vigorously prosecuted, and they already have between 8,000 and 9,000 tons of ore at the surface, ready to commence work with in the spring.

THE ETNA MINE.—The shareholders of this quicksilver mine, which is situated in Pope Valley, are jubilant over the fact of running out nineteen flasks of quicksilver from their retorts in a six days' run. They have plenty of fine-looking ore out, and, having repaired their furnace, expect to do a heavy amount of reducing this winter. The mine is now under the able superintendence of Mr. Peel, who is a practical miner, and a man of good, sound judgment in regard to operating quicksilver mines.

THE REED MINE.—This mine is at present employing quite a large number of hands, in proof of which is the fact that it required an extra coach to be put on the Knoxville line, by Scribner. Both stages were loaded down with men, blankets and carpet-sacks.

NEVADA COUNTY.

SPECIMENS ON THE STREETS.—*Union*, Jan. 18th: Main street is being macadamized with stone hauled from the dump piles around the quartz mills. A careful search of the stone put upon the street shows that in it are many pieces of quartz which show gold. Yesterday several good specimens were found. Dan Holbrook captured a nice little showing, Charley Stoeke got several pieces which show gold, and General Wholer found a fine specimen. In the afternoon of yesterday several small boys were using hammers in breaking up rock and looking for gold. Stokes is going to send his find to the Marysville Appeal, in order to show the people of his old home that he now lives in a New Jerusalem—the streets of which are paved with gold. We are afraid that some enterprising mill man will locate the stone pavement, on Main street, and will insist on crushing the same.

KENTUCKY.—*Foot-Hill Tidings*, Jan. 17: Work at this mine is progressing. On the 100-ft. level they have a 2-ft. vein of promising ore; below that level, though, work is suspended, there being too much water. We are informed that it is the intention of this company to make a trial of the Peier & Lundquist concentrator in connection with their new mill.

NEW YORK HILL.—A rich vein of ore was reached in this mine on Thursday evening. We have seen several fine specimens—literally plastered with gold—which were brought in after nightfall by Schneider, the foreman, who says there are many indications of a continuance of the rich vein. "Old Block" is in luck.

MAGENTA MINE.—The second level in the Magenta is making an excellent showing. The ledge is from 2½ to 3 feet thick, at the least, and is heavily charged with mineral. The sulphurets are very heavy and of the best kind.

Very little free gold can be seen in this rock as taken out of this mine. When the rock is burned, however, the gold manifests itself to the naked eyes in great quantity. Another crushing will soon be had, if the weather will permit hauling from the mine to the mill. Some of our experienced amalgamators, who have seen this ore from the Magenta's second level, say that it will require great care to save the gold in the ore by any of the appliances now used in this mills heretofore. A mill process trial will, nevertheless, be made and the sulphurets be saved for chlorination working afterward. Big results are sure.

SEVERAL ACCIDENT AT THE EMPIRE.—Yesterday morning, about 7 o'clock, a serious accident occurred at the Empire mine. In the mine a shaft was sinking from above and raising from below. Men were engaged in both works. They came closer together in the work than was suspected. The men who were sinking put in a blast and exploded it. The blast went through and reached the man who was below and engaged in raising the shaft. The proper warning was given, as we understand, but the man below thought the blast would not go through the intervening ground. The result was that Thos. E. Hooper, engaged in the raising part of the work, was seriously injured.

Dr. Manson was summoned to the case, and Dr. McCormick was also called. They agree that the wound is a serious one, and that Hooper may die of his injuries. At the last accounts yesterday evening Hooper had somewhat rallied.

SAN BERNARDINO COUNTY.

RICH.—*Argus*, Jan. 8: Quite an excitement was created on Third street on Tuesday evening by the test of a small quantity of Blue Jay ore, the ore which weighed 2½ ounces was washed and yielded a little over 80 cents. We do not believe that this showing has ever been excelled by any undeveloped claim in California.

SAN DIEGO COUNTY.

STONEWALL MINE.—*World*, Jan. 15: Col. Frary, of Frary & Shultz, and of the Stonewall mine, is in town. The Colonel reports the Stonewall to be in capital condition. He has all the water he will need for his mill for a year. The mine is surpassing its previous record, and turning out bullion at the rate of \$7,000 per month. It is proving itself a fortune to its owners.

SIERRA COUNTY.

EMPIRE GRAVEL MINE.—*Messenger*, Jan. 17: The proprietors of this mine, through the exertions of their efficient superintendent, J. Deacon, have opened one of the richest gravel deposits in the State.

TRINITY COUNTY.

RICH.—*Journal*, Jan. 17: Carson & Goering have struck into the old Sydney Gulch channel, back of town, and are now getting prospects of from fifty cents to one dollar to the shovel-full.

TUOLUMNE COUNTY.

MINERS' STRIKE.—*Democrat*, Jan. 17: The miners employed in the Blue Gravel claim, in Table Mountain, quit work on Thursday, in consequence of the company requiring the hours of labor to be increased from nine to ten. The works will be idle until the old hands, or a new set, are willing to work ten hours. Quite extensive improvements are being put on this claim, in the shape of mills, etc.

Nevada.

RICHMOND BULLION.—*Sentinel*, Jan. 15: There is an immense stock of bars piled up at the Richmond works. We have heard no estimate, but at a rough guess would lay the amount at something near two hundred tons.

FURNACES IN OPERATION.—There are at present seven furnaces in operation in the district. This time last year only one or two were in full blast.

PEAVINE DISTRICT.

POB.—*Cor. Reno Crescent*: The Poe company have had some ore worked at the English mill, and I am informed that the result was entirely satisfactory. A shaft is being sunk for a new level, and if improvement continues as it has commenced in the first ten feet, the mine will be truly a great one.

THE NEVADA MINE.—The sensation of the week has been the discovery of the Paymaster ledge in the tunnel of the Nevada company, located east of the Hopkins claim and about 100 feet south from the Paymaster mine. Within 12 feet from the face of the tunnel the top of the chimney of the ledge was cut; a shaft was started and is now down 20 feet showing a ledge 3½ feet wide, much decomposed and broken up as yet, having all of the characteristics of the ledge in the original mine. There is no one here who doubts its being the Paymaster ledge. The lucky owners of this mine are D. C. Martin, Felix O'Neil, W. H. Dickens and D. P. Carr, each one-fourth. There are but 880 feet in this mine, that being the distance between the south line of the Paymaster and north line of the Carr Tunnel Right.

THE BUCKEYE AND TOMPKINS are both lying idle, as is also the entire line of the Poe ledge. BENNETT & FREE are still driving ahead their tunnel for the Cable ledge.

THE STEWELL 2d NORTH PAYMASTER is located upon the line of the ledge as surveyed by Mr. Carr, and the company are now sinking a shaft to cut their ledge.

THE CARR TUNNEL.—The work in this tunnel has been continued vigorously for the past week, day and night. The Paymaster ledge is

still to the east of the drift, from the main tunnel (now in 70 ft.), but should be cut by it, if the ledge keeps its true course.

NEW CLAIMS.—The Sacramento, east of the Poe, shows some fine rock, assays from which prove it to be rich. The Golden Rose, Treasures Hill, Lottie Ellis and Chronicles ledges are claimed to have merit, but I have not seen enough of them to give any description.

WASHOE DISTRICT.

CONSOLIDATED VIRGINIA.—Gold Hill News, Jan. 17th: The product of this mine is about 200 tons daily, all from the 1,200-foot level. The ore breasts on this level and also the raise in the ore body above this level are yielding fine ore. The raise from the 1,200-foot level has now reached the 1,000-foot level and continues in good ore, the width of which at that point is yet unknown. The south drift from the shaft on the 1,000-foot level has reached the ore body and connected with the raise from the 1,200. A crosscut is now making to determine the width of the ore body at that point. At a depth of 100 feet below the 1,200-foot level in the winze sunk in the ore body, crosscuts are also now being run to the east and west. The east crosscut is in 30 feet and the west crosscut 46 feet from the winze and both drift in good ore. On the 1,300-foot level the drift running south from the shaft to connect with the winze is now advanced 140 feet. The north drift has reached the southern boundary of the California Mining Company. This drift will be continued northward through the latter mine. Sinking the main shaft is continued below the 1,300-foot or lowest level. The future of this mine looks exceedingly bright.

OPHIR.—Work upon the main south drifts and cross-outs on the 1,300 and 1,465-ft. levels has been discontinued for the present. The ore body on the 1,300-ft. level, as far as prospected, shows a width of 20 ft., and is of good quality. On the 1,465-ft. level the prospecting already done proves the ore to be 100 ft. in width, and of higher grade. Two winzes are to be immediately sunk—one in the ore body from the 1,300 to the 1,465-ft. level, and the other in the ore body extending from the 1,465 toward the 1,700-ft. level. A donkey engine has been placed at the head of the main incline on the 1,465-ft. level to do the necessary hoisting from the 1,700-ft. level up to the 1,465, which will greatly facilitate the work in that part of the mine. Driving the main south drift on the 1,700-ft. level is making steady progress, with nothing new to report.

BEUCHER.—The main incline is down 68 ft. below the 1,400-ft. level, still in hard blasting ground. The 1,400-ft. station has been opened and a drift which is in 39 ft., started to the northward to connect with the main south drift on the 1,400-ft. level from the Crown Point. All ore taken from the 1,300-ft. level is now being hoisted through the company's own shaft, doing away entirely with hoisting formerly done through the Yellow Jacket shaft. The south winze on the 1,300-ft. level is down 54 ft. All the ore stopes throughout the mine are looking well and yielding finely. Daily yield 500 tons. Mills are all running up to their full capacity and prospects look flattering.

CROWN POINT.—The south winze from the 1,300-foot level, giving a fine circulation of air, and greatly facilitating work. The middle crosscut on the 1,400-foot level is in 38 feet, the lower half of the drift still in ore, the upper portion in quartz and porphyry. A winze is about being started from the 1,400 to connect with the main south drift on the 1,500-foot level, which drift is making slow progress on account of the steady flow of water and the intense heat. The ore breasts throughout the mine are both looking and yielding well. Daily yield, 400 tons of ore.

AMERICAN FLAT.—Driving the main southwest drift on the 400-foot level of the Baltimore shaft is making steady progress, the indications of the development of a body of ore growing steadily more favorable as the work advances. It having been rumored that there has been a good development of ore in this mine, we are authorized to state that the mine will be thrown open for the inspection of all those who desire to visit it during the next three or four days, so they can see it for themselves.

SIERRA NEVADA.—Sinking the new shaft is making steady progress, the rock in the bottom blasting finely. The mill has been shut down since Wednesday last, for the purpose of putting a new cylinder on the driving engine, which repair will be completed and crushing ore resumed in a day or two more.

DARDANELLES.—Good developments in the Overman exercise an important influence over the Dardanelles, adjoining it upon the south, and being a continuation of the same ground in which the Overman strike is made.

PHIL. SHERIDAN.—A new shaft is being commenced near the foot of the steep declivity, east of the ledge, from which at the depth of five hundred feet a drift will run west to the ledge, cutting it at a great depth, and where good pay ore will undoubtedly be found judging from that already developed in the upper workings and operations.

HALE & NORCROSS.—The yield of ore is about 40 tons per day. The opening of the 1,900-ft. level is making good progress.

SILVER HILL.—There is no water to interfere with sinking the shaft to the 360-ft. level, at which depth a station is about being opened. The ore in the cross-cut from the main south drift at the second station still continues to improve in quality. The extraction of ore from the Justice winze, between the first and second levels, has been commenced. The Hope mill has been started upon ore from the mine.

JULIA.—The main southwest drift on the 1,000-ft. level has reached the body of ore tapped several months since, when the men were driven out by the heavy flow of water. This body, although not sufficiently prospected to prove its extent, is opening out finely, and gives average assays of \$45 per ton.

Sinking the winze from the 1,000-ft. level, to connect with the main west drift at the 1,200-ft. station, is making steady headway, the bottom still in rich ore. This main west drift on the 1,200-ft. level, is making slow progress, the rock in the face blasting hard, with occasional seams of white quartz crossing the course of the drift.

ARIZONA, UTAH AND GLOBE.—The main west drift, on the 400-foot level, is in 324 feet. The rock in the face is quite tough and hard to blast.

OCCIDENTAL.—Operations in this mine are confined to sinking a double winze in the ore body, below the main drift. The ore through which this winze is passing is superior in quality to any heretofore taken from the mine.

SENATOR.—The shaft is down 15 feet below the 400-foot level, the ore vein in the bottom having shown much improvement during the week in both size and quality.

CHOLLAR POTOSH.—Daily yield of ore, 90 tons; assay value, \$45 per ton. The ore breasts and stopes are looking well and yielding the usual amount of milling ore.

DANBY.—The shaft down 300 feet in good sinking ground. There is a slight increase of water in the bottom of the shaft.

EUNOPA.—The face of the tunnel is thought to be fully thirty feet yet from the west wall, and there is every reason for believing that good milling ore will be found before the wall is reached.

JUSTICE.—Raising the main incline from the 400-foot level to connect with the main perpendicular shaft at the 300-foot station is making rapid progress.

GOULD & CURRY.—No pay ore has been discovered by any of these drifts as yet. The developments on the 1,700-foot, or lowest, level are looking much more favorable.

JACOB LITTLE.—The fine vein of rich ore developed in this mine shows improvement. The ore extracted is being carefully saved for milling and will pay well.

UTAH.—A great body of water is expected to be encountered when the ore vein is tapped which is now liable to occur at any moment.

DAYTON.—The ore breasts on the first and second levels are both looking well and yielding finely. The Woodworth mill, on the Carson river, is kept steadily running and crushing ore from this mine. Daily yield, 50 tons of ore.

CALEDONIA.—Raising up on the third compartment of the shaft from the 600 to the 500-foot level is making good progress. The main tunnel has been driven ahead at the unprecedented rate of 12½ feet per day during the week.

SUTRO.—A streak of fine looking quartz has been encountered in the south drift. The ore assays on an average \$15 to the ton.

ALPHA.—The main north drift from the 1,500-foot station of the Imperial is still driven ahead, the quartz in the face looking more favorable for the finding of a permanent body of ore.

BULLION.—The main north drift to prospect the Bullion ground is making good headway with excellent indications of soon reaching the main ledge.

SAVAOE.—The main west drift at the 1,900-foot level is in 20 feet, the face in close, hard blasting rock, the progress made being very slow.

IMPERIAL.—The main east drift at the 1,900-foot station is making steady progress toward the ledge.

KOSUTH.—Driving the main west drift to cross cut the ledge is making steady progress, the prospects of a favorable development of fine ore growing more encouraging as the work progresses.

NEVADA.—The ore body in the up raises shows considerable improvement.

STOCCO.—The extraction of ore from the little shaft in the cañon is being vigorously prosecuted, keeping the mill steadily running.

LADY WASHINGTON.—Sinking the shaft is making good progress, the porphyry in the bottom working much softer.

BALTIMORE CONSOLIDATED.—Sinking the main shaft is making good progress.

TYLER.—The water in the shaft is being lowered at the rate of six feet per day.

NEW YORK CONSOLIDATED.—Sinking the shaft is making steady progress, the bottom still in porphyry mixed with clay and quartz.

EMPIRE.—Sinking the north winze on the 1,700-foot level is making rapid progress, with more favorable indications of a development of ore.

BUCKEYE.—Sinking the main incline has been resumed and is making good progress.

Arizona.

Miner, Jan. 9th: The Elliott Brothers have just completed roasting and crushing in their steam-power arrastra, in Prescott, 2½ tons of gold ore from Big Bug district. They saved \$68.50 per ton.

Several parties are working arrastras at and near Weaver, with good success. And since

Afilierilla, or Filere, and Its Kindred Plants.

Erodium Cicutarium, and *Erodium Moschatum*.

BY RALPH RAMBLER—FOR RURAL PRESS.

California is justly noted for the beauty and novelty of its native plants. Its flora is no less remarkable for plants that are useful, rather than ornamental. Of the various members of the latter class, none are more widely distributed, more generally known, and more justly celebrated, than the pasture plant here described and illustrated.

Afilierilla, or *Fil-e-ré*, as we really pronounce it, has been ranked in a previous paper as the "prince among our pasture plants," and we think it richly merits this distinction.

Bunch-grass, salt grass, from which stock running loose, get all the salt they need; tule grass, burr clover, and many other species of clover, both native and introduced; the lupines and various other rich succulent plants, which are lavishly spread in spring over our mountain and hill sides, our valleys and our river bottoms, furnish the richest and most varied food for the hundreds of thousands of sheep, cattle and horses that are annually pastured in our State.

Even when dry and crisp, as most of the plants are from June till December, they are devoured as eagerly and seem as nourishing as the best of hay. Indeed, in many localities, where this native growth is rankest, it is frequently mown and cured for hay. Entirely dried and lacking in substance, as it generally appears, stock feed upon it and are kept in the finest condition during our severest winters.

Among all our flora, no plant is more valued for such purposes throughout the State, and more widely celebrated, than the plant of which our engraver has given us most excellent likenesses from nature.

Botanically, our *afilierilla*, or, as we prefer to give it, *fil-e-ré*, is an *Erodium*, as has been frequently stated in descriptive works on California. This generic name is from the Greek *erodios*, meaning a heron or crane, and is given on account of the close resemblance of its seed-pod and stem to the head, neck and breast of that bird, as can be readily seen by a moment's inspection. Hence, in works on Botany its common name is given as Herons-bill, and even Storks-bill.

Its California name, *afilierilla*, is a Spanish diminutive from *filer*, a pin, and literally means the little pin. It is given because the long, tapering seed-pod is like a pin. For this reason it is frequently called a pin-plant. Its long and musical Spanish name is reduced by usage to the more convenient form *filere*, in that practical, characteristic style, which Californians have for finding the quickest and shortest way for doing everything.

This plant is frequently spoken of as a native of the Pacific Coast. So long has it been known here, so universally is it distributed in our State, and so well does it thrive on its adopted soil, that we do not wonder at this common error.

It is not, however, a native of America. More than forty species of *Erodium* are known and described by botanists, and a majority of them are natives of the shores and islands of the Mediterranean. One species is described as a native of Siberia; another, of the Cape of Good Hope; one variety is from Numidia; and the two which are so common in California, *E. cicutarium* and *E. moschatum*, are given as natives of Great Britain.

So, our familiar and valued friend, the *filere*, is an exotic from the Old World. As a pioneer, it is even more venerable than a "49-er." We do not know that history tells us when it first emigrated to its new home. It probably came with some of the first shipments of wheat, and barley, and other seed that were brought to our shores. But like the millions of Europeans who have sought homes in America, it has found in California a soil and climate so congenial that it has taken entire possession, and it seems so much at home, that we have come to look upon it as among our aboriginals. And does this seem strange, when we remember how similar our climate is to that of portions of Southern Europe, Western Asia, and Northern Africa?

Filere belongs to the geranium family, which, besides the sweet-scented and cultivated plants of that name, comprise also the wood-sorrel, the balsams or touch-me-nots, and the garden nasturtium, or *tropaeolum*, one species of which (*T. majus*), a native of Peru, is very remarkable for the following fact, which, we are told, was "first discovered by the daughter of Linnaeus." At night, its large orange flowers, shaped like those of the larkspur, or snapdragon, "emit spontaneously at certain intervals vivid sparks, like those of an electric machine."

When any of our lady friends are tending their beautiful and valued pets, the rose geranium and its kindred, which beautify their windows, rooms and conservatories, do they ever stop to think or have the time to learn, why this plant is called *geranium*. You know there is a reason for everything. This name and *erodium* are given for very similar reasons, as seems natural when we think of the close relationship of the plants to which they belong. *Geranium* is from the Greek word *geranos*, a Crane, and the name is given, because the seed-pod bears some resemblance to a crane's bill. For this reason, crane-bill is a common name of the geranium among botanists.

In the engraving, Fig. 1 represents an entire plant of *E. cicutarium*, very much reduced from its natural size, in order to give those unfamiliar with it, a correct idea of the general appearance of this noted plant. Fig. 2 represents stem, leaves, flowers, seed-pods and seeds with their spirally twisted filaments, of this species in their natural size. Fig. 3 is a natural sized leaf of *E. moschatum*.

The striking difference between the leaves of the two species, gives to the former the common name of *fine-leaved filere*, and to the latter, *coarse-leaved filere*, by which our people most generally distinguish them.

The excellent object-teaching of the engraver makes any attempt at a minute description of these plants unnecessary. We will, therefore, point out only a few of the different qualities which distinguish the species. A strong odor is a mark of these plants, as it is of other members of the geranium family. Mash the stem and leaves of *fine-leaved filere*, and they emit the odor of parenips very decidedly. *Coarse-leaved filere*, besides having coarser and rather shorter stems, leaves closer together and rather smaller flowers, has also a very strong odor of musk. Hence its specific name, *moschatum*, or *musky*.

The name, *ciutarium*, from *ciuta*, meaning hemlock, is said to be given to the species, because its leaves are finely divided, like the leaves of that notorious plant. But we

as *E. romanum*, so called because it is a native of Italy. Some species may have been introduced into California by the early Jesuit missionaries. Future research will show whether we have other species. The *filere* is one of our earliest plants to flower, and one of the latest to remain green.

Let us try to make clear this bond of union among plants which would otherwise seem far removed from each other. We will not say, at variance with each other, for, in the world of flowers, almost a universal harmony prevails. To have this tie understood, we must again call attention to the stamens of flowers, which, as we have previously explained, are the male members of the vegetable kingdom.

Look at the stamen of any flower, and you will find it consists of three parts, viz: a single thread or stem, called the filament; at the end of this a knob of various shapes, called the anther, and on this anther a fine dust, or pollen, the fructifying power of plant life.

Now in all this class of plants just enumerated, and the members of its families are counted by thousands, the filaments of the stamens are more or less closely united at their bases in one body, and they encircle in various ways the pistils, which, you know, are the female members in the world of flowers.

All these plants, Linnaeus combined in his 16th Class, and called it *Monadelphia*, from two Greek words meaning one brotherhood.



ALFILERILLA, OR FILERE.

must confess, it is not altogether agreeable to associate in any way with so nutritious and attractive a plant as this general favorite, an herb, like hemlock, so repulsive from its poisonous qualities, and with so black a historic record, if for no other reason than its being made an instrument of death for one of the noblest of philosophers, by the sentence of his unjust and misguided accusers.

The flowers of both of these species are of a delicate pink or rose-color. Each has a five-cleft calyx, five petals, five stamens, and produces five-barbed seeds, like the seeds of spear-grass. The appearance of these seeds, when matured, and the manner in which they are attached to the stem supporting them, is well indicated by the engraver.

The tendency to twist, especially when exposed to the heat of the hand or sun, seems to be a means which nature has provided to enable the seed to force its sharp points into loose soil and plant itself.

After a wet winter, *filere* grows very rank on soil of any strength. It sends out branches two and even three feet long, and form a very dense herbage which makes the best of wild hay. Its stems are full of mucilage, and Indians are said to eat them with evident relish.

These two are the only species of *filere* that the writer has been able to detect in San Joaquin valley.

Possibly we also have a variety of *E. cicutarium* called *hippinatum*, because its leaves are very finely divided. Loudon says the latter variety is a native of Numidia. We may also have in some portions of California the species known

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very economically too, on account of the small amount of material needed to meet the size of their patterns. When food is scarce, they eat the small leaves. With the large ones they cover their houses. With the ash of the leaves they make a very fair soap. Both leaves and bark are used medicinally.

Such is this great Linnaean brotherhood of plants to which our humble and beautiful *filere* belongs. This principle of oneness, discovered by Linnaeus, can then unite by a common tie plants so remote in place and seemingly so unlike in nature, as to include in the same vast family our simple pasture plant and the odd monkey-bread of Africa.

San Joaquin Valley, Jan., 1874.

What Becomes of the Quicksilver?

At the New Almaden quicksilver works, some years ago, it became necessary to pull down a portion of the old retorting furnaces to make room for other machinery. Upon investigation it was discovered that the ground where the furnaces had stood was completely saturated with quicksilver. The company set a body of hands to work upon the spot with hydraulic pipes, and the amount of quicksilver which was sluiced out in a short space of time was prodigious. The deeper the work proceeded the richer was the yield of mercury. Points were reached where the liquid metal could be dipped up with ladles, and it was ascertained that even the bed rock—a soft tertiary sandstone—was completely saturated with the liquid mineral. Much of this porous rock was quarried and retorted, but at length the cost of the work exceeded the profit, and the work was abandoned. The present consumption of quicksilver in reducing the ores of the Comstock is about 800 flasks per month, or about three-fourths of a million of pounds per annum. The entire amount consumed in the State is about 1,100 flasks per month, or nearly 1,000,000 pounds per annum.

In former years, the amount of mercury consumed was not so great, nor the price so high as it is now, but during the past ten years many millions of dollars' worth of this valuable substance have been lost in our silver reduction works. As mercury is indestructible, and can only lose its metallic character by being chemically combined with other substances, the query naturally arises, where does it all go? The bed rocks in this region are not porous like the miocene rocks at New Almaden, but they are all volcanic in character, and therefore hard and compact. There are doubtless many spots in the trachytic greenstone—the principal superficial rock of this locality—which are broken into minute fissures, but the main mass of the rock is solid and impervious even to water, and there must be reservoirs of pure quicksilver somewhere in Gold Cañon and also in Six-mile Cañon. As quicksilver is now worth more than one dollar per pound, the discovery of a big deposit of the precious substance would be better than finding a rich gold lode.—*Virginia Chronicle*.

Denver Branch Mint.

The following is a full statement of the Mint receipts during the year 1873, closing today, as furnished by Rodney Curtie, Esq., Chief Clerk:

Month.	No. Deposits.	Ozs., Gold Bullion.	Value.
January.....	73	2,066 79	\$34,008 09
February.....	69	2,005 45	33,261 15
March.....	74	2,211 07	36,755 89
April.....	69	1,788 10	29,862 77
May.....	119	3,190 88	54,421 94
June.....	115	3,914 73	65,579 88
July.....	164	4,122 42	69,908 66
August.....	190	5,626 56	94,304 24
September.....	166	6,959 88	118,197 19
October.....	178	5,318 37	89,610 25
November.....	131	5,004 33	84,238 11
December (est).....	130	5,000 00	81,000 00

Thus it will be seen that the total gold deposits for the first quarter of the year, were 216, valued at \$104,025.13; for the second quarter, 300, valued at \$149,864.09; for the third quarter, 520, valued at \$282,469.98; and for the fourth quarter, 439, valued at \$257,848.36; making a grand total of gold deposits for the year, of 1,475, valued at \$794,207.56.

Additional to the above were silver deposits in June, value \$1,220.54; one in July, value \$582.09; five in August, value \$3,365.21; thirteen in September, value \$11,041.01; making a total of 16 deposits, valued at \$14,988.31.—*Denver Tribune*.

MILLING STATISTICS.—We glean the following particulars concerning the operations of the Brunswick mill from the annual report of the Superintendent. This mill, owned by Messrs. Jones & Hayward, is one of the finest in the world. It is situated, it will be remembered, on the Carson River, a short distance east of Empire City. It has 56 stamps, and is run by water power, its full working capacity being 160 tons per day. It is supplied with ore entirely from the Crown Point mine. During the year 1873 the quantity of ore crushed at this mill amounted to 34,500 tons. The cost of labor, including construction, was \$59,231. The number of cords of wood used was 971; quicksilver used, 56,732 pounds, at a cost of \$54,216; cost of castings, 44,796; sulphate of copper used, 42,420 pounds; miscellaneous expenses, \$23,000; amount of bullion produced, 64,200 pounds. The capacity of the two other mills in the neighborhood, the Morgan and Mexican, is respectively 80 and 110 tons per day.—*Gold Hill News*.

Useful Information.

Why do Paints Dry?

It was proved long ago, that linseed oil, when exposed to the air, became covered with a hard crust, and that this crust is produced by the absorption of oxygen. Paint made from oil and coloring matter alone does not dry because it parts with any thing or because it gives off any vapor, but because it becomes hard by the action of the atmosphere. It is stated in a recent work on paints that oil does not form even the basis of a paint. This is more technical than judicious. Oil alone, if laid on in thin, successive coats, becomes very hard and forms a durable and impervious varnish, which protects the wood beneath almost as well as paint would do, at least so far as moisture and air are concerned. Against the sun's rays, however, it is a poor defense. But as it has been found impossible to apply a sufficient coat of this varnish in any thing like a reasonable time, the oil has in general been mixed with various colored powders or pigments, which thicken it and thus enable us to lay on a heavier coat. Many of these pigments have no action on the oil, and it is always best that they should have no action. Compounds of lead, which are known to form chemical compounds with the oil, are amongst the very poorest paints. White lead is confessedly one of the least efficient of all our preservative agents, the authority referred to to the contrary notwithstanding.

When paint is applied to a fresh surface of wood, it often appears to dry in a short time. In this case, however, it will be found that the paint has not really dried, but that the oil has been absorbed by the wood; and in this case the pigment is often left in the form of a friable powder, loosely adherent to the surface to which it was applied. It rubs off very easily. This occurs to a less extent with white lead than with any other paint, simply because the lead combines with the oil and holds it on the surface, thus preventing its sinking in. We are inclined to regard this feature as one which confers no advantages upon white lead. It is probably better for the wood that as much oil as possible should soak into it, and it is no great disadvantage that the paint of the first coat should not adhere strongly. Where economy is an object, the absorption of the oil is prevented by first applying a coat of cheap sizing. The size fills up the pores of the wood, and prevents the sinking in of the oil. For in-door work, this answers very well, but for out-door purposes it is objectionable.

But all paints do not dry in the manner that we have mentioned. For in-door work, where it is desirable that the paint should dry rapidly and have a dead or non-reflecting surface, paint is generally mixed with turpentine. This is a volatile oil, which passes off rapidly when exposed to the air, and thus leaves the paint behind as a thin crust. This ability of the paint to resist atmospheric influences is thereby lessened; and this, for in-door work, is a matter of no consequence. It would be wrong, perhaps, to say that the oil of turpentine passes off entirely by evaporation, as a small portion probably becomes oxidized and remains behind. The amount so retained is, however, very small.—*American Homestead.*

A NEW WEATHER VANE.—The old weather-cock has two essential faults; it indicates a direction when there is a dead calm. It gives no means of learning the force of the wind; while it fails to show the true course of the same, by exhibiting merely its horizontal component. M. Tany proposes the arrangement to be attached to the ordinary lightning rod. Just above a suitable shoulder on the latter is placed a copper ring, grooved and made into a pulley easily rotated in a horizontal plane. Around this passes a knotted cord, the ends of which are secured to the extremities of a short stick or metal rod, to which is secured a simple streamer. Thus constructed the vane indicates a calm by falling vertically, and besides shows the strength of the wind by being blown out more or less from the lightning rod. As is evident, it is capable of motion in every direction, so that if there exist in the wind an upward tending vertical component, the same will be shown.

TANNING LAMB-SKINS WITH THE WOOL ON.—Wash the pelts in warm water, and remove all fleshy matter from the inner surface; then clean the wool with yellow soap, and rinse the soap thoroughly out. When this is done apply to the flesh side the following mixture for each pelt: Common salt and alum, one quarter of a pound of each, and half an ounce of borax, dissolved in a quart of warm water; add to this enough rye-meal to make a thick paste, and spread the mixture on the flesh side of the pelt. Fold the skin lengthwise and let it remain two weeks in an airy and shady place, then remove the paste from the surface; wash and dry. When nearly dry scrape the flesh side with a knife, working the pelt until it becomes thoroughly soft.

COVERING FOR STEAM PIPES.—Loose paper is wrapped round the pipes and painted with thin syrup; on this is painted a mixture of 4 bushels of loam, 6 bushels of sand or coke-dust, 3 pails of syrup, and 30 pounds of graphite; the mass is put on 20 mm. thick, and painted with oil or tar.

New Way of Coloring Metals.

It is announced that metals may be colored quickly and cheaply by forming on their surface a coating of a thin film of a sulphide. So for instance brass articles may be thus in five minutes coated with any color varying from gold to copper red, then to carmine, dark red, and from light anilin blue to a blue white, like sulphide of lead, and at last a reddish white, according to the thickness of the coat, which depends on the length of time the metal remains in the solution used. The colors possess the most beautiful luster, and if the articles to be colored have been previously thoroughly cleaned by means of acids and alkalis, they adhere so firmly that they may be operated upon by the polishing steel. To prepare the solution dissolve 1½ ounces of hyposulphite of soda in 1 pound of water, and add 1½ ounces of acetate of lead dissolved in ½ pound of water. When this clear solution is heated to 190° to 210° Fahr., it decomposes slowly and precipitates sulphite of lead in brown flocks. If metal is now present, a part of the sulphite of lead is deposited thereon, and, according to the thickness of the deposited sulphite of lead, the above-mentioned beautiful luster colors are produced. To produce an even coloring, the articles must be evenly heated. Iron treated with this solution takes a steel-blue color; zinc, a brown color; in the case of copper objects, the first gold color does not appear; lead and zinc are entirely indifferent. If instead of the acetate of lead an equal weight of sulphuric acid is added to the hyposulphite of soda, and the process carried on as before, the brass is covered with a very beautiful red, which is followed by a green, (which is not in the first-mentioned scale of colors,) and changes finally to a splendid brown with green and red iridescence. This last is a very durable coating, and may find special attention in manufactures. Very beautiful marbled designs can be produced by using a lead solution thickened with gum tragacanth, on brass which has been heated to 210° Fahr., and is afterward treated by the usual solution of sulphide of lead. The solution may be used several times.

PEPSIN AND THE DIGESTION OF FIBRIN WITH-OUT PEPsin.—Experiments performed in the physiological laboratory of Heidelberg by Gustave Wolffügel, under Kühne's direction, have led to the results essentially differing from those of Von Wittich and previous experimenters. 1. Wolffügel finds that pepsin is not diffusible. 2. That the pyloric glands produce no pepsin. 3. That both hydrochloric and citric acids in solution, containing 0.4 per cent. at a temperature of 60° C., are capable of dissolving boiled fibrin, though somewhat slowly, and of converting it into peptone. 4. This power of forming peptone is perceptible in both acids at a temperature of 40° C. (104° F.) Though the action of nitric acid is decidedly slower, on this account nitric acid is to be preferred to hydrochloric in experiments on the presence and action of pepsin.

BRACONOT described a sugar obtained from mushrooms which was found to be mannite. A. Muntz examined several different species, and in some no mannite was found, but a sugar which was undoubtedly trehalose or mycose; some contained both sugars.

GOOD HEALTH.

Catching Cold.

Catching cold is "as easy as lying," but to explain the pathology thereof is by no means so readily done. In fact, until the recent researches of Dr. Rosenthal, whose work on the subject is attracting much notice in Europe, almost nothing was known about it except the mere fact that the ailments popularly ascribed to "cold" are liable to occur after the body, or some part of it, has been suddenly chilled, that is, cooled below the normal temperature. There are two factors concerned in this chilling process; the nature of the external medium—such as air or water—in contact with the body; and the condition of the blood-vessels.

Dry air has very little power to abstract heat, if it be still; but a slight wind, from the constant contact of fresh particles of cold air on the surface of the body, soon carries off its heat. If there is much moisture combined, the chilling effect reaches its maximum. Experience has shown that it is not so much the absolute lowness of temperature which gives rise to colds, as sudden changes from a higher to a lower. The reason of this was not understood until Dr. Rosenthal explained it. When the surface of a healthy animal is exposed to cold the cutaneous vessels contract, and by thus confining the blood to the interior of the body, prevent its cooling, and preserve the temperature of the vital organs, unless the application of cold be continued for a considerable time. This is not the case, however, when the animal has been previously exposed to warmth. The cutaneous vessels become paralyzed by the heat, and remain dilated even after the cold has been applied. The blood is thus exposed over a large surface and becomes rapidly cooled, even though the temperature of the surrounding medium is not very low.

In Rosenthal's experiments, animals were kept from 97 to 104 degrees F. The temperature of the animals themselves quickly rose during their confinement to 111 or 113 degrees. After their removal it not only sank to the normal temperature, but even below it, so that an animal which was from 108 to 111 degrees in the warming apparatus fell to 96.8 degrees, and remained at that for several days, although the room in which it was kept was moderately warm. Confinement in a close office, hot theater, or crowded ball-room, will have a similar effect on man. From such places, people pass out into the cool, open air, or sometimes even purposely station themselves in a draught. The blood, which is coursing through the dilated vessels of every part of the surface, is rapidly cooled, and, on its return to the internal organs, cools them much more quickly than it could have done had the person simply been exposed to cold without dilatation of the vessels by previous warmth. Rosenthal lays much stress on the great effect of sudden cooling in bringing on a cold, the sudden change in the temperature of the blood producing an irritating effect, and inducing inflammation in any weak organ in a way that a gradual alteration would not do. It would seem, however, that the alteration must be from a temperature above to one below the normal temperature of the blood, and not a mere reduction from one considerably above the normal to one at or near it.

When much heated we may stand for a short time in a cool atmosphere with impunity; but if we stand long enough to produce a shiver, we run a great risk of catching cold. The fact that it is more dangerous to sit for a long time in wet clothes, appears to indicate that a considerable and more gradual cooling, such as may then occur will produce similar effects to a slight cooling suddenly effected by exposure to a cold draught after being in a chill, in causing inflammations may be partly due to the effect of cold on the tissues themselves, and partly to the congestion which will occur in some parts when the blood is driven out of others by the contraction of their vessels. Rosenthal is inclined to ascribe the chief power to the former cause. Everybody knows the beneficial effect of cold baths, cold sponging, etc., in "hardening" persons, as it is termed, so that they are able to face almost any weather and to endure sudden changes of temperature without injury. Rosenthal considers that the frequent application of cold water or cool air increases the tone of the cutaneous vessels, so that they do not become so much relaxed by heat as to be unable to contract with sufficient force when necessary. The power of regulating the temperature is thus preserved, and the person prevented from catching cold.—*Journal of Chemistry.*

THE THERAPEUTIC USE OF DRY POWDERED BLOOD.—Dr. De Pascale, of Nice, several years ago published some observations on the very beneficial effect of warm blood taken the moment when extracted from the calf or ox, killed for general domestic use. He described at that time several cases of hemoptysis, in which a complete cure had been effected by this treatment. In a paper recently published, he states that, finding among his English and American patients at Nice an unconquerable repugnance to such a remedy, he was led to adopt the plan of giving the blood in the form of dry powder. This is merely the revival of a practice which was in vogue many years ago, and which has occasionally been tried in this country. The blood of the ox, after being dried in a water-bath, is reduced to a very fine powder, and grated through a sieve. Dry blood can be taken for any length of time, being almost tasteless, and no repugnance is likely to be felt, as is often the case with raw meat. It can be taken as any common powder, mixed with soups, milk, marmalade, or chocolate, or enclosed in a wafer. In some cases, where even the name of blood might have offended the patient, Dr. De Pascale has given it, mixed with a small quantity of pepsin, under the name of "nutritive powders." The quantity he prescribes has varied according to the age, sex, or the state of health and digestive power of the patient. In general, he begins with thirty grains, which is increased according to circumstances; but the quantity must be left to the discretion of the physician.

HINT FOR PROJECTORS OF TOWNS AND STREETS.—It is worthy of remark that the arranging of the streets according to the cardinal points involves a sanitary objection of no mean import. No fact is better established than the necessity of sunlight to health, and no constitution can long endure, without ill effects, the total privation of its health-giving power. Every house on the South side of a street running East and West must have its front rooms, which are generally its living rooms, entirely deprived of the sun during the summer. This fact, coupled with that of the indoor life of American, and particularly Western women, is enough to account for a very large share of the nervous debility which so generally prevails. If the rectangular system must be adhered to in city arrangement, it would be far better that the lines of streets should be Northwest and Southeast, and the cross streets at right angles with them, than as now disposed; in this case the rooms in front or the rear of a house enjoy at least sunshine in the morning or evening. A strong proof that sunshine is wholesome is found in the fact that during epidemics people occupying rooms not exposed to sunlight are comparatively much worse off than those who enjoy that blessing.—*Manufacturer and Builder.*

DOMESTIC ECONOMY.

Food.

Though man does not live by bread alone, the bread portion of his sustenance is of very great importance. Ignoring the body is as fruitful in mischievous results as living for it alone. Body and soul are so dependent on each other that what affects one affects the other, and the more finely organized the body and the soul of any person may be, the greater must be his care to keep the two in perfect harmony.

It makes a world of difference what one eats. No class of people are so particular about their food, the quality, the mode of cooking, and the manner of serving, as those who live by their brains. They know that the human animal who would keep in the highest working order must be as carefully groomed, as nicely fed, as perfectly appointed as Goldsmith's Maid or Dexter, and they lay their plans accordingly. The cooking a potato, the compounding a cup of coffee, the broiling a steak, the making and baking a loaf of bread, are to them of vital importance, as indeed, they should be to everybody. A great many people never stop to enquire what particular diet is best for them, but following the injunctions of St. Paul, in a sense never intended by him, eat what is set before them, asking no questions for conscience sake or any other sake. If "hog and hominy" is the standard dish, they live on that; if hot soda biscuit and steak fried in lard are provided, that must reinforce their strength and content their appetites. It is a melancholy fact that horses and cows and dogs are more intelligent feeders than most human beings, and by natural consequence, they rarely have dyspepsia, gout or humors. If men and women would be governed in their diet by reason as rigidly as brutes are by instinct, a large portion of the ills that flesh is heir to would never be heard of.

How many who read this column understand the chemistry of food, and know just what they must eat to make them warm, what food builds up bone and sinew, and muscle, and what will best supply the nervous waste? How many understand the effect of diet on the temper and disposition of the mind, and avoid whatever will make them irritable, stupid and melancholy? How many mothers regulate the food of their children with reference to these results, and by so doing secure the tranquillity of their entire households? How many students are there, who, alive to the importance of proper diet, eat only food "convenient for them?"

The object of this article is not so much to impart knowledge as to awaken in other minds a desire to investigate this subject in its various bearings. There are books full of information of all sorts respecting the chemistry of food, the composition of bone, and muscle, and brain, and blood, which, if generally understood, and their suggestions carried out, would go far to banish sickness, and crime, and want.—*N. Y. Tribune.*

WATER IN THE HOUSE.—A prominent writer says: "Let nobody be deterred from bringing water in the house by any fears of failure and perplexity. You might just as well stop the circulation of blood in the body because it is subject to derangement, as to refuse the circulation of water in the house because now and then a pipe overflows, and your frescoes are ruined. Good workmen will prevent any such accident, but if they cannot, give up your frescoes; do not give up your life blood. When I see the farmhouses, the dairies, the kitchens, whose only source of supply is the well in the yard, or the hoghead at the back door, how life would be lengthened and sweetened if all this heavy, and hard and slow water-bringing could be supplanted by a turn of a screw, I wonder that we do not manage to introduce it, somehow, into our marriage contracts. What an increase of vital force would ensue; what a diminished demand for divorce; what a strengthening and upbuilding of the family bond, if a girl should refuse to marry until there was an inexhaustible supply of water, at least in the kitchen. A house without water works ought to be considered as incomplete as a house without doors, and as incomplete in the country as in the city."

How to Cook FRESH FISH.—After fresh fish have been dressed well and washed, roll them in Indian meal, (after being sifted of course,) put them into a hot spider where there has been a large spoonful or two of lard melted. Sprinkle over some salt, then put the spider into the well heated oven and let them crisp over. Take them from the oven, lay them on a deep plate, turn all the fat out of the spider; (it will only be found fit for soap grease). Now put one quarter of a pound of butter in the spider, put it over the fire, and when it is all melted, add one half tea cup of strong vinegar to the melted butter, stir quickly, and pour it over the fish and serve immediately. I find but very few people but what think this method of cooking fresh fish, is very superior to the more common way of cooking it without adding the vinegar gravy.—*Ohio Farmer.*

MINING SCIENTIFIC PRESS

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The Cochran Self Feeders.

The Cochran ore feeders are now in successful operation at the St. Patrick mill, Placer county, the Patterson mill, Tuletown, Tuolumne county, the Independent mill, Sierra county and at Garland's mill in Calaveras county. They were placed in the St. Patrick mill at Newesetle, Placer county, Cal., on trial. The Superintendent of the mill, J. H. Croes, man, states that they have been in use there about two months, giving perfect satisfaction and doing all they were represented to do. In a letter to the Secretary of the company he advises keeping them for the following reasons:

"1st. They save us in labor alone, \$6 per day aside from the annoyance and expense of getting good men to feed the battery.

"2nd. The gain over batteries fed by men is two tons per 24 hours. We formerly crushed 18 tons and now crush 20 tons per day.

"3d. They keep the pulp more regular in the batteries, and the screens and plates always free, thereby ensuring good battery smalgamation.

"4th. Being automatic they can be so nicely adjusted that the shoe rarely, if ever, strikes the die. The saving by this of wear and tear of shoes and dies alone will repay the cost of the machines in less than 12 months. No quartz mill should be without them."

WORK AT THE FOUNDRIES.—Work at the foundries and machine shops is generally slack just at present, though the promise for an increase of business is better than it has been for some time. Many of the shops are quite slack and employing very few men as compared with the busy season. As spring opens and orders from the interior arrive, the shops will all be in full blast again and employ the usual number of hands.

The Risnon Iron Works are running busy, but have not much large work on hand. They are doing considerable small jobbing. They are also casting a good many car wheels just at present, and some large spur wheels, etc., to go to the Comstock mines. They have a good force of hands at work.

Proposed Mining Legislation.

In our last issue, we gave in full the proposed mining law, which has been introduced in the House of Representatives, by J. D. Ward of Chicago. Speaking mildly, it is to be hoped that our representatives in Congress will do their utmost to choke this bill off. If it becomes a law it will be the worst blow to the mining interests of the Pacific Slope that they have ever received. Under its provisions every claim holder in the country would be obliged to apply for a patent within a year, and pay for it at double the rates now necessary for lode claims, and five times that for placer claims. This bill differs from the present law in these important particulars: It compels all claim holders to apply for a patent, and pay for their claims at the rate of ten dollars per acre within one year; while under the law as it now stands, the owners of mining locations are not required to apply for a patent unless they desire to do so, and when application is made, the price per acre for placer claims is \$2.50, and for lode claims \$5.00.

The idea of this bill being "an amendment to an Act entitled an Act to promote the development of the mining resources of the United States," is a pleasant little joke on the part of the Hon. J. D. Ward of Chicago, who fathered the bill. "Promote the development" is good—as a joke. Why, it will be the very worst possible thing for our miners that can be done. At present not one claim in a thousand is ever patented, because in the first place there is not much need for it, and in the second place it is too expensive an operation for eight miners out of ten.

We don't believe Mr. Ward knows anything about mining or mining matters. The act will be a good one for lawyers and a very poor one for the miners. The principal object of the bill is to raise money from the sale of the mines to assist in paying off the national debt, and lessen the burden of taxation. Every few years this old game of selling the mines to pay the national debt comes up. The *Chronicle* estimates that there are 15,100,000 acres of mineral lands, which at \$10 per acre would yield a most magnificent sum to the Treasury. Why people buying mineral land should pay \$10 per acre and people buying agricultural land should only pay \$1.25 per acre, we do not see. A farmer can get his crops in the first year; a miner often works many years with no returns. In fact it takes him a year or so to prove whether the mine is worth even the labor expended on it. Must one man be compelled to buy a "pig in a hsg," and pay about 8 times as much as the man who sees what kind of a pig he is buying?

We venture to say that if the bill passes, the individual miners will, many of them, abandon the business; prospecting will not be popular, and incorporated companies will "rule the roost." About that time people will begin to think that our law-makers "developed the mining interests of the United States" on a mistaken principle. Small mines would have no show. It would bankrupt our mining interests to pay the millions of dollars necessary to be paid in the first year of the operation of the proposed new law. But what a harvest for the lawyers there would be! Perhaps Mr. Ward is one, and wants to settle on the Pacific Slope. What a quantity of litigation there would be while all the big mines were getting their patents the first year, and how many millions the lawyers, clerks, surveyors, etc. would receive as fees!

It is impossible to sum up all the demerits of this law in one newspaper article, and we shall have more to say concerning it in a future issue. Meanwhile we invite correspondence on the subject, and hope our Pacific Coast Representatives, who ought to know something of the mining interest, will do their level best to fight the bill to its death.

THE PACIFIC IRON WORKS, which have just received the order for rolling mill machinery for Japan, mentioned in another column, have just finished a lot of pans and settlers for Walbridge's new smelting works at Brooklyn. They are also making repairs in the Pacific Mail Steamship Co.'s steamers *China* and *Colima* putting the machinery in order, etc. The Pratt steam pumps, illustrated in this journal, are being made in numbers at these works. They are sending them out all over the country, for mining and agricultural purposes, and are said to be giving great satisfaction. These pumps are adapted to all classes of work to which a power pump is applied.

THE PATENT RIGHT CONVENTION met at Washington on the 16th inst., and 200 delegates were present, representing 18 States.

Rolling Mill Machinery for Japan.

For the past few years the foundrymen of this city have received occasional orders for machinery of different kinds to go to Japan. An item of considerable interest in this line is an order for rolling mill machinery, recently received here from the Japanese Government by the Pacific Iron Works. The order comes directly from the Japanese Government through their Engineer. The machinery wanted comprises a complete set of smelting and forging machinery. It consists principally of engine and boiler, blowing cylinder, steam hammer, bloom-squeezer, shears, ore crusher, furnaces, etc. The engine is to be of 40-horse power. The Government Engineer, who orders the machinery, states that they have in Japan large bodies of magnetic ore. It yields from 60 to 65 per cent. of iron, "one-third of which runs as malleable cast and two-thirds as a good quality of chilling iron," which would be something equivalent to the Saulshury iron of the East, a celebrated brand, which is used principally for the manufacture of our wheels. The malleable cast turns into a very good steel.

The machinery goes from here to Yokohama, whence it will be shipped to the district where the mines are located. The ore deposits are spoken of as very extensive and rich, and may yet become a prolific source of supply. This is their first attempt to develop any of the rich iron ore beds that has been made, and they seem to be in earnest to go to work properly. The metallic wealth of the country is said to be very great, comprising copper in quantities sufficiently large for an extensive exportation, considerable quantities of sulphur, lead, tin and iron, with some gold and silver. The Pacific Iron Works shipped some two years ago a complete 10-stamp quartz mill to Japan, and another quartz mill has also been sent thereby another of the San Francisco foundries. The Japanese artificers in copper, iron and steel have a very high reputation, and as a nation they possess mechanical skill in a high degree, so they will probably soon work their own mines and machinery in a skillful manner.

The Japanese are becoming quite enterprising in the matter of developing the resources of their country, and so far it has been to the benefit of San Francisco, as considerable machinery of different kinds has been made here on orders from Japan. As the people there become more accustomed to the use of machinery in the different branches of arts and manufactures, it is expected that quite a trade in that line will spring up between San Francisco and Yokohama. Our local foundrymen turn out excellent work of all kinds, and have already established a favorable reputation in Japan, as well as on the Pacific Coast.

WHITE PINE.—The *News* commends the English corporation known as the Eberhardt and Aurora Company, as being the only one that has done any systematic mining in White Pine. It says that the other companies have been scraping up the ground, and scratching here and there for rich ore, while the English incorporation has been working intelligently and with a purpose.

THE SAN FRANCISCO BOILER WORKS last year, made a mile of 30 inch pipe for the Spring Valley Canal Mining Company, at Cherokee Flat, Butte county. The pipe paid for itself in one month's run. This claim is the one which has made such a reputation for itself, by turning out large gold bars, one of them being the largest ever made on the coast.

THE ETNA FOUNDRY is quite busy on local work. They do a great deal of repair work, and are now making repairs for the woolen mills, and fixing up the candle factory. They are fitting up a steam fire engine for the Kimball carriage works, and making a pair of engines, etc., for the steam Yacht "Peerless," which are nearly completed.

ON THE RIO BLUE lead at Kernville, Havilah mines, Cal., they are now erecting an 80-stamp mill, in addition to the one now running night and day. The mill is run by the water power of Kern river, which is only half a mile from the mine. So says the Havilah Miner.

OUR CITY SUPERVISORS are on the right track when they propose to condemn the present water works for the city, and also propose that the city manufacture its own gas. A committee will be appointed to inquire into the water subject, and report the result to the Board.

Catalogue of Arctic Shells.

Mr. W. H. Dall, of the United States Coast Survey, has prepared for the California Academy of Sciences a catalogue of shells from Behring Strait and the adjacent portions of the Arctic Ocean, together with descriptions of two new species. Having had occasion to examine several collections of shells brought down by whalers from the Arctic Ocean in the autumn of 1873, Mr. Dall was struck with the fact that there does not appear to be any catalogue of the species of that vicinity. Indeed, the region has been visited by but few collectors, and the species have been commonly described among a host of others from all sorts of localities. The collectors, upon whose localities dependence can be placed, are rare, and are mostly of modern date. Mr. Dall has therefore prepared the catalogue referred to as a kind of a preliminary basis for a better one.

The authorities are chiefly as follows: Gray and Sowerby in the Voyage of the *Blossom*, Capt. F. Beechey; Gould, on the shells collected by the late Dr. Wm. Stimson, of the North Pacific Exploring Expedition under Capt. (now Admiral) John Rogers; Dr. P. P. Carpenter's Report to the British Association Mr. Dall's own collections from Plover Bay and Norton Sound and southerly, from 1865 to 1873; collections from Cape Espenberg and Grankey Harbor by Capt. E. E. Smith, and from Icy Cape by Capt. T. W. Williams in 1873. A few other species known to be found in that region have been added from various sources. Synonymy in general has been waived, except for the purpose of referring to a figure.

The region covered by this catalogue is probably a rich one, especially in forms of the *Buccinoid* and *Chrysomoid* types, and it is to be hoped that it may be more thoroughly explored before long. The large collections of species made by Dr. Stimpson in this region were lost in the Chicago fire, and contained many unpublished forms. It is therefore particularly desired that more material should be obtained, and none are better able to contribute to our knowledge in this respect than our hardy whalers. The catalogue will be published in the next volume of the proceedings of the California Academy of Sciences.

DEATH OF THE SIAMESE TWINS.—The renowned Siamese Twins died on the 19th inst. Their death has been expected for some time, as they were well advanced in years. On account of their peculiar nature many conjectures have been made as to the manner in which they would die, and it seems that one of them died some two hours before the other: A special from Richmond gives the following particulars of the death of the Siamese Twins, on Saturday morning, at their residence at Mount Airey, Surrey county, N.C. Chang was partially paralyzed last Fall, since which time he has been fretful, very much debilitated, and strongly addicted to drinking liquor, as a means of alleviating his sufferings. He had been quite feeble for several days, so much so as to confine the brothers to bed. On Friday night Chang became worse, and expired suddenly, about four o'clock on Saturday morning. Eng became so terribly shocked that he roared wildly for awhile. This attack was followed by what seemed to be a deadly stupor, and in two hours from the death of Chang, Eng breathed his last. The wives and families of the twins are in the deepest grief—the children, many of whom are deaf-mutes, expressing their sorrow in the most pitiful manner.

TUNNELS WANTED.—In emulation of the Comstock, two or three other localities are after Sntro tunnels. White Pine wants one to run under White Pine Mountain, and develop the wealth known to exist there. At Havilah, Kern county, they want a tunnel which will tap their immense mother lode, a continuation of the famous Big Blue, 1,200 feet beneath the croppings.

NEW MAP.—Charles W. Hendell of St Louis, Sierra county, has almost completed a topographical map of Sierra county. It will be a fine affair, similar to the one of the Slate Creek section, exhibited here last year by Mr. Hendell.

A DONEY ENGINE has been lowered to the 1,500-foot level of the Ophir mine, to be used in working from the east incline, below the 1,700-foot level, where sinking is now going on.

THE KEARSARGE MINE, in Lake county, is said to be producing one pound and upwards of native quicksilver, to the pan of dirt, which equals about \$1 to the pan.

Legislative.

The Legislature has now got pretty well into the business of the session. There are at this time, some 150 bills before the various Senate committees, which will be reported for action as fast as they can be considered in Committee. There is an evident disposition among the members to pay a reasonable degree of deference to the universal demand for retrenchment, the avoidance of special legislation, and a careful scrutiny into the manner in which public money is being expended, etc. With the present temper of the people and disposition of the Legislature there is a conspicuous absence of the thieving and jobbing bills, which have in times past so disgraced the annals of California legislation.

Repeal of the Five Per Cent. Law.

One of the most important measures finally disposed of is the repeal of the odious Five-Per-Cent. Law, which received the sanction of the Governor on the 14th instant.

Fares and Freights.

The most important measure now before the Legislature is Mr. Freeman's Bill regulating Fares and Freights. There is an almost universal demand for legislation of some kind upon this matter; but it is a most intricate and difficult subject to approach and should be carefully handled; there is no doubt but that the bill will pass in some shape, for the people must be protected to some extent from the excessive and discriminating charges of the C.P.R.R. Co. Whatever may now be done, however, it will be but the starting point of reform in this direction, and will only serve as something which may be studied and experimented upon until the next Legislature meets, when we shall be able to legislate more understandingly than we can possibly do now. This question is now before the Legislatures of quite a number of States—probably every one which is in session—and it is also prominently before Congress, in the form of a Bill "To Regulate Commerce by Railroads between the several States."

The discussion of the question of the right of the Government to regulate fares and freights, is definitely settled by the people, by legislatures and by the judiciary—the only question now remaining is 'how to do it.'

Irrigation.

The question next in importance to California, is that of irrigation. Many plans have been proposed to secure some general and uniform system of irrigation for the State. It is now quite generally conceded that it will not do to allow the waters which may be so used to pass into private hands; hence some plan must be adopted which will keep their control either within the several counties or in the State itself.

A bill was introduced, last week, by Senator Bush, of Los Angeles, which seems to meet with much favor, and bids fair to become the outline of a general system for the State. It places the waters within each county under the control of the county itself. Although it is designed especially for Los Angeles, whose waters and their use are almost exclusively confined to that county alone, we see no reason why its general principles may not be extended to other counties, where it may be desirable to extend the same ditch or irrigating, and, perhaps, transportation canal from one county to another. Mr. Bush's bill provides for a County Superintendent of irrigation, who, with a Board of Water Commissioners, shall establish a uniform system for the county, and have charge of the same. This plan is very much like that which has been so successfully adopted in Utah. We shall have more to say upon this matter at another time.

The Apportionment Question

Is one in which the agricultural counties, and San Francisco especially, is interested, in order that the central and coast regions of the State may have their due share of representation at the State Capital—a right of which they are now unjustly deprived. The matter is before the Legislature; but we fear there will not be that spirit of fairness and equality manifested in its settlement which should obtain. We trust, however, wise counsels will prevail and even-handed justice be meted out.

Equal Taxation.

Mr. Evans has a bill before the Legislature, which proposes a remedy for the double taxation that has heretofore borne so hard upon small property men who are compelled to raise money upon real estate by mortgage. This bill provides for the assessment of mortgaged property to its full value, less the amount of mortgage or lien which there may be upon it—the mortgages to be assessed to the parties which own them. This, or some similar bill, ought certainly to become a law.

The No-Fence Law.

Originally intended only for Fresno county, but now applying to Kern, Tulare, Ventura and Santa Barbara, which passed the Assembly on the 12th instant is now, by reference of the

Senate, in the hands of the Judiciary Committee for further consideration. In the meantime numerous signed petitions are coming in in favor of its final passage. It should and doubtless will become a law soon—if not even before we go to press with the present issue. The farmers of Kern and Tulare are especially anxious about it, as upon its passage depends the sowing of a large breadth of grain the present season; much further delay will make it too late for sowing.

After Sargent's Land Bill.

The bill introduced by Mr. Sargent to forbid the listing or transfer of any mired swamp land from the Federal Government to the State, is meeting with most marked disapproval by his constituency here. There is quite a general belief that there is a very large cat carefully concealed in this metaphorical meal tub, and a concurrent resolution has been introduced, instructing our Senators and Representatives in Congress to oppose the passage of the bill in that body. The bill has been reviewed in an able and exhaustive speech by Mr. Speaker Estee and its doubtful character is quite fully established by the great interest which the railroad men, in and out of the Legislature, manifest in the defeat of the condemnatory resolutions. The resolutions passed to engrossment on Tuesday.

Unwarrantable Expenditures of Public Money.

The Legislature is looking closely after the expenditures in the construction of public buildings, etc. The manner in which the public money was squandered in the construction of the Normal School, has already shown how

they can have no control over them for their after service by way of remuneration. The consequence is that our young men are too generally growing up in idleness and vice. A good apprentice law would no doubt do much towards settling the question of what to do with our boys.

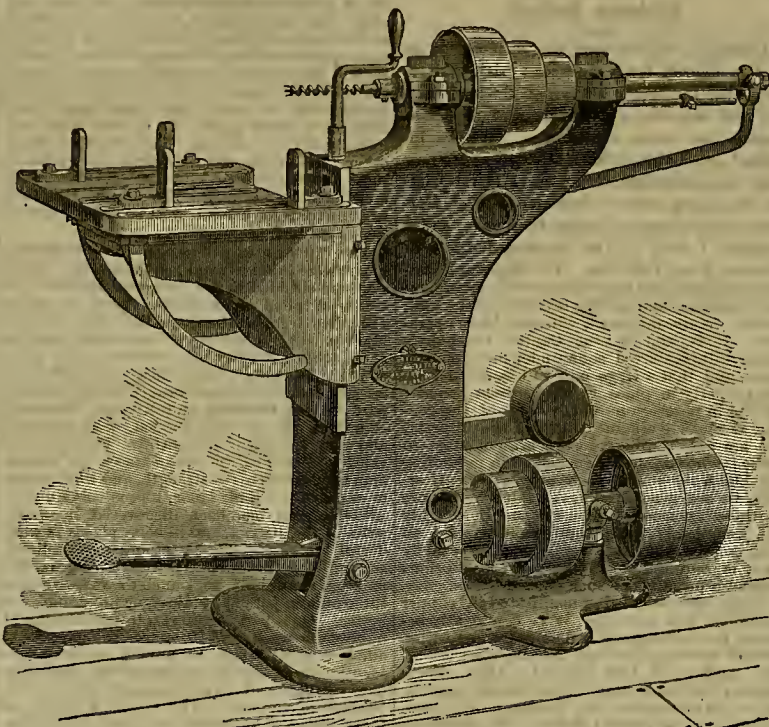
New Counties.

It is proposed to establish two new counties—one by setting off a portion of Tulare and Kern into a new county, with a county seat at Porterville. We are not aware that any bill to this effect has yet been presented to the Legislature.

But Mr. Tully, of Monterey, has favorably reported from a committee a bill creating the county of San Benito out of that portion of Monterey county lying east of the mountains. About seven-eighths of the inhabitants living in the proposed county have petitioned for such action. The new county would contain about 5,000 inhabitants, and \$4,500,000 of taxable property; leaving Monterey still with \$8,000,000. The bill will probably become a law.

Constitutional Convention.

The papers are generally, with the exception of the *Sacramento Union*, averse to the scheme for a Constitutional Convention, as a needless expenditure of the public money. There is no reason why the next Legislature may not attend to such duty, as if the matter is referred to the body its members (with the exception of the hold-over Senators) may be elected with special reference to such a work. It would no doubt greatly benefit Sacramento to have a



UNIVERSAL BORING MACHINE.

easy it is to swindle the people when such work is not closely looked after. Suspensions having become current that there was something wrong about the erection of one of the buildings of the State University at Oakland, a committee of investigation has been appointed who are now engaged in that labor. The testimony just concluded, shows that even if no frauds were intended there has been a looseness manifested on the part of those who had charge of that work which is highly culpable. There is much reason to believe that much money has been carelessly expended there, which a little care might have saved; and that the State has suffered to the amount of some \$40,000, and finds herself with an inferiorly constructed building on her hands. Dr. Merritt of Oakland, who has had the matter under his special charge, owes it to himself as well as to the State to see that the investigation is complete and thorough.

Rumor also has it that there is something wrong about the Insane Asylum now in progress of construction at Napa. The law authorizing the work assumed that \$300,000 only would be required for its completion. It is now claimed by some that \$1,500,000 will be called for. It is the story of the San Francisco City Hall repeated on a smaller scale.

It is proposed by Senator Oulton to introduce a bill imposing upon commissioners a penalty for exceeding the law in the matter of such expenditures. Should not the architects, who are the first to mislead in such matters, by handing in to commissioners erroneous estimates, come in for a little legislation?

An Apprentice Law.

Senator Perkins has given notice of the introduction of an Apprentice Law. Such a law is no doubt one of the needs of the State—if it can so be drawn with equal and exact justice to both the apprentice and master. As it is, there is a disinclination among employers to receive boys with a view of really teaching them anything in the way of a trade, for the reason that

Universal Boring Machine.

Among the tools used in wood working establishments, few have been more neglected than the wood-boring machine. As a general rule, shops otherwise well supplied with labor-saving devices lack this important and useful tool, or, when its want becomes felt, seek to supply its place with an apparatus which, perhaps, partly answers for the special object sought, but which lacks the ingenious contrivance to make it advantageously used or even applicable to a great variety of work.

The annexed engraving represents the Universal Boring Machine, which the manufacturers have made a special study so as to effect the necessary improvements in order to enable it to meet the wants detailed in many inquiries received relative to its adaptability for different uses. The machine is strongly built of iron and steel, and combines, in the small space it occupies, nearly all the facilities needed for boring large and small holes in any desired angle. It is cost with a heavy solid frame and body, and has two cone pulleys with three faces, for giving the mandrel the proper speeds for different sized bits. The mandrel, which is of steel, is made to traverse by a foot lever. The operator can adjust the leverage in a moment, so as to stop at any desired depth up to 11 inches. The adjustable table has a surface of 21 inches in width with 15 inches slide, and it can be raised or lowered 16 inches, enabling one to bore in the center of 32 inches. Adjustable rests upon the table render the work readily placed at any desired angle in the horizontal plane, while the table top itself can be set on an incline towards the bit to any angle not exceeding 45°, and the same can be raised or lowered, and slid forward or back, preserving the inclination given.

Angers and machine and pod bits of the various sizes can be employed, as an adjustable chuck is fitted to the mandrel for holding the same. The levers are in the inside of the machine, where they are protected, and where no dust and shavings can obstruct their movements. There is no spring connected with these parts to impart return motion, which requires a greater amount of pressure at this point of the operation than is needed to secure a smoothly finished hole.

It will be seen from the foregoing that the machine is always ready for doing either light or heavy boring at any angle desired, with ease and with great rapidity.

On machines or devices where the stuff has to be moved up to the auger, there is a liability of twisting, of making a crooked hole, and of breaking the bit, especially if knotty or crossgrained material be used; and the expense of bits would in a short time amount to the cost of the present invention.

The countershaft attached to the machine rests in adjustable boxes, and has a tight and loose pulley of eight inches diameter and three and a half inches face, and should make 900 revolutions per minute. For further particulars, address Bentel, Margedant & Co., Hamilton, Ohio, the well known manufacturers of the "Universal Wood Workers," planers and other wood working machinery.

Sequoia Gigantea.

It is a noticeable feature in the growth of the young trees of the Sequoia gigantea, that the body of the trunk at the ground attains to a large proportionate size as compared with most other trees of the same age, and from the ground tapers rapidly upward. In advancing a reason for this, we will have to assume that nature, even in the form of a tree, thinks; or in other words, knows just what it is about. The Sequoia in its native soil, climate and altitude above the sea, grows to a very great height and to an immense size.

These conditions must be met in a growth of trunk and root that will stand the immense strain from the great leverage of its vast trunk and wide spread foliage in hoary gales of wind. The tree knows this, and commences to make provision for it while yet quite young; it is therefore the habit of the tree, in any soil or climate where it will grow, to enlarge its trunk at and near the surface of the ground. After the trees in their native forests have assumed considerable size, and are standing quite closely together, each assisting the other to some extent in bearing up against the force of the winds, this difference in the growth of the trunk as between its top and bottom measurably disappears.

The Sequoia, like other trees, can never attain to that great height when grown singly in open ground, that it would in compact forest form, where each tree is striving to overtop its fellow in its race for sunlight; nor can we hardly expect it to find as genial a climate around the bay of San Francisco as in its native wilds.

Constitutional Convention meet in that city next summer; but such benefit would be at the expense of the balance of the State.

REDUCTION WORKS are needed in Montana, and the *Montanian* says a splendid opportunity is offered for investment in this line within fifty miles of Virginia City, M. T. To properly complete sampling works, amalgamating works, concentrating, matting and smelting works, with store-houses for ores, would cost some \$300,000, and a company is wanted to take hold of the matter. A good location is pointed out in the Beaverhead river, which is convenient to a large extent of country. If placed there, abundant water is available, and there are more than twenty different mining districts within from ten to fifty miles. The following are among the list of districts that would supply such works at the point named: West of the Beaverhead river, Bannack, Blue Wing, Argenta, Birch Creek, Bryant, Vipond, Moose Creek, Highland, Rochester, Iron Rod and Silver Star; east of the Beaverhead: East Silver Star, Bear Cañon, Wisconsin, Mill Creek, Ramshorn, Bivins, Junction, Granite, Fairweather, Highland, Pine Grove, Summit, Brown's Gulch, Williams' Gulch, Ruby Mountain and Silver Belt. The supply from these alone would be only limited by the capacity of the works, and the richness of these ores is already demonstrated.

RUSSIAN MINES.—The *Golos*, one of the leading daily papers of St. Petersburg, publishes a Government report, giving the production of minerals in Russia in 1871; according to that report, the yield was 105,928½ troy pounds of gold; 36,579½ troy pounds of silver; 102,882 tons of copper; and 817,010 tons of coal.

Coal in California.

The production and consumption of coal on this coast show a rapid increase. The California mines at Mount Diablo have been in operation since 1860. The production of these mines for the past two years has averaged 175,000 tons per annum, against 130,000 tons per annum for the previous five years and 47,000 tons annually for the first six years of their operation. This coal is mostly used for steam purposes by local manufactories and the hay and coast steamers. It is the lowest priced coal in this market, selling at \$6.25 for fine and \$8.25 for coarse. These would be considered good prices for the best hard coal in Atlantic cities. The mines at Mount Diablo are the only ones worked to any extent in this State. Other coal deposits have been reported from time to time in various sections of California, but their importance has not warranted any great outlay of labor and capital in developing the same. One of the greatest drawbacks to local manufactures is the want of cheap coal. The only motive power we have is steam, and this costs more here, perhaps, than in any other city in the United States. Whoever succeeds in furnishing San Francisco with good and cheap coal will add much to her material prosperity. All other supplies of this article are obtained from points outside of California. The other Pacific coast mines from which we draw are at Coos Bay, Bellingham Bay, Seattle and British Columbia. The Coos Bay mines are located on the Oregon coast, and have been in operation from twelve to fifteen years. However, up to the beginning of 1868, the production was less than 3,000 tons per annum. During the past six years, the yield has averaged 24,200 tons per annum, and for the past two years, 35,000 tons per annum. The coal from these mines is largely used for culinary and office purposes. The present wholesale price is \$11 per ton, or \$14 for retail lots delivered. The Bellingham Bay and Seattle mines are in Washington Territory. Some of the earliest Pacific coast supplies were obtained from the former mine. The yield for the past fifteen years has been irregular, varying from 5,000 to 21,000 tons annually. From 1868 to 1871 inclusive, the mines turned 17,000 tons per annum. A fire in the mine in 1872 stopped operations. During the past year the yield has been the largest in the history of the mine, amounting to 21,200 tons. This coal sells at \$8.50 from ship, and is used for all purposes. The Seattle mines were opened in 1871, when they sent to this market 4,900 tons. In 1872 we received 14,800 tons, and in 1873, 13,600 tons. None has been received for some months, but operations are expected to be renewed soon. This coal bears the same price as Coos Bay, and is largely used for domestic purposes. The only other domestic coal on this coast comes from Wyoming Territory, and is called Rocky Mountain. It is brought by rail, and on account of high transportation expenses, only limited quantities have been received, say 1,000 tons in 1871 and 1,900 tons per annum for the past two years. The price by the carload is \$15 per ton, retailing at \$17. The ashes from this coal are like wood ashes and there are no cinders. Were it possible to retail it at \$13 or \$14 per ton, it would be largely used in houses and offices. There are two mines in British Columbia, one at Nanaimo, formerly operated by the Hudson Bay Company and from which we receive our principal supplies of that description, and the other at Departure Bay. The latter mine was opened a few months ago, and several cargoes have been received here. The coal is known as Wellington, burns freely, makes a hot fire and consumes slowly. The retail price is \$17 per ton. The coal from the Nanaimo mines is largely taken by the Gas companies. From 1860 to 1863 inclusive, our receipts of British Columbia coal amounted to 6,900 tons per annum. During the past ten years, the receipts have averaged 18,000 tons per annum, and during the past two years 28,000 tons per annum. In 1871 we received one cargo of anthracite coal from Queen Charlotte Island, British Columbia, the first of that description mined on this coast. The quality, however, was inferior, and the expense of working too heavy to proceed, and operations were accordingly suspended. It is said that there are abundant anthracite croppings in Alaska, but investigations so far do not justify active mining operations there. At present all our hard coal comes from the Atlantic States, chiefly from Pennsylvania and Maryland. During the past two years we have received 13,000 tons of Anthracite and 9,000 tons Cumberland per annum. The steady increase in the consumption of Pacific coast coal has been largely at the expense of Eastern mines. There is a special demand for Cumberland, which is not met by any other kind, but all other descriptions of Eastern show a marked falling off within a few years. From 1860 to 1864 inclusive, our receipts of Eastern anthracite coal averaged 36,500 tons per annum. During the two following years only 34,000 tons was received. From 1867 to 1870 inclusive, there receipts averaged 31,000 tons per annum, while during the past three years the average has been only 15,000 tons per annum. Our supplies of foreign coal, outside of British Columbia, are chiefly obtained from Australia and the United Kingdom, with occasional cargoes from Chile. In 1861 we received 12,500 tons from Chile, and in 1867, 15,000 tons. However, outside of those two years the receipts from that source have not averaged over 3,500 tons per annum. The supplies from the

United Kingdom have been quite irregular, varying from 7,000 to 54,000 tons per annum. Up to the beginning of 1868, the quantity received from Europe scarcely averaged 13,000 tons per annum. During the past six years, the average has been 35,500 tons per annum, reaching 52,600 tons last year, notwithstanding the high prices in the primary markets. The receipts from Australia last year were 96,000 tons and 115,000 tons in 1872. In 1869 and 1870, we received 75,000 tons and 84,000 tons respectively, and in 1866, 54,000 tons. The receipts for other years since 1860 have averaged only 22,000 tons per annum. A large portion of the coal received here of late from Australia and the United Kingdom, had been on account of ships anxious to come here to take wheat. The annual receipts of coal at San Francisco from all sources since 1860 are annexed:

	TONS.		TONS.
1860	77,600	1867	248,900
1861	116,200	1868	282,000
1862	120,500	1869	329,000
1863	135,000	1870	320,500
1864	167,300	1871	315,200
1865	150,100	1872	434,500
1866	192,600	1873	454,600

These figures are from the *Commercial Herald*, and show an average of 240,000 tons per annum for the period named. The consumption for the past two years has averaged over 400,000 tons per annum. Much of this increase is due to the augmented demand from manufactories and to the multiplication of gas companies in the interior cities of the State. We shall probably want nearly 500,000 tons during the current year.

Robinson District.

Although but little work has been carried on in this district for some weeks past, particularly since the shutting down of the mill, matters are assuming a more cheerful aspect as regards the future of the same. We are informed on reliable authority that there are now four companies at work near Mineral City, all employing more or less men, and at Hercules Gap, some six miles from town, and a number of men in the adjacent districts of Nevada, Ward, Lake, etc. The Hayes and Watson companies are extracting ores in considerable quantities and getting it ready for the mill, which, we are informed, will soon be in operation. It is said that the Canton Company's mines will be started soon under new management, and that a large mill will be erected on the property in place of the present furnace. We are in possession of the name of the gentleman who will assume control of the property, but are not at liberty at the present time to make it known; still are satisfied in predicting for him a success, if such is possible. However, we are assured that the value of the ore in these enormous mines will be thoroughly and completely tested, and made to yield all that can be got from them, which is exactly what is required to give the really meritorious district a prominence such as it deserves.

Much interest is being manifested in copper ores there just now, and it is confidently believed that a company is being formed with a view of erecting furnaces, looking forward to the matting of this mineral. "It's always darkest just before day," is a proverb applicable to the interests of our Robinson neighbors. In our view the present status of the district is far more encouraging than was that of the now flourishing town of Eureka in '69, and no doubt can exist among men acquainted with both localities that a larger amount of ore is absolutely in sight in Robinson District than was the case at Eureka as late as 1871. Our faith has never flagged in the future of the subject of our item, but, on the contrary, has been constant and firm from the first, and we have no hesitation in saying we believe that time will reveal the facts so often set forth by us relative to the eventual richness of Robinson District. We are informed that the mill will soon be started on ore from the Hayes & Watson Company's property, and that the erection of the mill proposed to be built by the Canton Company will shortly be commenced. Our neighbors have struggled long and manfully in their endeavors to wring success from the stubborn mountains and it is with pleasure we perceive indications of a glorious consummation of all their hopes.—*White Pine News*.

THE CALISTOGA MINE.—A Calistoga correspondent of the *Register* writes: The workmen in the silver mine at the St. Helena mountain have discovered a rich deposit of sulphuret, samples of which have been sent to Mr. A. Badlam, in San Francisco, and the assayer's certificate returned yesterday shows: Silver, per ton, \$93.57; gold, per ton, \$20.17; total, \$113.74. This rock was taken from a depth of 120 feet, and the quality of the ore, such as sent, is almost unlimited. This last development settles the question as to the value of this mine. Reduction works will be erected as soon as the weather will permit. I learn from a gentleman just down from the Missouri mine, that they have got their return to work, and, in the language of our informant "quicksilver is coming out in a stream as big as a rye straw." This mine is a fortune to its owners, Messrs. Sturdt, Elder & Bartlett, who intend putting up more extensive works as soon as spring opens. They have secured the services of Mr. Harris, an old Almaden miner, as general superintendent, and you may soon expect to hear of something "big."

South African Gold Mines.

A correspondent of the *Piöche Record* says: Thinking that a little information regarding the recent gold discoveries along the east coast of South Africa would interest many of the *Record* readers and many of my friends and acquaintances who have heard me speak of my recent travels through a section of that far-off continent, for the general information of all, I will proceed to give a few extracts and details of that, the original land of Ophir, from a letter received from that country, a portion of which was published some time since in the *New York Herald*.

The three principal gold fields are (in order as discovered) first, those of the Fat river, on the borders of Matabilli land, some 1,000 miles or so inland. The gold is found in quartz reefs, which are reported to be very rich, but very hard to work, it requiring a great deal of labor and capital to work them successfully. Next come those of Marabastadt, 120 miles northeast of Pretoria, the capital of the Transvaal Republic, and about 500 miles from Durban, a part of Natal. The gold discovered there is also in quartz reefs. The first reef was discovered some three years ago, and at that time created a furore on the continent. Afterwards two other very rich reefs were discovered. A Mr. Batton went to England and organized a company, which is now erecting some very powerful and expensive quartz machinery. It has a large quantity of quartz out, which is now ready for milling. It looks very rich. No "hand diggers," or "poor diggers," as they are called, can make a living there, in consequence of the gold being in hard quartz reefs. There are no alluvial deposits. One of the reefs (or what in this country would be called a lode or ledge) has been traced for a distance of 2,000 yards. It is very wide and looks very rich. Borings have been made on other parts of the field, or over an extent of some 5,000 acres, and in several places gold reefs have been struck. The gold-bearing rock is supposed to extend west southwest across the Republic.

The "poor man's diggings," or alluvial diggings, were the third and last discovery. They, also, are situated in the Transvaal Republic, in a district called Leydenburg. They are about 440 miles from Durban, and 200 miles east of Marabastadt. They were discovered about a year ago, after I left the country. The Leydenburg district, in which these new gold fields are situated, is the most beautiful and healthy part of the beautiful and healthy Transvaal Republic. It is well wooded, well watered, and the climate is delightful. There the invalid soon shakes off his sickness, the healthy man receives excess of strength, and work comes to one easily. Kafir labor, too, is obtainable. Alluvial gold has been discovered in many parts of the district, and in some places in wonderful richness. The latest and most reliable reports say, that the majority of diggers are making from half an ounce to one, two and three ounces per day, while some are doing even better. One party is known to have found 11 ounces one week, and 20 ounces the next week; another party found 15 ounces in three consecutive days, and seven ounces the following day. Nuggets of twenty pennyweights to two ounces are common. The largest nugget yet found weighed 16 ounces, 20 ounces, 23 ounces, two pounds, and one is reported to have been found weighing 45 ounces. It has been proved beyond question that the fields are payable alluvial gold fields—a veritable "poor man's diggings." Population is setting in there from all parts of South Africa. Natal is the nearest port of ingress and egress to these fields. Transportation by ox-wagon to these Leydenburg diggings from Natal is £7. Freight by same is 50 shillings per 100 pounds. Provisions, clothing and tools can be purchased at very reasonable rates at Natal.

Arrived at the fields he will have a fine country open before him, a salubrious climate to live in, and the prospects of making an independency at the gold diggings; this he may rely upon.

Other gold fields, some of which the undersigned has traveled through. Next in order come those discovered by Thomas Bains, F. R. G. S., the well known traveler, explorer and artist; but these are gold fields, which, although their value has not been so conclusively proven, may yet be regarded with great hope. Mr. Bains first discovered gold reefs in the Matabilli county, beyond the Tati, which he is sanguine will pay well. Then in the Tugela hills, in the same colony, gold reefs have been discovered, and alluvial digging are said to exist. The value of the reefs have not yet been proved nor payable alluvial found, but great hopes are entertained of both. Again, the Zulu country is said to be rich in gold reefs, which the jealousy of the natives has heretofore prevented being developed. With all these prospects before us we may well entertain bright hopes of the future mineral developments of the great but little known continent.

TIN IN JAVA.—A Siak correspondent writes the following to the *Indier*, of the 16th ultimo: In the interior of Siak very important tin lodes have been discovered. An experimental working of the mine has already taken place, which will be continued on a larger scale, and which yielded such favorable results, at first, that the best expectations as to the future may be entertained.

New Mines in Arizona.

Last April, Messrs. Stevens, Leatherwood, Marsh, Hopkins, Hewitt, Hutton, and probably one or more others did, in person or by employes, considerable prospecting south of Tucson, and made locations on the "Orn Blanco" lead. This is a vein upon which there was much work done many years ago. In some of the old cuts, large oak trees have grown since the work was done, and none now living seems to know when the works were abandoned. The "Oro Blanco" is about sixty miles a little west of south from Tucson, eighteen southwest of Kitchen's ranch and three and one-half miles from the line between Sonora and Arizona and near the source of the Altar river. Until quite recently, it was a question in which country the lode is situated. To determine its national status, about ten days ago Messrs. Hopkins, Leatherwood, Marsh, Stephenson, Bartlett and Van Alstine provided themselves with instruments and proceeded to run out the line between monuments on the boundary and found it located as before stated. They returned on Thursday, and brought cheering accounts of the prospects of the new mining settlement and work in progress there.

At this time there are twenty-two arrastras in operation. The vein is explored along its line 100 yards and at one place to a depth of thirty feet. The ore is gold-bearing and decomposed so far as yet found, and is excavated without the use of drills and powder. Many thousands of dollars have been lately taken out, and the yield is uniform from \$60 to \$100 per ton. On the 300 feet developed, the vein runs from two to three feet in thickness, and is regarded as a first-class poor man's mine. Wood is abundant and near by and pasturage for animals all that could be desired. There is water enough to run a fifteen or twenty-stamp mill, and is regarded as permanent. The weather at this time is clear and frosty, but just suited for comfortable labor. The camp consists of about forty miners and some ten houses have been built—five of which are stone and adobes. The miners have no doubts about the value of the mines, and from all appearances a very large mining town must soon grow up there.

Now that the vein is clearly demonstrated to be in Arizona the claimants intend to go about the work of mining in earnest. As we understand it, all those at work are mining by leave of the claimants named in the first of this account, but they manifest a willingness to accommodate themselves to such arrangements as the owners will accord to them.

The year 1874 bids fair to show much mining prosperity along our southern border.—*Arizona Citizen*.

NEW SYSTEM OF SCIENTIFIC CLASSIFICATION.—The *Sacramento Record* of Jan. 7 says, that prior to the Agassiz Institute being called to order last night, J. H. Stinson, of Jacksonville, Oregon, addressed in quite a lecture, the members present, upon the subject of a book he proposes to issue on modern science. The work, he said, proposes a rigid system of classification for all natural phenomena. It is applicable to all the natural sciences. It proceeds by inductive methods, which are new, and works complete formula for that purpose. By these it brings out the causes involved in any set of phenomena. The system can be used in the wheat field, in the garden, in the dissecting room, and throughout nature. It is a scheme by which results can be calculated in a manner similar to the plan upon which the surveyor acts, when after getting his data, he proceeds to determine the area of the land. After his explanation, some remarks were made favorable to the project. Rev. Mr. Bonte believed the book would be of value, and hoped the members would aid in its publication, and explained at some length where it would be of use to the world. Dr. Logan said the subject and its treatment were entirely new and worthy of serious consideration and investigation.

MINERS' PAY.—Perhaps in no two towns in the world of the same population is so much money scattered every month among the people for labor as at Virginia and Gold Hill. The *Enterprise* of the 4th says: The Crown Point Company yesterday distributed \$69,000 among their workmen; the Jacket, \$13,000; the Sierra Nevada, \$10,000; the workmen at the Eureka mill received \$7,000, and the funn has hardly commenced. To-morrow the Belcher will pay out \$80,000, and other big companies very large sums. The few companies we have mentioned pay out nearly \$200,000, and we have only named one mill and four mines, whereas we might mention twenty mines and an equal number of mills, did we know exactly the amounts they will severally distribute. Besides all the coin sown broadcast by our mill and mining companies in the shape of wages, a snug sum will in a few days be received by our people in the shape of dividends.

DURING the month of December there was reduced at the Eureka mill, Carson River, over 5,000 tons of ore. A portion of the time the mill was not running to its full capacity. This month, Mr. King, superintendent, expects to reduce over 6,000 tons. As the ore worked averages over \$70 per ton, the yield of this one mill for the month will be over \$400,000.

NEW JERSEY'S 200 iron mines yielded, last year, 670,000 tons of ore, of which 150,000 tons were manufactured into pig iron. The value of the product is about \$3,000,000. In 1867, the product of the mines was only 300,000 tons.

A Remarkably Rich Deposit.

The Dayton mining company, whose mine is situated a short distance below Silver City, have opened upon a remarkably rich deposit of gold-bearing matter. The deposit in question, where cut on the 225-foot level, is fifteen feet in width and has been followed northward a distance of from eighty to one hundred feet, when it becomes quite narrow. At the 100-foot level the deposit is about six feet in width. At the depth of three hundred and twenty-five feet a drift will soon cut the vein, it being now within from twenty-five to fifty feet of where the deposit should be found in case that it extends to that depth. Car samples taken from the deposit on the 225-foot level assay at the rate of \$600 per ton, nearly all gold. The deposit is composed of a black, decomposed matter which is perfectly "lousy" with free gold, much of it almost as fine as flour. Being fearful of losing much of this fine gold if the ore be worked by common mill process, the company are now engaged in sinking it and in a day or two will send a lot of fifty tons of it to the Anburn mill at Reno, the foreman of which guarantees that he will save all the precious metals contained in the ore. As an evidence of the astounding richness of the peculiar vein of matter developed we may state that we were yesterday shown a button of gold weighing half an ounce which was washed by pan from three pounds of the ore by Samuel Doake, of this place, and then there was so much gold left in the dirt he intends giving it a second panning. The gold was melted into the form of a button by Conrad Weigand, who pronounces the gold worth \$12 per ounce. Mr. Doake says that in digging out his sample he did not take it from one spot in the vein, and had no idea he was getting dirt so immensely rich. The yield he obtained is at the rate of \$4,000 per ton, a yield so great that it is next to impossible that there should be any very large amount of such ore in the mine. The Dayton folks appear to have struck a huge pocket and will no doubt take from it a large amount of gold.—*Virginia Enterprise*.

BUYING ORE AT THE SMELTER.—The method of sampling and trying ore at the smelter being one of interest to our readers, we have taken pains to ascertain the rule in force here, which we find to be the same as in Utah and Nevada. First, every fifteenth shovelful from a wagon load is kept separate. That pile is well mixed and then divided by means of a box with no bottom—that is, the box is placed on the floor and the ore poured over the side from the point of a shovel. The inside pile is then served in the same way, until by repeated operations it is reduced to the compass of about one shovelful. The ore in the mean time is reduced to sufficient fineness by pounding. The assay from this shovelful generally comes within ten per cent. of working process, and then incidental losses must be subtracted, and those losses are larger than is generally supposed. 1st, interest on money invested in ore and fluxes; 2d, waste in yard of ores and fluxes; 3d, lost time on stacks and miscalculations generally, under which head comes the calculation that a certain ore requires certain fluxes, and here comes the proposition that the richer ore is in silver the greater the risk in smelting. Lead ore is what we want now to make the smelting business a success, and we hope our miners will not be backward in furnishing it at a fair assay value.—*Helena (Montana) Herald*.

BARATH OF THE NEVADA UPAS.—Billy Anderson, the well-known lawyer, who is now in this city, and who for some years (since 1868) has been a resident of Eastern Nevada, gives a startling account of the effects of the poisonous fumes from the smelting furnaces there in use. He speaks particularly of the town of Eureka, where these furnaces are very numerous and are scattered through the village. He says that in approaching the place a smell resembling that of garlic can be detected at a distance of at least three miles. Often the smoke and fumes hang over the town in clouds so dense as to resemble a London fog, and the smell of the poisonous gases is almost unendurable. Kittens and puppies die soon after coming into the world, and it is found impossible to rear these animals in the place. A sheet of white paper laid in the open air and left over night, will be covered with a thick white crust. The arsenical fumes mingled with those of lead and other minerals, more or less affect the health of all who reside in the town. Some are but slightly affected, while others suffer very severely. The poisonous atmosphere of the place not only affects the physical but also the mental health of many, causing them to become morose, nervous, and in some cases, wandering in mind.—*Enterprise*.

MINERS' WAGES.—The scale of prices for day labor, is slowly but steadily falling in all the mining districts of Colorado. Miners may complain of this, and endeavor to stay the fall by strikes and other devices peculiar to their guild, but we think they will be struggling against long odds, and playing a losing game. Wages have, up to the late financial trouble, been higher in Colorado than in any other territory of the United States, Montana perhaps excepted, and the tendency to lower them is an indication that the business of mining is assimilating itself more closely in character to the other various producing industries, where lower compensation is paid for manual labor.—*Colorado Mining Review*.

Cherry Creek.

The White Pine News says: Letters received from old residents of Hamilton regarding this new section of country contain much that is encouraging in the future, but represent the present aspect of affairs as dull, with a fair prospect of continuance for some time. The severe storms of the past few weeks have retarded all kinds of work, particularly mining, and has kept matters at a standstill. Building has almost entirely ceased, only on account of the weather, every one quietly waiting for the spring, to resume operations. There can be no doubt of the future of Cherry Creek, as many mining operators are simply awaiting the coming of good weather to commence active operations. The parties who have bonded the Chance mine have purchased a mill site with water privileges about one and a-half miles north of the town, and intend soon commencing the erection of a 20-stamp mill on the same. It is generally thought that the money for the mine will be forthcoming before the bond shall expire.

The means of communication are, a stage line every other day from Hamilton, run by Travis & Co.; another from Toano, semi-weekly, fare \$15; Woodruff & Ebnor's line from the Wells, carrying mail and express every other day; and a line from Eureka once a week. So it can be seen that the means of communication are plentiful, making it an easy matter for persons desirous of visiting the new camp to do so. Taken altogether, from the best information obtainable, next spring will show remarkable activity at Cherry Creek, with, we trust, splendid results. The town is described as being of considerable size, with a population of some three hundred men, which number is considerably increased by many prospectors and mine owners in the hills near at hand. The old town of Shellburn is described as being almost entirely deserted both in population and buildings, having all left for Cherry Creek. Being distant only eighteen miles from each other, the old prospects of the former camp can still be looked after and made to accrue to the advantage of both places.

AN EFFICIENT ARRANGEMENT.—The fire-extinguishing apparatus of the Crown Point, Kentucky and Yellow Jacket hoisting works is the most efficient arrangement in Gold Hill. From the immense tank or reservoir on the steep hillside, north of the Crown Point Ravine, above the Bowers Grade, heavy iron pipes lead the water down to each of the hoisting works mentioned. Hydrants are placed at various advantageous points about the works, and each company being well provided with carbolized hose and the proper nozzle, it is but a minute's work to run out the hose, attach it to a hydrant and directly have a big stream sent with immense force for hours upon any fire in the vicinity—a stream which never can tire or exhaust for a moment while there is water in the great reservoir—a stream which merely requires to be directed and which is powerful enough to almost tear a house to pieces or wash it off the hillside. With such an immense fall as can be obtained, and a larger pipe, the town water works and hydrants ought to be more effective than they are and fully as much as those of the mining companies we have mentioned.—*Gold Hill News*.

MINING EXPERIMENTS.—A series of experiments have been strangled by her Majesty's Inspectors of Mines, for the purpose of testing the practical value of a French invention known as the aeroplane, or the Denay-Rouze mining apparatus. By means of this, and encumbered with a weight of no more than eight or ten pounds, it is said that a man may penetrate at once to a great distance into a pit filled with choke-damp, smoke, or gas of whatever nature or density, remain there for several hours, carry a lamp with him without danger, and have free use of his arms. Its first trial in England has been arranged to take place in the Wigan coalfield, and the well-known fiery nature of the mines in that district will afford the opportunity of a really practical test.—*Mining World*.

The Mineral Point, Wis., *Tribune* notes with satisfaction the revival there of copper mining, which twenty-five years ago was an important industry in Mineral Point. Samples of ore raised have been tested in England, and found to yield 20 to 50 per cent. of metal, far above the average of English ores.

In the northern and westerly divisions of South America the silver production has latterly been insufficient to meet the requirements for currency, and the article has attained a slight premium compared with gold.

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Information Wanted of Ezra S. Gaver.

When heard from last, ten years ago, was at Pikes Peak, Colorado. Any information of him, or his fate, will be thankfully received by his brother, JOHN GAVAR, at 1309 Vallejo street, San Francisco. 25v27-3m

BUY BARBER'S BIT BRAOE.

[Continued from page 53.]

the storms, placer miners have been taking out big pay at Weaver and on Antelope hill.

Plenty of water is now running in Lynx, Big Bug and Hassayampa creeks, and the miners are slicing with good results.

Colorado.

STAVOK IT RICH AGAIN.—Mr. C. B. Vaughan has been engaged for nearly eight months in running a tunnel to strike his ledge, the Little Jenny, situated in Vanghan's gulch, Upper Ten Mile, with the object in view of again coming upon the rich deposit of ore which he found about a year ago. During this time, however, he has also been carrying on developments on other portions of the lead with more than average good results, and has made one shipment of ore to San Francisco. A few days ago the lower level struck the streak, and an assay which went \$2,586 per ton has been received. There is about 70 ft. of it to stope out, which, should it average even one-fourth as much as the above assay, will make Mr. Vanghan a snug little competency. He last summer shipped through the First National several tons of ore to Freiberg, Germany, which averaged within a fraction of \$800 per ton, and several tons of his San Francisco shipment averaged \$1,000 per ton. We understand that Mr. Vaughan intends hereafter to ship all of his richest ore to Freiberg. He has on the dump-heap and in his ore-house several hundred tons of low grade ores, running from \$70 to \$200 per ton, and about 18 tons in store, which averages \$170 per ton. On the whole, we believe this to be the richest strike in lead mining ever made in the Territory, and we heartily congratulate Mr. Vaughan on his good fortune.

Idaho.

MINING AFFAIRS.—Cor. *Statesman*, Jan. 8th: At Rocky Bar, the Pittsburg & G. M. Co. are working day and night on the "Ida Elmore," upon a very fair quality of ore.

Mining affairs may be said to be improving rapidly. A report has just come that at "Red Warrior" yesterday, Messrs. McNally & Thomas made a rich strike in the east tunnel on the "Wide West" that exceeds in richness anything heretofore ever discovered in that valuable mine. Parties are working on various other mines, such as the "Idaho," "Vishnu," "General Grant," and other ledges.

The Ellis Vapor Engine.

A letter from Haskins Machine Company, of Fitchburg, Mass., forwarded to us by the inventor, states that the system has been introduced into the works of that corporation with every success. The machinery of the establishment is operated by a six by nine steam engine, under a pressure of sixty-five pounds. With the exhaust from this engine, the bisulphide of carbon is boiled, and with its vapor a second engine, of eight inch cylinder by eleven inch stroke, is actuated. The power is not only applied to the immediate use of the factory, but is conveyed by means of a two hundred and fifty-four foot wire cable to a neighboring establishment. For this service the company receives a sum about equal to that which it costs to produce the steam for the steam engine, so that which would otherwise be clear waste is here turned into gain. It is further stated that the vapor engine, when once in complete order, worked with literally no stoppages, other than were desired, and that the total leakage, for a period of over four months, was less than one gill per twenty-four hours. At the expiration of the whole time in which the machine was in continuous use—about eight months—the manufacturers, desiring to replace it with one of newer and more improved form, sold it for cost price, a careful examination of all its parts by the purchaser, proving that no portion had become deteriorated or injured.

As regards the bisulphide of carbon employed in the boilers, we learn that the Vapor Engine Company have erected works for its manufacture, and are prepared to furnish it to consumers at one dollar per gallon. The same concern also supply the vapor engine with their fixtures, etc., in all sizes; and guarantee that a combined steam and vapor machine will give a certain horse power, with half the fuel required to produce the same power with the steam engine alone.—*Scientific American*.

A WALLA WALLA paper, of a late date, says: "We learn that several of our citizens, practical mechanics, propose to form an association for the purpose of building a steamboat, rigged with the necessary pumps to raise water required for working the bars on the Columbia River. For years it has been known that the bars all along the line of the river were rich in gold, but, owing to the difficulty in obtaining water at the required head, these bars have never been worked to any great extent."

FUEL.—In Virginia and Gold Hill coal retails all the way from \$20 to \$28 per ton. Rocky Mountain coal is worth \$20 per ton in bulk and \$21 in sacks. Excelsior coal, which comes from Rock Springs, situated about 200 miles east of Ogden, retails for \$28 per ton. Split wood costs \$14 per cord; limb wood, \$15; nut pine, \$16, and stove wood, \$6.

Academy of Sciences.

At the regular meeting of the California Academy, held on Monday evening last, the following new members were elected: George W. Smiley, L. Livingston, life members; Judge S. S. Wright, W. H. L. Barnes, Dr. A. S. Hudson, Dr. Gustave Eisen, August Drucker, C. Shultz, E. Steele, E. E. Haft and A. B. Paul, resident members.

The donations to the museum were as follows: From E. P. Upton, of Castle Brothers, specimens of Japanese manufacture, embracing seventy-five varieties of tanned and preserved skins, a piece of tanned deer skin, said to be one thousand years old; *Tufa Bicornis*, an edible Chinese water nut; linen cloth with fiber; sample of tea from Mount Mohee, in China, said to be the finest made, and has been sold in this city for \$25 a pound, at wholesale; also a quantity of seeds of the teaplant in the capsules.

From E. T. Lorquin, stuffed specimens of *Pelecanus fuscus*, from the Bay of San Francisco; also specimens of *Cupidonia cupid* (the prairie chicken) purchased in this market, probably from the Rocky Mountain region.

From J. P. Dameron, specimens of lignito coal, from Lincoln and Mount Diablo coal.

From Captain John H. Mortimer, of the ship "Isaac Webb," specimens of *Halobates cerinus*, said to be the only true oceanic insect known; *Phyllosoma commune*, or glass crab; *Leptocephalus*, or ribbon fish; *Liliopa bombyx*, with fiber and ova attached; *Fucus navalis*, or Sargasso weed, entangled with byssus thread spun by the little shell-fish *Liliopa bombyx*. Three specimens of birds caught at sea; a flying fish; *Salpa pinnata*, preserved upon sheets of paper; *Veilella*, preserved upon strips of glass; also various other marine specimens.

From L. H. Thompson, Buff Cochon chickens, preserved in alcohol, remarkable for having four legs.

The usual regular monthly addition of scientific publications was received for the library. Mr. A. W. Chase, of this coast, read a paper on the ariferous sands of Gold Bluff, referred to at length in another column of this issue.

The President announced that the Trustees of the Academy held a regular quarterly meeting on the evening of the 12th, when the following appointments were made: Curators—General Zoology, W. H. Dall; Ichthyology, George Hewson, M. D.; Conchology, W. G. W. Harford; Ornithology, William Blunt; Entomology, Henry Edwards; Paleontology, W. A. Goodyear; Mineralogy, Theodore A. Blake.

Committee on Publications—George Davidson, R. E. C. Stearns, Charles G. Yale, Henry Edwards and Albert Kellogg, M. D.

Committee on Foreign Publications—A. B. Stout, M. D., H. N. Bolander, Emile Durand, J. F. Lewis, Dr. Behr, J. M. Smyth.

The Academy having effected a lease of the church on the corner of California and Dupont streets, the next meeting will be held in their new quarters, the collections, etc., having been removed from the old rooms. This is another evidence of the increasing vitality of this Academy.

Borax.

This important article of our native products, says the *Commercial Herald*, begins to assume its proper place in exports, both crude and refined being extensively dealt in; prices of refined now 12½¢/lb. The concentrated is being shipped to New York in quantities for refining. Sales for the week, 500 cs refined, private. The price in London has recently declined 20 per cent.

Exports by sea for		1872		1873	
	Cs.	Value.		Cs.	Value.
New York.....	3,267	\$94,084		9,237	\$237,437
England.....				8,234	\$141,107,091
China.....				103	2,138
Japan.....				133	2,710
Mexico.....	6	127		7	111
Victoria.....	1	18		8	198
Australia.....				200	4,400
Central America.....				1	11
Germany.....				250	5,000
Totals.....	3,274	\$94,239	18,492	701	\$119,036

NEW BELTING.—Our attention has been called by the managers of a large industrial establishment in this city to an improved belting for machinery manufactured by Thomas J. Rorer, of 112 North 3d street, Philadelphia. This consists of two or more thicknesses of leather, between which one or more layers of heavy cotton duck are placed, and the leather and duck riveted or stitched throughout the entire belt. The canvas is thoroughly stretched by machinery, previous to its use in the belting. At the recent fair of the American Institute, in New York, a ten-inch belt of this kind was seen driving a large portion of the machinery exhibited. It attracted a large amount of attention, and the advantage over ordinary belting in the almost perfect non-stretching qualities, was unqualifiedly spoken of by experts, who have given much attention to this branch of machinery.—*Journal of Farm.*

Interesting American Minerals at Vienna.

Under the above heading we translate from the "Oester Reichische Zeitschrift für Berg und Hüttenwesen" the following account of American minerals, exhibited by G. Kustel, at the Vienna Exposition, which were awarded a medal of merit: In the American department there is in group No. 1 a small case, No. 25, containing about 50 specimens of very interesting minerals, principally from California and Nevada, and also some from Arizona and Sonora, Mexico. So, for instance, is No. 48 a specimen of copper ore from Sonora, Mexico, with a singular glance-ore on it, a combination of copper and lead, in appearance similar to "Roehren Blei Erz," (a sulphuret of lead). It is foliated and has a strong glance, but has not been analysed. Another remarkable copper specimen is No. 49 from California (Silver Mountain). It shows a crystalline texture with lustrous, large faces of different angles, like a broken piece of pure antimony metal. It is black and contains \$200 of silver per ton. No. 45 is a copper silicate from Nevada, (Battle Mountain), in appearance exactly like a light-green slag of an iron blast furnace. No. 41 represents a beautiful specimen of metacinnabarite from California. Another new mineral is No. 47, a zinc blende, rich in sulphur; it not only evolves much sulphur in a closed glass tube without decomposition, but the sulphur flows out, if heated with the blow pipe, even from the specimen. It is reddish-brown and occurs at Lone, Nevada. No. 2 is a yellow translucent mineral which reacts strongly of tellurium and for which Mr. Kustel proposed the term "tellurium blende." The ore to which this mineral sticks and which is impregnated with small scales of the same mineral, is very rich in silver carrying telluride of gold at the same time, assaying \$12,700 in all per ton.

Still richer is another similar specimen, No. 17. It is found in Nevada, (Jefferson Canon). No. 3 excels by exposing several tellurium compounds, as tellurides of lead, of silver (Pezit), of nickel and free gold. Especially interesting is No. 7, a constellation of 10 or 12 specimens showing the gradual change of fahlerz into stede-feldite which Mr. Kustel exhibits as "probable transition." The first piece is pure silver fahlerz from Belmont, Nevada; the last one pure stede-feldite, and the intermediate ones show the gradual change. They are all from the same place. No. 22 is an antimony compound of a yellow color, probably a silicate. No. 27 is a variety of stembergite, that occurred on Gold Hill, Nevada. It agrees in composition with the stembergite, but not in the physical properties. No. 26 is a light-yellow silver ore, considered to be antimonial silver-lead oxide, occurring frequently in Nevada. No. 19 presents two pieces of gray lead-oxide from Arizona, similar to massive gray carbonate of lead which, according to Kustel's opinion, is transformed like the stede-feldite from a sulphuret through carbonate into an oxide. The transformation can be traced also here in a similar way from galena with a gradual change into the oxide. Besides these specimens there are exhibited beautiful horn silver ores, miargyrite, stephanite, bromic and iodic silver specimens, etc.

COKE FOR SMELTING IRON.—Dr. Hoffman communicated to a recent meeting of German engineers a method for desulphurizing coke. It consists in extinguishing the coke as it comes from the ovens, with water having chloride of manganese in solution. The sulphur passes off sulphuretted hydrogen, while manganese and the excess of chloride of manganese remain, forming an advantageous addition to the coke for iron smelting. Chloride of manganese is a waste product in many factories of bleaching salts. It is understood that the process will be tried on a large scale.

A BRIDGEPORT, (Conn.) man has invented an entirely new plan for constructing railroad cars. The model is constructed of brass tubing; the only wood used is in the flooring of the cars and the platform of the trucks. The cars are to be covered with metal, and if necessary, nickel-plated. There is a guard connected with the trucks, which, it is claimed, will prevent a train from running off the track.

ARIZONA has received from one firm in Yuma over one million and a half pounds of freight in two months.

The amount of gold dug in California since 1843, is \$1,380,700,000, of which \$93,000,000 was mined in 1853.

THE CARSON RIVER is "up" and all the mills are working on full time.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., Jan. 20, 1874.

FOR WEEK ENDING Jan. 6th, 1874.

WATER MOTOR FOR SEWING MACHINES.—Oscar J. Backus, S. F., Cal.

MEDICAL COMPOUND.—Peter Hunter, Corvallis, Oregon.

SECTIONAL CAM.—John F. Mallinckrodt, Middle Boulder, Colorado.

SEED SOWER.—John B. Nixon, Cottonwood.

BOO CARRIER.—Maurice A. Franklin, San Bernardino, Cal.

"The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. Note.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with greater security and in much less time than by any other agency."

MAJOR M. A. BALDWIN, head of the Baldwin Exploring Expedition, which very recently has been prospecting in southern Utah, is in this city.

THE MILL built at Shellburn last year by the Tehama Company is to be removed to Cherry Creek. This looks well for Cherry Creek and bad for Shellburn.

THE Eberhardt and Aurora mill, formerly the International, at White Pine, is working well and turning out bullion.

PAIN-KILLER!

FOR OVER THIRTY YEARS

Perry Davis' Vegetable

PAIN KILLER

HAS BEEN TESTED IN EVERY VARIETY OF CLIMATE, AND BY ALMOST EVERY NATION KNOWN TO AMERICANS.

It is the constant companion and estimable friend of the missionary and the traveler, on sea and land, and no one should travel on our Lakes or Rivers without it.

It has been before the public over thirty years, and probably has a better and wider reputation than any other proprietary medicine of the present day. At this period there are but few unacquainted with the merits of the Pain-Killer; but while some extol it as a liniment, they know but little of its power in easing pain when taken internally, while others use it internally with great success, but are equally ignorant of its healing virtues when applied externally. We therefore wish to say to all that it is equally successful whether used internally or externally, and it stands to-day unrivalled by all the great catalogue of family medicines. It is sufficient evidence of its virtues as a standard medicine, to know that it is now used in all parts of the world and that its sale is constantly increasing. No curative agent has had such wide spread sale or given such universal satisfaction. It is a purely vegetable compound, and perfectly safe in unskilful hands.

After thirty years trial, it is still receiving the most unqualified testimonials to its virtues, from persons of the highest character and respectability. Physicians of the first respectability, recommend it as a most effectual preparation for the extinction of pain. It is not only the best remedy ever known for Bruises, Cuts, Burns, &c., but for Dysentery or Cholera or any sort of Bowel complaint, it is a remedy unsurpassed for efficiency and rapidity of action. In the great cities of India, and other hot climates, it has become the Standard Medicine for all such complaints, as well as for Dyspepsia, Liver Complaints, and other kindred disorders. For Coughs and Colds, Canker, Asthma, and Rheumatic difficulties, it has been proved by the most abundant and convincing testimony to be an invaluable medicine.

Beware of all Imitations.

The Pain-Killer is sold by all respectable druggists throughout the United States and foreign countries.

Prices—25 cents, 50 cents and \$1 per bottle.

PERRY, DAVIS & SON, Proprietors, 1241 No. 136 High street, Providence, R. I.

THE SCIENTIFIC PRESS.—The San Francisco Mining and Scientific Press entered upon its twenty-eighth volume last Saturday. The Press is one of the most useful and valuable papers published on the Pacific Coast, and richly merits a liberal patronage. Its subscription price is only \$4 a year, and it is well worth that amount to any one who can appreciate it.—*Amador Dispatch*, Jan. 10.

TAKE UP YOUR LINE of march for Crittenton's, No. 7 6th Avenue, all ye coughers and wheezers, and snufflers. It is the depot for Hale's Honey of Horehound and Tar, which for all ailments of the lungs and their air passages is an immediate and sovereign remedy. All Druggists keep it. Pike's Toothache Drops cure in 1 minute.

NO LIFE INSURANCE COMPANY has a better record or more permanently popular reputation than the CONNECTICUT MUTUAL LIFE INSURANCE CO., J. B. Roberts, 35 California Street, San Francisco, is general agent for this Coast. Send to him for circulars and information of this reliable, first-class company.

PHOTOGRAPH PAINTING done in the most satisfactory manner at 426 Kearny street, from the smallest card to full life size, on very moderate terms by EMILY R. EASTMAN, Artist, 426 Kearny street, San Francisco.

CONTINENTAL LIFE INSURANCE CO., No. 302 Montgomery street, corner of Pine, San Francisco.

D EWEY & CO.,

American and Foreign

Patent Agents.

No. 338 Montgomery St.

SAN FRANCISCO,

Patents Obtained Promptly.
 Caveats Filed Expeditiously.
 Patent Reissues Taken Out.
 Patents Secured in Foreign Lands.
 Assignments Made and Recorded in Legal Form.
 Copies of Patents and Assignments Procured.
 Examinations of Patents made here and at Washington.
 Examinations made of Assignments Recorded in Washington.
 Examinations Ordered and Reported by TELEGRAPH.
 Interferences Presented.
 Opinions Rendered regarding the Validity of Patents and Assignments.
 Rejected Cases taken up and Patents Obtained.
 Every Legitimate Branch of Patent Agency Business promptly and thoroughly conducted.

SEND FOR CIRCULAR.

SHAREHOLDERS.

TRUSTEES, and

SECRETARIES of

ALL MINING COMPANIES,

Should see to it that their Notices are advertised legally in the MINING AND SCIENTIFIC PRESS, at much less cost than the usual rates of daily publications. Every person interested in the prosperity of legitimate mining enterprises should favor such practical economy. Send for circular of convenient dates for advertising, free blanks, and a copy of the New Code Corporation Assessment Law.

Mining and Other Companies.

On to the time necessary to mail the present large edition of the M. & S. Press, we are obliged to go to press on Thursday evening—which is the very latest hour we can receive advertisements.

Diamond Silver Mining Co.—Notice.

A meeting of the stockholders of the Diamond Silver Mining Company, of Tintic District, Juab County, Utah Territory, will be held on Wednesday, the 18th day of February, 1874, at one o'clock p. m., at Sherman's Building, No. 606 Montgomery street, Room 12, for the election of Trustees for the ensuing year. The subject of levying an assessment upon the capital stock of the company will also be determined.

By direction of the Board of Trustees,
 WM. SHERMAN, President.
 O. C. MILLER, Secretary.
 San Francisco, Cal., January 12, 1874. ja-6t

Commercial Coal Mining Company, of

San Francisco. Principal place of business, City and County of San Francisco, State of California. Location of works, Santa Cruz County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 16th day of December, 1873, an assessment of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at his office, No. 402 Montgomery street, room No. 23, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 26th day of January, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 26th day of February, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

S. B. HANSON, Secretary.
 Office, No. 402 Montgomery street, room No. 23, San Francisco, California. de20

Notice—Stockholders of the Hecker-

dorn Gold and Silver Mining Co. are requested to call at the Secretary's office and exchange their old certificates of stock for the new.

PAUL J. ROBERT, Secretary.
 Office, 620 Washington street, San Francisco.

Cupel and Tiger Silver Mining Company.

Principal place of business, San Francisco, Cal. Location of works, Wallapai Mining District, Mohave County, Arizona Territory.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 25th day of October, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J. P. Ridgeway.....	87	1000	\$200 00
J. P. Ridgeway.....	87	1000	200 00
J. P. Ridgeway.....	88	1000	200 00
J. P. Ridgeway.....	89	1000	200 00
J. P. Ridgeway.....	90	1000	200 00
J. P. Ridgeway.....	91	1000	200 00
J. P. Ridgeway.....	92	1000	200 00
J. P. Ridgeway.....	93	1000	200 00
J. P. Ridgeway.....	94	1000	200 00
J. P. Ridgeway.....	95	1000	200 00
J. P. Ridgeway.....	96	1000	200 00
J. P. Ridgeway.....	97	1000	200 00
J. P. Ridgeway.....	98	1000	200 00
J. P. Ridgeway.....	99	1000	200 00
J. P. Ridgeway.....	100	1000	200 00
William Miller.....	49	600	100 00
William Miller.....	50	600	100 00
William Miller.....	51	600	100 00
William Miller.....	52	600	100 00
William Miller.....	53	600	100 00
William Miller.....	54	600	100 00
William Miller.....	55	600	100 00
William Miller.....	56	600	100 00
William Miller.....	57	600	100 00
William Miller.....	58	600	100 00

Names.	No. Certificate.	No. Shares.	Amount.
William Miller.....	59	100	100 00
William Miller.....	60	100	100 00
William Miller.....	61	100	100 00
William Miller.....	62	100	100 00
William Miller.....	63	100	100 00
William Miller.....	64	100	100 00
William Miller.....	65	100	100 00
William Miller.....	66	100	100 00
William Miller.....	67	100	100 00
William Miller.....	68	100	100 00
William Miller.....	69	100	100 00
William Miller.....	70	100	100 00
William Miller.....	71	100	100 00
William Miller.....	72	100	100 00
William Miller.....	73	100	100 00
William Miller.....	74	100	100 00
William Miller.....	75	100	100 00
William Miller.....	76	100	100 00
William Miller.....	77	100	100 00
William Miller.....	78	100	100 00
William Miller.....	79	100	100 00
William Miller.....	80	100	100 00
William Miller.....	81	100	100 00
William Miller.....	82	100	100 00
William Miller.....	83	100	100 00
William Miller.....	84	100	100 00
William Miller.....	85	100	100 00
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William Miller.....	92	100	100 00
William Miller.....	93	100	100 00
William Miller.....	94	100	100 00
William Miller.....	95	100	100 00
William Miller.....	96	100	100 00
William Miller.....	97	100	100 00
William Miller.....	98	100	100 00
William Miller.....	99	100	100 00
William Miller.....	100	100	100 00

And in accordance with law, and an order of the Board of Directors, made on the twenty-fifth day of October, A. D. 1873, many shares of each parcel of stock may be necessary, will be sold at public auction, at the office of the Company, room No. 12 Express Building, San Francisco, California, on Saturday, the twentieth day of December, A. D. 1873, at the hour of 12 o'clock m. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

C. J. EATON, Secretary.
 Office removed to room No. 7, same building, San Francisco, California. de29

POSTPONEMENT.—The above sale is hereby postponed until Saturday, January 17th, 1874, at the same hour and place. By order of the Board of Trustees.
 C. J. EATON, Secretary.

POSTPONEMENT.—The above sale is hereby postponed until Monday, February 16th, 1874, at the same hour and place. By order of the Board of Trustees.
 C. J. EATON, Secretary.

Ida and Rhoda Lewis Consolidated Mining Company.

Principal place of business, San Francisco, California. Location of works, Wallapai Mining District, Mohave county, Arizona Territory.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 1st day of December, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Eugene Pardini.....	292	20	\$2 00
E. D. Dement.....	303	25	2 50
E. D. Dement.....	304	25	2 50
E. D. Dement.....	305	25	2 50
E. D. Dement.....	306	25	2 50
T. B. Wingard.....	313	200	20 00
L. Elser.....	314	50	5 00
L. Elser.....	316	50	5 00
L. Elser.....	317	50	5 00
L. Elser.....	318	50	5 00
L. Elser.....	319	50	5 00
J. E. Shiley.....	341	25	2 50
Joseph Sharon.....	342	250	25 00
Joseph Sharon.....	343	250	25 00
Joseph Sharon.....	344	250	25 00
Joseph Sharon.....	345	250	25 00
F. Chappell.....	348	1000	100 00
F. Chappell.....	349	1000	100 00
N. S. Klein.....	350	1000	100 00
John Claresy, Trustee.....	73	200	20 00
John Claresy, Trustee.....	77	200	20 00
John Claresy, Trustee.....	78	100	10 00
John Claresy, Trustee.....	85	50	5 00
John Claresy, Trustee.....	86	50	5 00
John Claresy, Trustee.....	87	50	5 00
John Claresy, Trustee.....	88	50	5 00
John Claresy, Trustee.....	89	50	5 00
John Claresy, Trustee.....	90	50	5 00
John Claresy, Trustee.....	91	50	5 00
John Claresy, Trustee.....	92	25	2 50
John Claresy, Trustee.....	93	25	2 50
John Claresy, Trustee.....	94	25	2 50
John Claresy, Trustee.....	95	25	2 50
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John Claresy, Trustee.....	111	25	2 50
John Claresy, Trustee.....	112	25	2 50
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John Claresy, Trustee.....	115	25	2 50
John Claresy, Trustee.....	116	25	2 50
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John Claresy, Trustee.....	120	25	2 50
John Claresy, Trustee.....	121	25	2 50
John Claresy, Trustee.....	122	25	2 50
John Claresy, Trustee.....	123	25	2 50
John Claresy, Trustee.....	124	25	2 50
John Claresy, Trustee.....	125	25	2 50
John Claresy, Trustee.....	126	25	2 50
John Claresy, Trustee.....	127	25	2 50
John Claresy, Trustee.....	128	25	2 50
John Claresy, Trustee.....	129	25	2 50
John Claresy, Trustee.....	130	25	2 50

Names.	No. Certificate.	No. Shares.	Amount.
J. Cohn, Trustee.....	357	1000	100 00
J. Cohn, Trustee.....	358	1000	100 00
J. Cohn, Trustee.....	359	1000	100 00
J. Cohn, Trustee.....	360	500	50 00
J. Cohn, Trustee.....	361	500	50 00
M. J. McDonald.....	268	200	20 00
William Weisb.....	362	367	36 70
J. T. Bradley.....	363	133	13 30
J. T. Bradley.....	364	37	3 70
J. M. Thompson.....	365	100	10 00
J. M. Thompson.....	366	97	9 70
L. A. Johnson, Trustee.....	137	100	10 00
L. A. Johnson, Trustee.....	138	100	10 00
L. A. Johnson, Trustee.....	139	100	10 00
L. A. Johnson, Trustee.....	140	100	10 00
L. A. Johnson, Trustee.....	141	100	10 00
L. A. Johnson, Trustee.....	142	100	10 00
L. A. Johnson, Trustee.....	143	100	10 00
L. A. Johnson, Trustee.....	144	100	10 00
L. A. Johnson, Trustee.....	145	100	10 00
L. A. Johnson, Trustee.....	146	100	10 00
L. A. Johnson, Trustee.....	147	100	10 00
L. A. Johnson, Trustee.....	148	100	10 00
L. A. Johnson, Trustee.....	149	100	10 00
L. A. Johnson, Trustee.....	150	100	10 00
L. A. Johnson, Trustee.....	151	100	10 00
L. A. Johnson, Trustee.....	152	100	10 00
L. A. Johnson, Trustee.....	153	100	10 00
L. A. Johnson, Trustee.....	154	100	10 00
L. A. Johnson, Trustee.....	155	100	10 00
L. A. Johnson, Trustee.....	156	100	10 00
L. A. Johnson, Trustee.....	157	100	10 00
L. A. Johnson, Trustee.....	158	100	10 00
L. A. Johnson, Trustee.....	159	100	10 00
L. A. Johnson, Trustee.....	160	100	10 00
L. A. Johnson, Trustee.....	161	100	10 00
L. A. Johnson, Trustee.....	162	100	10 00
L. A. Johnson, Trustee.....	163	100	10 00
L. A. Johnson, Trustee.....	164	100	10 00
L. A. Johnson, Trustee.....	165	100	10 00
L. A. Johnson, Trustee.....	166	100	10 00
L. A. Johnson, Trustee.....	167	100	10 00
L. A. Johnson, Trustee.....	168	100	10 00
L. A. Johnson, Trustee.....	169	100	10 00
L. A. Johnson, Trustee.....	170	100	10 00
L. A. Johnson, Trustee.....	171	100	10 00
L. A. Johnson, Trustee.....	172	100	10 00
L. A. Johnson, Trustee.....	173	100	10 00
L. A. Johnson, Trustee.....	174	100	10 00
L. A. Johnson, Trustee.....	175	100	10 00
L. A. Johnson, Trustee.....	176	100	10 00
L. A. Johnson, Trustee.....	177	100	10 00
L. A. Johnson, Trustee.....	178	100	10 00
L. A. Johnson, Trustee.....	179	100	10 00
L. A. Johnson, Trustee.....	180	100	10 00
L. A. Johnson, Trustee.....	181	100	10 00
L. A. Johnson, Trustee.....	182	100	10 00
L. A. Johnson, Trustee.....	183	100	10 00
L. A. Johnson, Trustee.....	184	100	10 00
L. A. Johnson, Trustee.....	185	100	10 00
L. A. Johnson, Trustee.....	186	100	10 00
L. A. Johnson, Trustee.....	187	100	10 00
L. A. Johnson, Trustee.....	188	100	10 00
L. A. Johnson, Trustee.....	189	100	10 00
L. A. Johnson, Trustee.....	190	100	10 00
L. A. Johnson, Trustee.....	191	100	10 00
L. A. Johnson, Trustee.....	192	100	10 00
L. A. Johnson, Trustee.....	193	100	10 00
L. A. Johnson, Trustee.....	194	100	10 00
L. A. Johnson, Trustee.....	195	100	10 00
L. A. Johnson, Trustee.....	196	100	10 00
L. A. Johnson, Trustee.....	197	100	10 00
L. A. Johnson, Trustee.....	198	100	10 00
L. A. Johnson, Trustee.....	199	100	10 00
L. A. Johnson, Trustee.....	200	100	10 00

And in accordance with law, and an order of the Board of Trustees made on the twenty-seventh day of October, 1873, so many shares of each parcel of such stock as may be necessary, will be sold at public auction at the office of the Company, Room No. 12 Express Building, San Francisco, California, on Wednesday, the twenty-third day of December, 1873, at the hour of 12 o'clock m. of said day, to pay delinquent assessments thereon, together with costs of advertising and expenses of this sale.

O. J. EATON, Secretary.
 Office removed to room No. 7, same building, San Francisco, California.

POSTPONEMENT.—The above sale is hereby postponed until Monday, January 26th, 1874, at the same hour and place. By order of the Board of Trustees.
 C. J. EATON, Secretary.

Mina Rica Silver Mining Company—Location

of principal place of business, San Francisco, California. Location of works, Auburn, Placer county, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 14th day of January, 1874, an assessment of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at his office, No. 116 Leldesdorf street, on Monday, the 9th day of February, 1874, at the hour of 1 o'clock p. m. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

Machine Builders.

ESTABLISHED 1851.

PACIFIC IRON WORKS,

First and Fremont streets,

SAN FRANCISCO.

IRA P. HANKIN, A. P. BEATON,
GEO. W. FOGG, Superintendent.

Steam Engines and Boilers,

MARINE AND STATIONARY,

IRON AND BRASS CASTINGS

Mining Machinery of Every Description,

And all other classes of work generally done at first-class establishments, manufactured by us at the lowest prices, and of the best quality.

Particular attention paid to Jobbing Work and Repairs.
N. B.—Sole Agents for sales of HUNTOON'S CELEBRATED PATENT GOVERNOR.
18v20-3m. GODDARD & CO.

FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

TEAM ENGINES,

Quartz, Flour and Saw Mills,

new Improved Steam Pump, Brodie's Improved Crasher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tebama and Fremont streets, above Howard street, San Francisco. 3-qy

THE RISDON

Iron and Locomotive Works.

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....\$1,000,000.

LOCATION OF WORKS:
Corner of Beale and Howard Streets,
SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors: Jesse Holladay, O. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS E. MEAD.....Secretary
24v17-07

UNION IRON WORKS,

Sacramento.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS,

CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for new and old cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,
SACRAMENTO CITY.

PACIFIC

Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of

RAILROAD AND OTHER IRON

Every Variety of Shafting,

Embracing ALL SIZES: f

Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames

HAMMERED IRON

Of every description and size.

Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2432, San Francisco, Cal., will receive prompt attention.

The highest price paid for Scrap Iron.

Miners' Foundry and Machine Works,

CO-OPERATIVE,

First Street, bet. Howard and Folsom, SAN FRANCISCO

Machinery and Castings of all kinds.

CAST STEEL SHOE AND DIE COMPANY,

OFFICE—Room 28, Hayward's Building, 419 California St.,

SAN FRANCISCO.



CAST STEEL SHOE

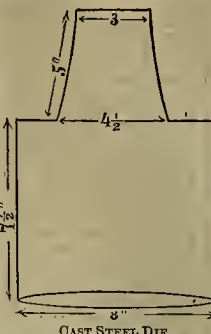
PATENTED CAST STEEL SHOES AND DIES for Quartz Mills.

An improvement greatly needed—being Stronger, more Durable and Economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as bar steel.

—ALSO—

Cast-Steel Tappets, Cams, Hammers, Gearing and Castings

OF ALL KINDS, A SPECIALTY.



CAST STEEL DIE

LEFFEL & MYERS,

MANUFACTURERS OF

LEFFEL'S AMERICAN DOUBLE TURBINE WATER WHEELS,

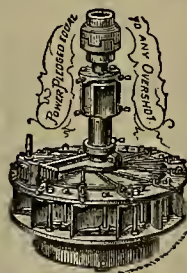
Spherical and Horizontal Flumes,

AND ALL

MILL GEARING

Especially adapted to our

Wheels.



We will also do a commission business in Millers' and Miners' Supplies.

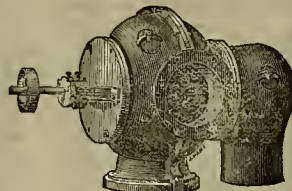
We cheerfully furnish, on application, to parties who contemplate building or repairing Mills, all necessary information gratuitously.

Our extensive and practical knowledge and experience with every variety of Mill work and Millwrighting,

in connection with the various applications of our wheels to machinery of all kinds—there being more than two hundred and fifty in successful operation on the Pacific Coast, and more than Six Thousand in the world—afford the best guarantee of our ability to supply the most reliable information, and to prepare plans and specifications, and estimate for flour, saw, paper and quartz mills, and factories of every description.

Address or call on

Send for Illustrated Pamphlet—sent free



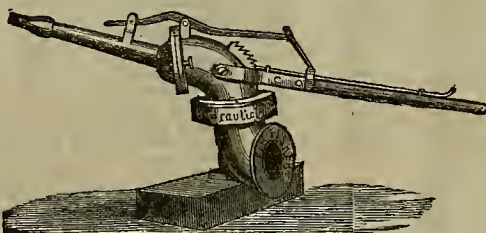
HORIZONTAL FLUME. Patented April 1, 1873.

LEFFEL & MYERS, 306 California st., S. F. 2v8-1am3

HYDRAULIC CHIEF.

FISHER'S KNUCKLE JOINT AND NOZZLE

IS THE Cheapest and Best Hydraulic Machine in use.



The only reliable party in the Hydraulic business who protects his patrons.

9v23-4f

Address F. H. FISHER, Nevada, Cal.

HYDRAULIC MINERS, TAKE NOTICE—I hereby caution Miners and Manufacturers against making, buying, selling or using a Hydraulic Machine or Joint known as the Little Giant, manufactured and sold by R. R. & J. Craig and Richard Hoskin, as the same is an infringement upon the invention of the machine known as FISHER'S HYDRAULIC CHIEF, secured by Letters Patent, No. 110,222, dated Dec. 20, 1870. All parties participating in such infringements will be rigorously prosecuted. Nevada, Jan. 13th. F. H. FISHER.

SACRAMENTO FOUNDRY,

N. E. corner N and Front streets.....SACRAMENTO.

Steam Engines—all kinds of Mining Machinery.

SHIP, AGRICULTURAL, STOVE, RANGE AND HOUSE CASTINGS.

Iron Railings and Ornamental Work of every description

At the Lowest Rates.

13v27-1y

WM. GUTENBERGER.

OCCIDENTAL FOUNDRY,

137 and 139 First street.....SAN FRANCISCO.

STEIGER & BOLAND,

IRON FOUNDERS.

IRON CASTINGS of all descriptions at short notice.

Sole manufacture of the Hepburn Rolling Pan and Callahan Gate Bars, suitable for Burning Screenings.

Notice.—Particular attention paid to making Superior Shoes and Dies. 20v26-3m

CALIFORNIA BRASS FOUNDRY,

No. 125 First street, opposite Minna, SAN FRANCISCO.

ALL KINDS of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Scooping Nails, Sander Braces, Hinges, Ship and Steamboat Bells and Gongs of superlative tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch.

PRICES MODERATE. J. H. WERD. V. KINGWELL.

THOMPSON BROTHERS,

EUREKA FOUNDRY,

128 and 131 Beale street, between Mason and Howard, San Francisco.

LIGHT AND HEAVY CASTINGS,

of every description, manufactured. 24v16ar

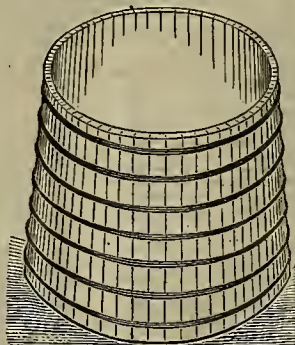
OUR SPECIALTY: "BEYOND THE MISSISSIPPI!"
GO WEST, YOUNG MAN! GO WEST!
Gold by the Bushel! Silver by the Ton!
Capital required! Nerve and Honest Industry.
THE FAR WEST.
All about its Resources, Mines, Railroads, Lands, Indians, Climate, and Development Illustrated and Described in CROFT'S WESTERN WORLD, for \$1.50 a year. With \$10 Premium Chromo, "AMERICAN PROGRESS," free to each subscriber.
Two sample Worlds sent for 10 cents. Agents wanted.

GEO. A. CROFT, Pub. & Prop. 257 1/2 Broadway, N. Y. P. O. box 2435. P. O. box 2435.

Don't Have Your Teeth Extracted.



DR. BEERS' PATENT ENAMELED GOLD CROWNS, for Covering Teeth broken down by Decay, have been thoroughly tested, and when properly applied will surely restore them again to usefulness and beauty. Call and see them. Office, 230 Kearny street. 1v7-cow-bp-3m



WATER TANKS of any capacity, made entirely by machinery. Material the best in use; construction not excelled. Attention, dispatch, satisfaction. Cost less than elsewhere. MECHANICS' MILLS, 3v28-3m-sa Cor. Mission & Fremont Streets.

BLISS & WILLIAMS,

167 to 173 Plymouth street, Brooklyn, N. Y.,

Manufacturers of Presses, Dies and Tools

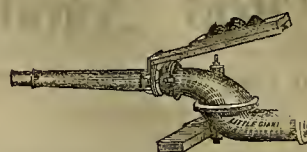
FOR MAKING

SALMON, FRUIT AND OTHER CANS, And working Sheet Metals in all forms. Catalogues furnished upon application. 20v27-3m

PURCHASERS please say advertised in Scientific Press.

Machinery.

TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

All persons infringing on either of these patents

WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under Craig's, Rice's, Macey's and Hoskin's patents.

I Guarantee Full Indemnity to all my Customers.

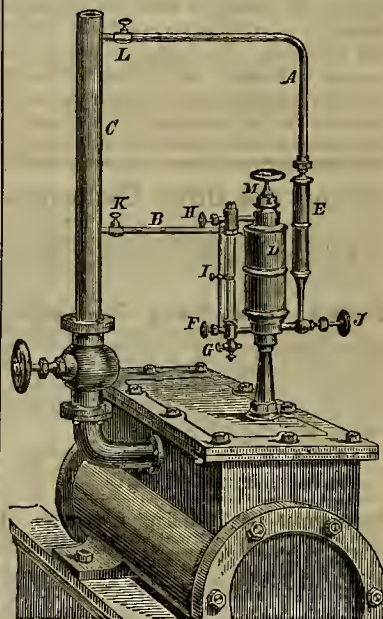
Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an improved LITTLE GIANT.

For further particulars apply to

R. HOSKIN, Dutch Flat,
R. R. & J. CRAIG, 304 Montgomery st., S. F.
Or WILLIAMSON & CORY, Marysville.
Dutch Flat, August 1 1873. 6v27-2m

N. Seibert's Eureka Lubricators.



THE HIGHEST PREMIUM

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used; food constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stops; H, F, valve to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Manufactured by California Brass Works, 125 First street, S. F. 24v23tf

CROCKER'S PATENT TRIP HAMMER QUARTZ BATTERY.



This machine, complete, weighs 1,500 lbs. Has an iron frame, five steel arms with stamps weighing 17 lbs. each, which strike 200 blows per minute, in a mortar provided with screens on both sides, and crushes 750 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$800.

G. D. CROCKER,

17v26-4f 315 California street, San Francisco.

Brittan, Holbrook & Co., Importers of Stoves and Ranges, Tinners' Goods, Tools and Machinery, 11 and 12 California St., 17 and 19 Davis St., San Francisco, and 173 J St., Sacramento. mr.-1y

THEODORE KALLENBERG,
MACHINIST,
 and Maker of Models for Inventors. All kinds of Dies
 Stamps and Punches made. Also, all kinds of
 Small Oars Cut.
 Repairing done on very Reasonable Terms and in the
 best manner. No. 32 Fremont street, S. F. 19v23-3m

STEAM ENGINES AND BOILERS
 Of all sizes—from 2 to 60-Horse power. Also, Quartz
 Mills, Mining Pumps, Hoisting Machinery, Shafting,
 Iron Tanks, etc. For sale at the lowest prices by
 10v27M J. HENDY, No. 32 Fremont Street.

Metallurgy and Ores.

JOHN TAYLOR & CO.,
 IMPORTERS OF AND DEALERS IN
ASSAYERS' MATERIALS
 Chemical Apparatus and Chemicals,
 Druggists' Glassware and Sundries,
 PHOTOGRAPHIC GOODS, ETC.,
 512 and 514 Washington street, SAN FRANCISCO

We would call the special attention of Assayers
 Chemists, Mining Companies, Milling Companies
 Prospector, etc., to our large and well adapted stock of

ASSAYERS' MATERIALS
 —AND—
Chemical Apparatus,
 Having been engaged in furnishing these supplies since
 the first discovery of mines on the Pacific Coast,
 67 Our Gold and Silver Tables, showing the value
 per ounce Troy at different degrees of fineness, and val-
 uable tables for computation of assays in Ores
 and Minerals, will be sent free upon application.
 7v25-4f **JOHN TAYLOR & CO.**

Varney's Patent Amalgamator.

These Machines Stand Unrivaled,
 For rapidly pulverizing and amalgamating ores, they
 have no equal. No effort has been, or will be spared
 to have them constructed in the most perfect manner
 and of the great number now in operation, not one has
 ever required repairs. The constant and increasing de-
 mand for them is sufficient evidence of their merits.
 They are constructed so as to apply steam directly
 into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows.
 The pan being filled, the motion of the miller forces
 the pulp to the center, where it is drawn down through
 the aperture and between the grinding surfaces.—
 Thence it is thrown to the periphery into the quicksilver.
 The curved plates again draw it to the center, where it
 passes down, and to the circumference as before. Thus
 it is constantly passing eregnow between the grind-
 ing surfaces and into the quicksilver, until the ore is
 reduced to an impalpable powder, and the metal amal-
 gamated.

Settlers made on the same principle excel all others
 They bring the pulp so constantly and perfectly in con-
 tact with quicksilver, that the particles are rapidly and
 completely absorbed.
 Mill-men are invited to examine these pans and settlers
 for themselves, at the office, 229 Fremont Street,
 San Francisco

Important to Miners and Mill Men.

Silver-Plated Copper Amalgamating Plates,
 for Saving Gold.

Of all sizes and in any quantity, furnished to
 order. Full instructions sent for operating.
 Particular attention given to plating goods for
 Builders, Plumbers, etc. Hotel and Restaurant
 work repeated.

SAN FRANCISCO GOLD AND SILVER PLATING WORKS,
 655 Mission street, San Francisco.
 7v25-3m **E. G. DENNISTON, Proprietor.**

CHARLES F. KIRCHNER,
Sampler and Crusher of Ores,

NO. 11 DRUMM STREET,
San Francisco.

ORE BAGS FOR SALE
 IN QUANTITIES TO SUIT,
 Apply to
CROSS & CO.,
 315 California street, San Francisco.

COPPER ORES.

The undersigned, agent of Messrs. POPE, COLE & Co.,
 proprietors of the Baltimore Copper Works, purchases
 for cash all grades of Copper Ore above 10 per cent,
 paying the full value of same in Baltimore less Freight,
 Insurance, Interest and Commission.
 HORACE D. RANLETT,
 218 California st., San Francisco.
 16v27 P. O. Box 2945.

Richardson & Co., Copper Ore Wharves,
SWANSEA.

Richardson & Co. have been for thirty years established
 in Swansea as Agents for the preparation Samplings, Assay-
 ing, and sale of Copper, Silver, Gold, Lead, Zinc, and all
 other Ores and Metals, for which they have extensive Ware-
 houses and Wharves under cover, 1400 feet of Quay Front-
 age within the Floating Dock, and the most complete Ma-
 chinery and Appliances. They are also prepared to make
 advances against Ores in anticipation of realization, and to
 guarantee all payments when required. 23v26 ly

PLATINUM

Vessels, Apparatus, Sheet, Wire, Etc., Etc.
 For all Laboratory and Manufacturing Purposes
 H. M. RAYNOR,
 25 Bond street, New York.
 Platinum Scrap and Native Platinum purchased.

ANDREW CRAIG,
A. C. PUTNAM,
JAS. W. WHITLATCH,
JNO. L. MURPHY,
The California Ore Crushing and Sam-
pling Company,
 Nos. 413 and 415 Mission st., San Francisco.



Our works are the largest, and afford the best facilities
 for CRUSHING and SAMPLING ORES on the Coast.
 Work done at the Shortest Notice.
 Prompt attention to all orders. 22v27-3m

E. N. RIOTTE, JAR. L. BEYEA, S. O. BROWN.
AUBURN MILL COMPANY,
Reno, Nevada.

Purchase Silver Ores in quantities of ten tons and up-
 wards, delivered on board the cars at San Francisco or
 Oakland at the annexed Net Rates, WITH NO CHARGE FOR
 SAMPLING OR REDUCTION. On lots of less than 10 tons,
 freight to Reno will be deducted.

Special Rates for Gold Ores.
 On Gold contained in Silver Ores to the amount of \$30 and
 upwards, 50 per cent. will be paid. When less than \$30, and
 above \$10, the amount will be added to the Silver value.
 Sacks promptly returned free of charge. Ores sampled by
 Battery or Sampling Mill as shipped may elect, and re-
 turns made promptly by cheque on San Francisco.

Rates:

Assay Value.	Per Cent.	Assay Value.	Per Cent.	Assay Value.	Per Cent.	Assay Value.	Per Cent.
\$50	25	\$50	25	\$125	47	\$165	57
\$60	27	\$60	27	\$150	50	\$200	60
\$70	29	\$70	29	\$175	53	\$225	63
\$80	31	\$80	31	\$200	56	\$250	66
\$90	33	\$90	33	\$225	59	\$275	69
\$100	35	\$100	35	\$250	62	\$300	72
\$110	37	\$110	37	\$275	65	\$325	75
\$120	39	\$120	39	\$300	68	\$350	78
\$130	41	\$130	41	\$325	71	\$375	81
\$140	43	\$140	43	\$350	74	\$400	84
\$150	45	\$150	45	\$375	77	\$425	87
\$160	47	\$160	47	\$400	80	\$450	90
\$170	49	\$170	49	\$425	83	\$475	93
\$180	51	\$180	51	\$450	86	\$500	96
\$190	53	\$190	53	\$475	89	\$525	99
\$200	55	\$200	55	\$500	92	\$550	100

And on intermediate values in proportion.
C. A. LUCKHARDT, Agent.
 21 First St., San Francisco.
S. O. BROWN, Manager,
 Reno, Nevada. 3v28-6m

Nevada Metallurgical Works,

21 First street.....San Francisco.

Ores worked by any process.
 Ores sampled.
 Assaying in all its branches.
 Analysis of Ores, Minerals, Waters, etc.
 Plans furnished for the most suitable pro-
 cess for working Ores.
 Special attention paid to the Mining and
 Metallurgy of Quicksilver.

E. N. RIOTTE,
C. A. LUCKHARDT,
 Mining Engineers and Metallurgists.

RODGERS, MEYER & CO.,

COMMISSION MERCHANTS,

ADVANCES MADE

On all kinds of Ores, and particular attention
 PAID TO
CONSIGNMENTS OF GOODS.
 4v16-3m

O. W. STRONG, W. L. STRONG.

STRONG & CO.,
Metallurgical Works,
 No. 10 Stevenson Street, near First, San Francisco.

We purchase high grade Gold and Silver Ores, Bul-
 lion, Etc. Ores worked and tested made with care; also,
 Ore Assays of Gold, Silver, Copper, Lead, Tin, Iron,
 Manganese, Olanabar, Nickel, Etc.

LEOPOLD KUH,

(Formerly of the U. S. Branch Mint, S. F.)

Assayer and Metallurgical
CHEMIST,
 No. 411 Commercial Street,
 (Opposite the U. S. Branch Mint.
 SAN FRANCISCO CAL. 7v21-3m

The Phelps' Manufacturing Co.,

(Late S. F. Screw Bolt Works.)

MANUFACTURERS OF ALL KINDS OF

Machine Bolts, Bridgs Bolts, and Ship or
 Band Bolts.

13, 15 and 17 Drumm Street, San Francisco. 4v24ly

McLAREN, JAMES & CO.,

DEALERS, MANUFACTURERS AND INTRODUCERS OF

NEW INVENTIONS

FOR THE PACIFIC COAST.

Manufacture Espey's Patent Coil Wire Door and Gate
 Springs; Gate's Patent Oil Blacking, etc.

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NO. 605 CLAY STREET, SAN FRANCISCO, CAL.
 1a10-1p-3m

Dunn & Kewin, Pattern and Model Makers,

Globe Iron Works, Nos. 143 and 145 Fremont street,
 between Mission and Howard, S. F. 1v28-6m

The California Powder Works

No. 314 CALIFORNIA STREET.
SAN FRANCISCO.

Manufacturers and have constant on hand

SPORTING,
MINING,
And BLASTING

POWDER,

OF SUPERIOR QUALITY, FRESH FROM THE
 MILLS. It being constantly received and transported
 into the interior, is delivered to the consumer within a
 few days of the time of its manufacture, and is in every
 way superior to any other Powder in Market.
 We have been awarded successively

Three Gold Medals

By the MECHANICS' INSTITUTE and the STATE AG-
 RICULTURAL SOCIETY for the superiority of our
 products over all others.
 We also call attention to our

HERCULES POWDER.

Which combines all the force of other strong explosive
 now in use, and the lifting force of the BEST BLASTING
 POWDER, thus making it vastly superior to any other
 compound now in use.

A circular containing a full description of this Pow-
 der can be obtained on application to our Office.
 16v20-3m **JOHN F. LOHSE, Secretary.**

BLACK DIAMOND FILE WORKS.



G. & H. BARNETT,

Manufacturers of Files of every Description,
 Nos. 39, 41 and 43 Richmond street,
 Philadelphia, Pa.

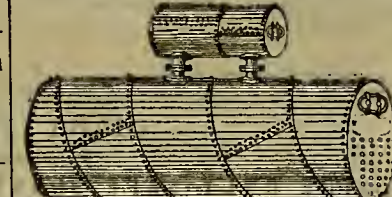
Sold by all the principal hardware stores on the
 Pacific Coast. 18v25-1y

San Francisco Boiler Works,

123 and 125 Beale Street.....SAN FRANCISCO

F. I. CURRY.

(Late Foreman of the Vulcan Iron Works,) Proprietor.



High and Low Pressure Boilers of all
Descriptions.

SOLE MANUFACTURERS OF THE CELEBRATED
SPIRAL BOILER.

SHEET IRON WORK of every description done
 at the Shortest Notice.

All kinds of JOBBING and REPAIRING promptly
 attended to. 17v25-3m

Steam Boiler Manufactory

—or—

JAMES H. SHANLEY, Successor to D. McDonald,

Oregon street, below Front, San Francisco.

All Sorts of Steam Boilers Made to Order

and Repaired.

Also, all kinds of Sheet Iron Work done promptly,
 and at prices to suit the times. 1v27

McAFEE, SPIERS & CO.,

BOILER MAKERS

AND GENERAL MACHINISTS,

Howard st., between Fremont and Beale, San Francisco.

Gravel Claims and Hydraulic Mining.

Special attention given to the development of this
 important interest in California.

SURVEYS AND REPORTS MADE—COMPANIES
ORGANIZED.

Mills, Mines, Mining Machinery, Wood and Timber
 Lands.

REAL ESTATE BUSINESS OPPORTUNITIES.

Best of References.

W. B. SKELLENGER,

No. 422 Montgomery street, San Francisco.

13v27-3m

Diamond Drill Co.

The undersigned, owners of LESCHOT'S PATENT

for DIAMOND POINTED DRILLS, now brought to the

highest state of perfection, are prepared to fill orders

for the IMPROVED PROSPECTING and TUNNELING

DRILLS, with or without power, at short notice, and

at reduced price. Abundant testimony furnished of

the great economy and successful working of numerous

machines in operation in the quartz and gravel mines

on this coast. Circulars forwarded, and full infor-
 mation given upon application.

A. J. SEVERANCE & CO.

Office, No. 315 California street, Rooms 16 and 17.
 24v28-4f

Friel's Patent Paragon Vapor Stove.

PATENT ORANTED MAY 20, 1873.

The Great Labor Saver of the Household.
 ECONOMY, CONVENIENCE AND SAFETY COMBINED.



Fire in Full Blast in
Half a Minute!
OVEN HOT IN TWO
MINUTES.

Steak broiled in seven
 minutes! Baked Beans in
 thirty minutes! The fire
 extinguished in a moment
 And the house heated!

It has no rival in all
 kinds of Cooking and Flat
 Iron Heating, and com-
 bines Economy, Conven-
 ience, Neatness, Safety
 and Durability! The La-
 dies welcome it: a little
 Child can operate it, and

All Recommend It.

Prices from \$5 to \$25, according to size. Manu-
 factured and sold by **WM. FRIEL,**

60 and 71 Fourth street, San Francisco.

N. B.—Agents wanted in every town in the State. On
 payment of \$5, one Stove will be sent as sample.
 22v25-2mly

FRANCIS SMITH & CO.,

MANUFACTURERS OF

HYDRAULIC PIPE

AND

Artesian Well Pipe.

Having the Latest Improved Machinery, we can make
 it an object to

Mining & Water Companies

OR

WATER WORKS,

TO CONTRACT WITH US FOR

SHEET IRON PIPE.

ALL SIZES MADE AND ALL WORK GUARANTEED

OFFICE AT 112 BATTERY ST.,

SAN FRANCISCO. 1a3-4f

SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM

PIPE, of any size and for any pressure, and contract to

lay the same where wanted, guaranteeing a perfect

working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special

patterns for Mining Cars. These small wheels are made

of the best Car Wheel Iron, properly chilled, and can be

fitted up with the improved axle and box—introduced by

this company, and guaranteed to outlast any other

wheels made in this State.

27 All kinds of Machinery made and repaired.

24v22-3m **JOSEPH MOORE, Superintendent.**

MECHANICS' INSTITUTE,

27 POST STREET.

Courses of 15 Lectures on Popu'ar Scisbcs,

BY THE

PROFESSORS IN THE STATE UNIVERSITY,

Commencing Saturday Evening, Jan. 3, '74.

Tickets for the course, Two Dollars. The number of

tickets being limited, application should be made at

once to the Librarian's desk, Mechanics' Institute.

1a10-4f

REMOVAL.

THE OFFICE OF THE OPHIR SILVER MINING

Company has been removed to Rooms 1 and 2 Hayward's

Building, 419 California street.

1a10-4f **JOSEPH MARKS, Secretary.**

REMOVAL.

THE OFFICE OF THE ECLIPSE, WINTERS AND

Plato Consolidated (Gold Hill) Mining Company has

been removed to Room 3 Hayward's Building, 419 Cal-
 ifornia street.

1a10-4f **JOSEPH MARKS, Secretary.**

REMOVAL.

THE OFFICE OF THE TRENCH (GOLD HILL)

Mining Company has been removed to Room 3 Hey-
 ward's Building, 419 California street.

SAN FRANCISCO METAL MARKET.

WEDNESDAY M., Jan. 21, 1874.

The metal market is quiet, and will remain so until more calls are made from builders. Mining machinery does not take very large quantities of metal at present. Quicksilver is very strong, and there appears to be no reason to expect a fall. Some anticipate a still further rise.

Scotch Pig Iron, 50 lb. ton.	\$52.00	@	—
White Pig, 50 lb. ton.	52.00	@	—
Refined Bar, had assortment, 50 lb.	—	@	3 1/2
Refined Bar, good assortment, 50 lb.	—	@	—
Boiler, No. 1 to 4.	—	@	06
Boiler, No. 5 to 9.	—	@	07
Sheet, No. 10 to 13.	—	@	07 1/2
Sheet, No. 14 to 20.	—	@	09
Sheet, No. 21 to 27.	—	@	10
Horse Shoes, per keg.	7.50	@	8.00
Nail Rod.	—	@	—
Norway Iron.	—	@	—
Rolled Iron.	—	@	—
Other Irons for Blacksmiths, Miners, etc.	—	@	—
COPPER.—			
Braziers.	—	@	40
Copper Tied.	—	@	—
O. Niel's Pat.	—	@	25
Sheathing, 3/4 in.	—	@	25
Sheathing, Yellow.	—	@	25
Sheathing, Old Yellow.	—	@	12
Composition Nails.	—	@	25
Composition Bolts.	—	@	25
T. PLATES.			
Plates, Charcoal, 1/2 in. box.	14.00	@	14.50
Plates, 1/2 in. Charcoal.	13.00	@	13.50
Roofing Plates, 1/2 in.	13.00	@	13.50
Plates, 1/2 in. Slabs, 3/4 in.	40.00	@	42 1/2
STEEL.—English Cast, 3/4 in.	18.00	@	22
Drill.	18.00	@	22
Flat Bar.	18.00	@	22
Plough Points.	16.00	@	17
ZINC.			
Zinc Sheet.	—	@	10
Nails.—Assorted sizes.	5 1/2	@	8
QUICKSILVER, per lb.	—	@	1.20

LEATHER.

SAN FRANCISCO, Wednesday M., Jan. 21, 1874.

The Leather market is dull. The local leathers do not recover. There have been some considerable transactions in Jodots, but no change of price. A short time since the market promised a better feeling, and lately there was a little more activity. Just now, however, there is but a moderate business being done.

City Tanned Leather, 3/4 in. box.	25.00	@	29
Santa Cruz Leather, 3/4 in. box.	25.00	@	29
Country Leather, 3/4 in. box.	24.00	@	28
Stockton Leather, 3/4 in. box.	25.00	@	29
Jodot, 8 Kil., per doz.	66.00	@	85
Jodot, 11 to 15 Kil., per doz.	55.00	@	70.00
Jodot, second choice, 11 to 15 Kil., per doz.	57.00	@	70.00
Cornellian, 12 to 15 Kil., per doz.	60.00	@	64.00
Cornellian Females, 12 to 15 Kil., per doz.	66.00	@	74.00
Beaumontville, 15 Kil., per doz.	60.00	@	—
Simon, 18 Kil., per doz.	61.00	@	63.00
Simon, 20 Kil., per doz.	65.00	@	67.00
Simon, 24 Kil., per doz.	72.00	@	74.00
Robert Oalf, 7 and 9 Kil., per doz.	35.00	@	40.00
French Kips, 3/4 in. box.	1.00	@	1.15
California Kip, 3/4 in. box.	40.00	@	42 1/2
French Sheep, all colors, 3/4 in. box.	8.00	@	15.00
Eastern Oalf for Backs, 3/4 in. box.	1.00	@	1.15
Sheep Roams for Top, all colors, 3/4 in. box.	1.00	@	1.15
Sheep Roams for Linings, 3/4 in. box.	5.50	@	10.50
California Russell-Sheep Linings, 3/4 in. box.	1.75	@	4.50
Best Jodot Calf Boot Legs, 3/4 in. box.	5.00	@	5.25
Good French Calf Boot Legs, 3/4 in. box.	4.00	@	4.75
French Calf Boot Legs, 3/4 in. box.	4.00	@	—
Harness Leather, 3/4 in. box.	30.00	@	37 1/2
Pair Bridle Leather, 3/4 in. box.	43.00	@	72.00
Skirting Leather, 3/4 in. box.	30.00	@	37 1/2
Well Leather, 3/4 in. box.	30.00	@	50.00
Buff Leather, 3/4 in. box.	19.00	@	22
Wax Side Leather, 3/4 in. box.	17.00	@	19
Eastern Wax Leather.	—	@	—

HINTS FOR INVENTORS. We will send on receipt of stamp for postage, FREE, our 52-page Circulars containing 112 Illustrated Mechanical Movements; a digest of PATENT LAWS; information how to obtain patents, and about the rights and privileges of inventors and patentees; list of Government fees, practical hints, etc., etc. Address DEWEY & CO., Publishers and Patent Agents, San Francisco.

THE NEW U. S. MINING LAWS.

The new Laws of 1872, governing the location and purchase of Placer and Quartz Mines and Agricultural Lands in Mining Districts of the U. S., printed in circular sheet, for sale at this office. Single copies, 25 cts.

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Dress Circle and Orchestra, Reserved.	1.50
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DIVIDEND NOTICE.

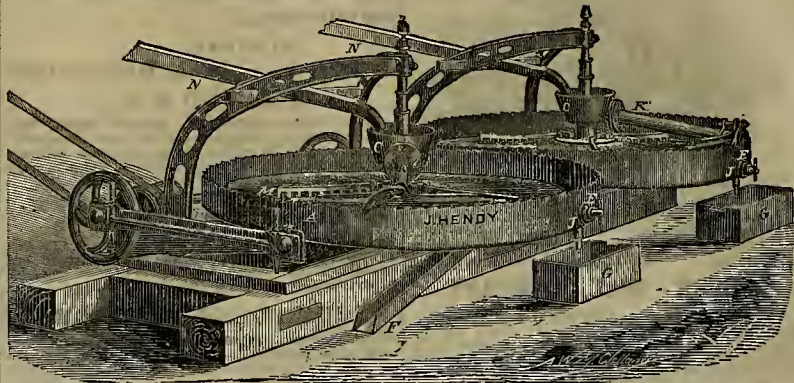
SAVINGS AND LOAN SOCIETY, 619 OLAY STREET.
At a meeting of the Board of Directors, held January 6th, 1874, a dividend was declared, free of Federal Tax, of nine (9) per cent. per annum on all deposits, for the six months ending December 31st, 1873, payable on and after the 15th instant.

j310-hp-2w OYRUS W. CARMANY, Cashier.

\$5,000 PER MONTH SAVED

BY THE USE OF

HENDY'S IMPROVED CONCENTRATOR.



Can be seen at the Manufactory, 32 Fremont Street, San Francisco.

JOSHUA HENDY, Esq.—Dear Sir:—As a practical miner and millman, I take pleasure in recommending the use of your Concentrators in all mills where gold or silver ores are reduced. No mills should be without them for the following reasons:

- 1st. They are good sizers (no perfect concentration in pulverized ore can be effected without first sizing).
 - 2d. The best Concentrator I have ever known—(the concentrated stuff only containing 5 per cent. of sand).
 - 3d. They are good amalgamators, light (feather) particles of amalgam and particles of coated gold, by attrition are brightened, and from their specific gravity and the action of the pan, fall to the bottom and adhere.
 - 4th. They require but little power and attention to run them, and with ordinary care will last for years.
- I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grase Valley; am familiar with their practical workings on the Empire Mine, Grase Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oaks and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,

Yours respectfully,

JAS. H. CROSSMAN, M. E.

400 California street, or Cosmopolitan Hotel.

SAVING MONEY.—The report of O. C. Hewett, Superintendent of the Keystone Consolidated mine, in Amador county, is to the effect that they have saved about \$5,000 per month by the abandonment of blunkets and the use of Hendy's Concentrators. The Concentrators have been in use there about five months and of course give great satisfaction, as they have performed their work so well.—SCIENTIFIC PRESS, Jan. 10.

The Superintendent, O. C. Hewett, reports that a saving of about \$5,000 per month is arrived at by the use of these Concentrators.

References:

Reference is made to the following mills, some of which have had HENDY'S CONCENTRATORS in use for over four years:	
EMPIRE MILL. (8 Concentrators).	Grass Valley, Nevada County.
NORTH STAR M. & M. CO. (8 Concentrators).	Grass Valley, Nevada County.
VULFURE CO. (8 Concentrators).	Prescott, Arizona.
ROY'S & CO'S MILL. (2 Concentrators).	Prescott, Arizona.
LUCY MINING CO. (3 Concentrators).	Owyhee District, Idaho.
EL TASTE CO. (3 Concentrators).	Sonora, Mexico.
ST. LAWRENCE MILL.	Georgetown, El Dorado Co.
ST. PATRICK MILL.	Newcastle, Placer Co.
JULIAN MILL.	Newcastle, Placer Co.
VIRTUE MILL.	Newcastle, Placer Co.
KEYSTONE MILL. (22 Concentrators).	Amador Co.

CAUTION.—All of HENDY'S PATENT CONCENTRATORS are marked thus: "J. HENDY, Patented April 17th, 1865, and May 10th, 1868."

For full description send for Circular. Orders or letters of enquiry, address,

JOSHUA HENDY, San Francisco.

Office and Works, 32 Fremont street.

GIANT POWDER.

Patented May 26, 1868.

THE ONLY SAFE BLASTING POWDER IN USE.

GIANT POWDER, NO. 1.

For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

GIANT POWDER, NO. 2.

For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.
Its EXCLUSIVE use saves from 30 to 60 per cent. in expenses, besides doing the work in half the time required for black powder.

The only Blasting Powder used in Europe and the Eastern States.

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General agents, No. 210 Front Street.

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MAGAZINES.	P. An.	W. E. LOOMIS.	FRENCH MUTUAL PROVIDENT
Harper's.....	\$4.00	News Dealer	Savings & Loan Society.
Atlantic.....		AND STATIONER,	
Godey.....			
New York Ledger.....			
Blackwood.....		S. E. corner of Sansome and	
Honors at Home.....		Washington streets,	
Peterson's.....	3.00		
Arthur.....		SUPPLIES ALL	
Lady's Friend.....			
Harper's Weekly.....	5.00	Eastern Periodicals,	
Chimney Corner.....			
Literary Album.....			
London Society.....	6.00	BY THE	
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La. don Ill. News.....	15.00		

Dividend of nine per cent. per annum (net 9 per cent.) upon the operations of the French Savings and Loan Society, for six months ending December 31st, 1873, has, in conformity with the report of the Committee of Verification appointed by the members of the Society, been declared by the Board of Administration, at the Annual Meeting held on the 16th inst. This dividend will be payable on and after the 19th instant, at the office of the Society, 411 Bush street.

GUSTAVE MAHE,

Director of French Savings Bank.

NOTICE.

To Plumbers, Tanners, Metal Roofers, Type Founders, Iron Founders, Etc.

F. C. BELDEN & CO., METALLURGISTS, are now manufacturing at their works, No. 215 First Street, San Francisco, a superior quality of

Solder Babbit Metal and Type Metal,

Which they can supply, in quantities to suit, at a MUCH LOWER PRICE than any wholesale house in this city.

F. C. BELDEN & CO.

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Steam, Liquor, Soda, Oil, Water and Flange Cocks, and Valves of all descriptions, made and repaired. Hoes and all other Joints, Spelter, Solder and Copper Rivets, etc. Gauge Cocks, Cylinder Cocks, Oil Globes, Steam Whistles, HYDRAULIC PIPES AND NOZZLES for mining purposes, Iron Steam Pipe furnished with Fittings, etc. Coupling Joints of all sizes. Particular attention paid to Distillery Work. Manufacturer of "Garratt's Patent Improved Journal Metal." Highest Market Price paid for OLD BELLS, COPPER and BRASS.

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Saw Smithing and Repairing ESTABLISHMENT.

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Patent Tooth Circular Saws.

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Lafin & Rand Powder Co.

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Ten Powder Mills, two Iron Keg Factories, one Wood-Engraving Factory, factory for manufacturing the ELECTRICAL BLASTING APPARATUS (one of the greatest inventions of our age, discharging simultaneously any amount of blasts). Besides employing some ten other factories manufacturing exclusively for them SAFETY FUSE and other articles pertaining to the Powder trade; such as RUBBER TUBING, all kinds of CAPS, LEADING and CONNECTING WIRES, etc.

KABATH & LADD,

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Will be happy to furnish interested parties with all the information in their possession. 8v28-lp-3m

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and Progressive Industry.

BY DEWEY & CO.,
Patent Solicitors.

SAN FRANCISCO, SATURDAY, JANUARY 31, 1874.

VOLUME XXVIII
Number 5.

An Anticipated Invention.

The past fifty years have been such an era of inventions that many people suppose nothing ever was "invented" except during the past few generations. Patent offices were not in vogue in the days of the Greeks and Romans, nor for some hundreds of years after the decline of their governments. One of our national characteristics is self-conceit, and the popular idea is that "nobody but a Yankee can invent anything worth shucks." On the other hand, people are apt to over-estimate the knowledge possessed by the ancients, and attach a high degree of importance to the crudest inventions that have long since gone out of use. Now, no intelligent man, unless he is an enthusiast to whom the very name "Lost Arts" has a charm, will concede that all knowledge died with the ancients; at the same time he must allow that the phrase "Nothing new under the sun," is in a great measure true.

We are constantly meeting with proofs of the correctness of Solomon's saying. It is hardly worth while to detail even a few evidences in its favor. There have been so many lectures on the "Lost Arts" that the subject is familiar to the general public. We take occasion, however, to illustrate one anticipated invention in its crude shape, of which the present venerable system of wire tramways, such as Hodgson's or Hellidge's, is the result. The invention of the steam engine gave subsequent inventors a chance to enlarge upon and perfect the plan shown in our engraving.

The following description of the apparatus is extracted from Derhem's "Philosophical Experiments and Observations of the late eminent Dr. Robert Hooke," London, 1726: *a*, the basket to be filled; *b*, the basket emptying itself by the lower part of it hitting against the axis of the two pulleys; *c*, the filled basket passing from *a* to *b*, supported by the pulleys; *n*, *d*, the empty baskets returning without any support between the extremes; *e*, *e*, *e*, the rope carrying the filled baskets; *f*, *f*, *f*, the same rope returning them empty; *g*, the pulley at the filling end, supported by the post; *m*; *h* the pulley at the emptying end, supported by the post; *k*, and by turned the handle; *i*; *l* the to support the interposed trestles, *n*. Fig. 2.—post *b*, the two pulleys fastened on; *r*, *r*, an iron axis to be turned by *i*; *q*, a winch; *e*, *e*, the rope lying in its tapering edge, as shown in Fig. 3; *o*, *o*, the basket hung by its handles; *p*, *p*, a stick tied with packthread on the rope, *e*, *e*, *e*. Fig. 3.—*g*, *g*, the shape of the edge of the pulley, expressed in the first figure by *h*, which is grooved with a tapering groove, that may hold the rope on which is tied, *e*, the stick thrust through the handle, *f*, *f*, of the basket. Fig. 4.—*a* the rope on which is tied, *b*, the stick, thrust through the handles of the basket; *c*, *c*, the truckles' edge, hollowed with a half round, *h*, for the rope to run on.

No particulars are given as to the quantity of work performed by the actual machine, but the author says that "by this way 'tis easy to transport earth, sand, etc., 1, 2, 3, 4, or 500 yards, whether ascending or descending; and, I conceive, two men can do more than six in the common way."

DEATH OF DR. LIVINGSTONE.—Dr. Livingstone, the world-renowned explorer, died in the interior of Africa in June last. He had been traveling over a partially submerged country, and after wading four days in the water, he was seized by the illness of which he died. His perilous travels and explorations in search of the source of the Nile have been continued for many years and he has at last met his death in the field of his labors. It is hardly probable that any one can be found who will risk his life in exploring with as much persistence and self-denial as Dr. Livingstone, the great unknown country of central Africa.

SNOW SLIDES have been very destructive in the cañons of Utah during the late storms. In Big Cottonwood Cañon particularly, several avalanches are reported. Quite a number of lives have been lost.

Gambling.

We believe it perfectly legitimate to purchase the stock of any mining or manufacturing company or organization, with a view of realizing reasonable or even large profits or dividends, from development, or increased value given to products, by the labor bestowed upon their manufacture. But when we see men of probity and character, men whom it might be expected would lend all reasonable aid to enterprises which alone can give wealth and permanent prosperity to the State, turning their attention to, and using their means in simply buying one day and selling the next, the stock of some wildcat mining or other company, with no other object than buying low and selling high, building their own fortune on the ruin of their friend who may chance to be the loser, it becomes a matter of doubtful propriety if not of morality, and scarcely deserves a milder name than public gambling.

We would not, however, interpose objections solely on this ground, every man being the keeper of his own character and conscience, and the city of San Francisco is the protector of its reputation as against gamblers. But look at the ability, the energy, the business talent, the capital in money, and the great good to

The Ohio Consolidated Mine.

The Secretary of the Ohio Consolidated Mining Co., W. Aug. Knapp, has issued a circular in relation to improvements upon the company's mine for the general information of shareholders, from which we make a few extracts. The improvements have all been made with a view to permanency, and constructed at the same time on economical principles. It is designed shortly to erect an 8-stamp battery, which will enable the company to crush their own ores, particularly the low grade, of which the present shaft is expected to open up a very large amount. The drift on the vein has been sunk about 146 feet and has all been well timbered. It shows a well defined vein of nearly two feet in thickness.

"A shaft sunk upon the middle vein for hoisting purposes, and pumping, the power used being an overshot wheel of 30 feet diameter, 4 feet face, supplied by water from a ditch above. This wheel will enower to attach and drive an 8-stamp mill as well. Connected with this shaft at a depth of about 130 feet there is a drain tunnel 330 feet in length, saving the hoisting of water above the tunnel, and at the depth of 150 feet there is a cross drift of about 120 feet to the east vein, also a rise 32 feet high. N. Stope open 80 feet, which prospects

Eureka Artificial Stone.

The world has exhausted itself in the effort to produce a material which should do away with the laborious and expensive operation of stone-cutting, but until recently with very indifferent success. Those processes which were valuable, so far as excellence of product is concerned, have almost uniformly been so expensive that good artificial stone has cost nearly as much as the natural. In one notable instance this was not the case—that of M. Coignet, whose material has been used for about twenty years in France and the neighboring countries in the construction of buildings, arches, aqueducts, sea-walls, etc. It seems, however, to have been reserved for California to achieve a yet greater triumph. A young Californian, who had seen something of the success of M. Coignet's process, undertook to cheapen it, to use common and cheap materials to obtain the same chemical result, and at the same time to improve it in some important particulars.

We have often called attention to the fact that California inventors have taken a front rank, and we hope and believe it will be so in this case. Certainly it appears as if nothing was lacking in the present invention to insure the success of the company who have purchased the patent.

We visited the office of this company—the Eureka Artificial Stone Company, 304 Montgomery street—a few days ago. It is a young corporation, but composed of men of known worth and business ability, as the following list of Directors will show: M. G. Cobb, President; O. F. Gehricke, J. B. Cox, Peter Portois and G. E. Sloss. The capital stock is \$500,000, divided into shares of \$25 each. The books are open at the office for subscriptions to the stock, which is being rapidly taken.

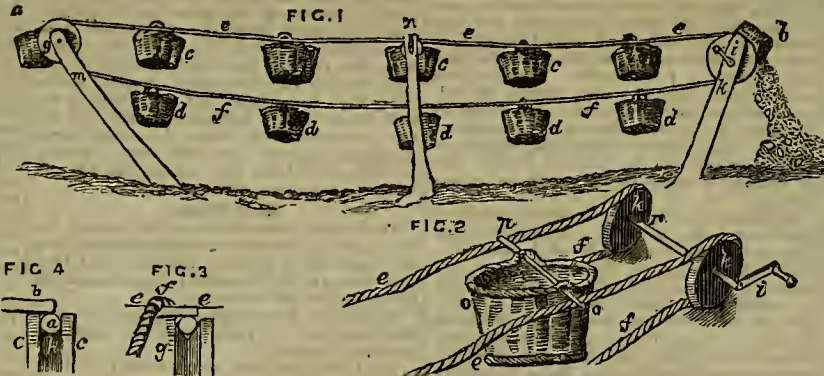
The company propose to manufacture stone for building, for cemetery and other monumental work, for bridges, sea-walls, and for all kinds of work where a beautiful, durable, fire-proof and waterproof material is required. They exhibit at their office substantial and convincing specimens of their stone.

As a test of the non-absorbing qualities of this stone we tried an experiment at our office by sinking a hollow in a piece of the stone with a hammer and chisel, filling it with water and letting it stand for twenty-four hours. It proved itself entirely impervious, to water, none being absorbed or lost in any way except what escaped by evaporation.

Of the many advantages claimed for it, we abbreviate a few from the company's circular: "It can be manufactured cheaper than any other, no machinery or costly appliances being necessary; no soda or salt water being used in the manufacture, it does not lose its beauty by age and exposure. Piers, arches, pillars and blocks too large to be handled, can be made *in situ*; and the composition can be laid on with a trowel over brick walls, forming a beautiful and durable covering, which water cannot penetrate, needing no paint, and giving the appearance of a handsome stone front." Roofs, also, fire-proof and water-proof, have been made of it, and have given thorough satisfaction.

As we have already mentioned, stone somewhat similar to this has been used for many years in France, in the Suez Canal, and in other places. That first-class stone can be manufactured is undoubtedly true, and it appears as if our California inventor had discovered the method not only of making it, but of making it cheaply. This, after all, is the essential point, for those who take stock in an enterprise of this kind do so with a view to profit. Hence an expensive stone, however excellent in quality, would be worthless. But in this matter the inventor has had in view not the making of a wonderful scientific experiment, but of a commercial and profitable fact.

Those who wish to see and judge for themselves, can do so by calling at 304 Montgomery streets, the office of the company. The patents were granted through the Mining and Scientific Press Patent Agency.



the industries of the State that might accrue, all withdrawn, locked up in the brains and pockets of four or five hundred men daily assembling at the corners of California and Montgomery streets.

Is it any wonder that San Francisco should lose her prestige as the queen commercial city of the Pacific, or that interior projects for the development of the State's industries and interests should languish? The wonder only is, that with so much of the cash capital of San Francisco entangled in the meshes of hazardous stock speculations, there is enough left for the development of even the few industries which are now and then inaugurated in our midst.

MINING SUIT.—A suit has been brought by M. A. Wheaton, against the Le Grange Ditch and Hydraulic Mining Co., in the 19th District Court. The complaint avers that on the 4th of December, 1873, the plaintiff was the owner and entitled to the possession of a tract of land commencing at a point on the east line of the north-west quarter of Section 16, in township 3 south, in range 14 east, from Mount Diablo base and meridian. The land lies near or at the boundary line of Stanislaus and Tuolumne counties. Wheaton says that while he was the owner of the land, the defendant unlawfully ejected him. That the value of rents of the land is \$300 per day. He asks judgment for the restitution of the premises, for \$100,000 damages for the withholding, and \$100,000 damages caused by the loss of the value of the rents and profits.

CARSON MINT.—During December there were received at the Carson Mint 8,845,468 ounces of gold, valued at \$127,357.52, and 138,976,019 silver, valued at \$155,938.21. Coinage and bars executed, \$365,134.15.

over \$50 per ton. In the cross drift of E vein a large body of ore has been reached 80 feet below where it has been worked from above, and in consequence of want of ventilation and to secure greater and better facilities for working, it was deemed advisable to sink another and more substantial working shaft on this vein. This necessitated the purchase of a steam engine and boiler, together with permanent hoisting gear, etc., also the building of a house over the same for protection against the weather, storage of tools, dry wood for the engine, etc."

PLATINUM IN QUEENSLAND.—The Northern Argus states that a discovery of platinum has recently been made within a distance of 250 miles of Rockhampton. A party who had been prospecting for gold arrived in town with a small parcel of mineral deposit that to him presented unusual features. He submitted it to Mr. A. Tucker, assayer, who, after careful examination, pronounced the parcel to contain an excellent sample of platinum, with the usual combination or osmium and iridium.

GEOLOGICAL SURVEY OF UTAH.—The citizens of Utah wish for a geological survey, and a memorial has been presented to the Legislature to promote the object. The committee appointed to get up this memorial was composed of P. Edward Connor, R. C. Chambers, Henry Sewell, W. S. McCormick, L. U. Colbath, J. E. Cleyton, E. M. Barnum, C. H. Hempstead, and Albert Carrington.

TUOLUMNE county, a few years ago, produced hundreds of thousands of dollars in gold annually, but no wheat. In 1873, it produced over 5,000,000 bushels of wheat, and only \$50,000 gold.

White Island.

M. Morhange, Consul-General of Belgium in this city, gives the following interesting account of a visit to a remarkable volcanic island, known as White Island, off New Zealand, and which he described in a paper read before the California Academy of Sciences:

"When I came on deck the morning after we had left Auckland harbor, we were in the Bay of Plenty, (Whakari, as the natives call it), and White Island is situated in that bay. For hours I stood watching its gradual appearance. I saw first, in the dim distance, a mere greyish spot. After some time the spot had enlarged and assumed the vaporous shape of a column of smoke; then it looked like an opalescent cloud resting on the horizon, and so I kept it in sight for about two hours. At last it stood there as it really was. 'I was aware then' that what I took at first for the island was only the large crest of vapor which crowns its summit, for White Island is nothing less than a volcano, isolated in the midst of the sea; a perpetually active crater, which, in the course of time, like the mollusc which secretes its little shell, had built up a huge cone, $3\frac{1}{2}$ miles in circumference and 860 feet high, of indurated ashes and scoriae. The walls of this cone are perfectly straight, of a dark ash-grey color, cut at intervals with deep longitudinal furrows, and having on the northwestern side a few small patches of sparse vegetation, which resemble, when viewed from a distance, hollows in the grey walls, so that I thought they were the 'depression of the crater'; but it is inside the walls, on the eastern side. Looking north, it seems as if the base of the island had been upheaved and left deeply inclined toward the west.

As the walls rise perpendicularly from the level of the sea, I could not understand where we should find a landing place, and still less how we could ever penetrate into the interior of the hollow cone. At last two quarter boats were lowered, with our small party of eight or ten, including the captain and some officers. As we proceeded, I noticed toward the southern extremity of the island an opening, a gap apparently produced by the falling down of a portion of the circular wall. On the left rose a high pyramid of consolidated ashes. On the right stood two separate walls of the same formation, several hundred feet high, covered with a whitish crust, full of cracks, like old, dry plaster. There we landed, walking with care over a succession of boulders, accessible in smooth water, but which in a few hours would be washed by the rollers. Through the gap in the wall we entered an immense funnel-shaped circus, $1\frac{1}{2}$ miles in circumference, almost at the sea level, the walls of which were of a lighter gray inside, but ridged and striated longitudinally, like the outer surfaces. We were breathing in a sulphurous atmosphere. We trod upon a warm soil, slightly indurated, soft and crackling, full of rents and fissures. I felt as if I were walking over a floor of heated gutta-percha. In every direction were carpets of white and yellow efflorescences, hard nodules incrusting with sulphur and gypsum, narrow streams of tepid, acidulated water. Stooping down, I could easily detach from the ground sheets of the gray crust, and on examining the under surface I found them covered with native sulphur of various tints, from straw-yellow to orange and saffron, all bestrewn with fine granulations and elegant needles of crystallized sulphur. Wherever I introduced my stick a foot deep into the soil, a jet of hot vapor was emitted, so hot indeed that I could hardly hold my hand over it. Sometimes, instead of vapor, water or mud came out. In several places the ground was quite perforated, and numbers of thin jets, one, two and three feet high, poured out, condensing in little rills. The taste of this water was generally either markedly acid or alkaline.

Not a blade of grass, not a mark of vegetation, not the buzz of an insect, in this vast, gloomy solitude; but a constantly increasing noise, as of a seething sea. While we were walking on the treacherous, yielding ground, moving slowly and frequently sounding with our sticks, we were suddenly almost suffocated by a dense blast of sulphurous vapors, with a greatly intensified heat. I retreated for a few moments to take breath, and when, somewhat relieved, I looked around and recognized my companions I noticed where the pungent exhalation was coming from. It arose from a lake, in about the center of the solfatara, a boiling lake of the most gorgeous yellow green color, which I could easily compare to a sea of molten gold, combined with malachite; and all around, filling up an area of over fifteen acres, at various heights above the basin, numberless fumeroles and geysers sent up fifty or sixty feet their jets of vapor, or of boiling water, with a writhing, roaring, deafening noise, as if a hundred high-pressure engines were blowing off steam on the spot. Columns of vapor, visible in the upper part of the back-ground, far away, at a height of perhaps 800 feet, indicated the presence of other fumeroles and geysers. The captain told me that, about a year ago, there was a kind of natural sidewalk, between the lake and the foot of the walls; but it was no longer so, and we were compelled to stop, in front of the boiling sea, towards the entrance, recent eruptions having covered up the side-walks.

No description, however masterly, be it by Dante himself, could possibly convey to the imagination of those who have not witnessed it, the wild grandeur and desolate sublimity of this barren, Plutonic island. I stood spell-bound, looking about me, and so utterly be-

wildered that I seemed to have lost even the idea of time. But our kind captain had not forgotten it. There might have been some danger in a protracted visit on such a shifting ground. Besides, there was another danger, threatening from without. The swell was coming in as the tide rose, and it might have been difficult to reach our boats. It was high time, indeed, to return. We had landed dry-footed on this broken, rugged beach, but now we could not escape the roaring rollers, which tumbled upon us as we jumped from boulder to boulder.

But who would mind a thorough ducking, to say nothing of the danger, for such a glorious sight? We spent on White Island about an hour and a half; it seemed to me a few moments then, but now, in the recollection, with all its associations, I almost fancy we were there a whole day.

Lida Valley and Sylvania.

Mr. J. L. Darrah returned a few days since from a visit to the mining camps east of the range. Mr. Darrah is eminently a practical man, and while at Lida he submitted the plump question to Mr. Hiskey, manager of Hiskey & Walker's mill and mines, to know what they were doing, whether he might have an abstract of assays and working results of the ores of that section that would give a reliable idea of their average value, etc. In reply to this Hiskey told him that there was his office and books to "pitch in and copy the ore, assay and bullion books, from one end to the other if he wanted to." Darrah "pitched in," and after carefully transcribing the figures on the mill books as they were set down from day to day, the results are as follows:

The assay value of 219 samples gives the extraordinary average of \$292 per ton! One assay from the Brown's Hope, which, by the way, in the richness of its ores has not more than two or three superiors on the coast, gives a yield of \$4,351.41. This was the largest assay; the smallest, which was a simple prospect specimen, \$6.13.

The working result of 668 tons put through the mill since last March, gives an average value of \$244 per ton, or an aggregate product of \$163,000. This is certainly a showing not often excelled in any camp, and the entire statement may be accepted as perfectly reliable.

Mr. Darrah is confident that the section embracing Lida Valley, Gold Mountain (20 miles to the south) and Sylvania (15 miles west of Lida) is inevitably bound to prove itself, sooner or later, the most prolific mineral section east of the Sierra Nevada. Our own personal knowledge of the two first-named inclines us strongly to that opinion, as the number of rich silver mines is innumerable. The prospects are, however, that the newer district of Sylvania will do more to determine the status of the entire region than either or both the others, though either one is undoubtedly capable of adding greatly to the world's wealth, and of making a noise in the world in consequence.

Sylvania district has one feature worthy of special mention, even in a necessarily brief local reference: For a width of about 3 miles, and 10 miles in length, the country rock is a perfectly defined body of granite. Through the center of this streak runs another of softer and whiter rock than the granite, and again through the center of this soft rock runs a large lode of rich argentiferous galena, which wherever uncovered for full eight miles invariably yields ore identical in characteristics, one place with another, and thus proving this lead to be full eight miles long—eight miles of a lode composed of the best quality of smelting ores; superior, Mr. Darrah thinks, to those of Cerro Gordo, in the reduction of which he was actively engaged for three years.

There is the greatest abundance of timber for wood and charcoal all along the lead, and water can be obtained in numerous localities close at hand. Wood and its product, charcoal, can be furnished fifty per cent. cheaper than at Cerro Gordo; and, taking that famous locality still further as a standard of comparison, the ores of Sylvania are said to be many times more abundant, and presumed to be generally richer in silver and quite as easy to smelt; further, Cerro Gordo bullion has to be hauled 275 miles on wagons, while that from the other will be but 195. In the nature of the case, however, it may cost as much or more per ton to land it in San Francisco from Sylvania than Cerro Gordo, but in other important particulars the advantage appears to be entirely in favor of the former. Unless people's hopes are allowed to run away with their judgment, Sylvania district is surely capable of producing more bullion of a richer quality and at a cheaper rate than Enreka with its score of big furnaces. Looking at the prospects for Sylvania and Waucoha, at one end of the county, as it were, with Panamint, equally undeveloped but promising, at the other, and our present mainstay of Cerro Gordo, and other important mining operations now or likely soon to be in full blast, it strikes us that the future of Inyo is about as flattering, prospectively, as any reasonable person could desire. It is bound to be the banner mining county of this State. It needs but a narrow gauge railroad, or cheap freights, to enable it to hold its head up with the highest mineral producing county of any State or Territory. Nevada and Arizona papers will take notice.—*Inyo Independent.*

Cottonwood Canon Mines.

From the correspondence from Alta, Little Cottonwood, in the Salt Lake Tribune, we make the following extracts:

The resumption of work on the Flagstaff mine last week has had a visible effect on the times. The daily shipments of ore from the mine are forty tons. This amount is to be increased to double the quantity, if desired. The mine is now under the charge of George W. Cullins. The ore is brought down on the tramway in cars, there not being sufficient snow to run the boats.

The roads between this place and the terminus are in a splendid condition, and never was there a better opportunity offered for the cheap and easy transportation of ores from Little Cottonwood; and still, the best of our mines are lying idle, either awaiting the arbitration of quarrels in England or the adjustment of lawsuits at home.

The Vallejo Mine

Still continues to ship ore whenever required. If a good customer is found the ore is forthcoming. "Business is business," and it takes wealth to buy ore from the Vallejo.

The Emma

Is shipping about five or eleven tons per day—that is as near as one can come to the shipments, unless he keeps tally of the teams as they leave the ore house. As this procedure would not pay, a marginal guess is the best your correspondent can do. If the reports of men who are working in the lower levels are to be believed—and I can see no reason why they should not be given the fullest credence—they have undoubtedly struck the largest, richest and best-defined body of ore ever revealed in the mountains of Utah. It is said they have gone through the limestone formation, and have found a ledge thirteen feet in width, enclosed in granite walls. The ore does not require sorting, and is sacked in the mine. Hannibal Williams, the superintendent, is always at his post, and is one of the hardest working men about the mine. He always receives his visitors very courteously, and will allow them to go anywhere around the mine; but not into it. The information that one receives from him the public may rely on.

The Davenport

Mine is closed, nobody can tell for how long. It may be for weeks, and possibly for months. Lawyers, sheriffs, etc., are eating up the profits of the mine, if it ever made any. The surroundings of the Davenport look cheerless and gloomy, suggestive of bad management, either here or over the water. That as fine a property as this should be suffered to remain idle, when it is known by all the miners who have ever worked in it, and by its late superintendent—Joe Farren—that it can be made to pay large dividends on the capital invested within thirty days, is a disgrace to Utah; and is of untold injury to her mining interests. By the time Cottonwood is visited by several more European "experts," and their ideas of mining are fully carried out, Alta will become depopulated and the mines will be abandoned.

Other Mines.

The Grizzly mine has closed shipments for the winter, as the owners cannot afford to keep the roads open between the mine and Alta. The closing of the Davenport mine necessitated the closing of the Grizzly.

The City of Rocks still continues to work a few men, and the prospects of the mine are extremely favorable.

The Utah mine, now being worked by Matt. Gisborn, of Mono notoriety, is looking well, and is one of the best defined lodes in the camp.

The Wellington mine is now looking better than ever. The shipment of ore from it next season, will not probably be exceeded by that of any other in the district.

The Oxford and Geneva still continues to produce argentiferous wealth in paying quantities, but is not shipping ore on account of the high tariff charged for transportation in the winter.

Work is going on in the Fuller mine, and the indications in the lower workings were never better. The ledge still continues on the even tenor of its way, not varying far from ten feet in width. Its shipment record for this coming season promises to be large.

The McKay continues to keep up its well-earned reputation. The ledge in the incline shaft is so wide that the wealth cannot be determined until they drift across the vein. The body of ore is solid, filling the sides, bottom, top, and breast of the incline. The ore is of very high grade. Preparations are being made to ship the ore that is now on the dump.

The Victoria and Imperial tunnel company have made a rich find in the stope eighty-five feet above the tunnel level. The vein is four feet in width, and increasing daily. The tunnel is still being pushed forward, and has now reached a length of 640 feet. The indications in the breast of the tunnel are not flattering, but they are bound to strike it if they persevere.

The great excitement of Alta is the working of the Burleigh drill and patent air compressor. The machinery arrived here some weeks ago, and was placed in position and was in working order yesterday. There is no doubt of its proving entirely successful, as the manner of working this drill will be of importance to the mining men of this Territory.

ITALY has a more powerful siege gun than either Krupp or Armstrong have turned out.

Colorado's Milling Capacity.

The present capacity of the metallurgical works in Colorado is about 165 tons per diem, of which total Clear Creek county represents 50 tons; Gilpin, 25; Jefferson, 20; Boulder, 15; Park, 45, and Arapahoe, 10. This does not include the numberless stamp-mills that are scattered all over the gold bearing sections of the Territory, and which would swell the total to fully, if not over 800 tons. Against this treating capacity is a production of ore that rarely exceeds 350 tons daily, and averages throughout the year about 300, worth, taking all together, between \$50 and \$60 per ton. Of this sum about 125 tons may be considered as stamp rock, requiring simply crushing and raw amalgamation, and the remaining 175 tons as more or less refractory ore, needing roasting before being smelted into matte, run down into pig-lead, or amalgamated.

To one who has watched the progress of our ore-milling business during the past three years, a great change will have been noticed in, 1st, the class of ore handled; 2d, the system of treatment; 3d, the location of works. In 1870 the gold production exceeded that of silver by at least a million dollars; that is to say, the raise of ore chiefly valued on account of its gold. Now, the production of the two metals is at least even, with the balance probably in favor of the least valuable one. As this change has taken place, the yield of the Gilpin county mines, while it has not decreased, has increased but little, the production of the Georgetown mines has more than doubled, and the new silver districts of Caribou and Park county have sprung into prosperous existence. Gold Hill is the only new gold district that has been opened since the beginning of the present decade, and it seems quite likely that at the close of the year the production of the two metals from that point will be nearly equal. This change has thrown into the shade the stamp-mill treatment (always a costly system) and created a demand for smelting works that is ever on the increase.

The change in the methods of treatment is evinced by a tendency towards the production of matte, and especially so since the completion of the Separating Works at Black Hawk. But three companies now milling produce bullion without previous smelting, viz.: the Stewart, Masonville and Caribou Mills, while the Boston & Colorado, the Whistle, Swansea, Dudley, Alma and Golden Works produce either a copper matte or a lead product, from which the gold and silver is afterwards separated. Amalgamation, both raw and after roasting, is therefore losing place in the working of Colorado ores, and smelting gaining in favor, while battery and plate amalgamation, which scarcely saves its thirty per cent. of metal, is rapidly being done away with as concentration takes its place.

In early days it was considered necessary for every large mine to have its mill. In obedience to this idea numerous stamp mills were erected in Gilpin county, and wherever gold quartz was found; and the Brown, Baker and International mills of Clear Creek county were built. Only a few of these are now in operation, the majority having shut down for want of ore, or failed by reason of unsuccessful processes. The Caribou mill is now the only silver works in the Territory that is supplied by the product of a single mine, and even it is at present preparing to receive custom ores. It seems to have been clearly shown that mining and milling operations are seldom profitably carried on by one and the same organization, and custom works will hereafter be the order of the day. More than this, our ore mills are every year becoming congregated, as it were, around central points, instead of being scattered over the country, one for each great mine.

Black-Hawk and Golden are at present pre-eminently the two prominent smelting centers of Colorado, and by their location and connections command a larger portion of the ore supply than could any other points.

This centralization of the smelting industry is bound to proceed, as it becomes evident that the whole mountain area of Colorado is one vast mineral district, or a segregation of small ones so close together that the interest of one becomes the interest of all. We may look for the successful establishment of beneficiating works of large proportions in the neighborhood of Fairplay; at Boulder City; in Baker Park, when the San Juan district is developed; and in the valley of the Bine. The progress during the past year has been very encouraging; for not only have a number of new works sprung into existence, but the problem of profitably handling most of the refractory ores has been solved. We are now shipping away a very small quantity of ore, and no matte, which two items amount to a saving of about a quarter of a million of dollars.

In England timber is jealously guarded, and farmers have commenced to plant trees, and there are a greater number of acres under Scotch pine now than at any other period in Scotland's history, notwithstanding the immense quantity that has been cut down for lumber. Much of this pine, however, will not be available for many years, and larches are therefore being planted, as they are of rapid growth and yield good timber. The timber question should have more prominence in this country than is now awarded it.—*Am. Manufacturer.*

SCIENTIFIC PROGRESS.

Does Iron Improve With Working?

The question, "Does iron improve with working?" has had many theories in the affirmative, with little or nothing against it. We think that it can be shown that iron can be overworked while in process of manufacture, or at least between much heating and much working it can be overdone, especially by the former. The re-heating of iron lessens the amount of cinder contained in it. Simply and plainly, this is best proven by the use of old furnace tools, old grate bars, and much other old scrap iron that has been subjected to alternate heating and cooling, which, when faggoted and rolled, produces an iron of inferior quality. Next, it can be shown by the rolling of piles or blooms that have been kept in the furnace an undue length of time, till the cinder having been consumed, "dried up," as the expression is, will be shown in the rolling to have become stiff, unpliant and liable to crack, if the shape that it is worked into is very thin or of irregular form, such as angle iron, T iron, etc. Iron is overworked when it ceases to work soft and easy from the liquid cinder that it should contain. Some iron possesses more cinder than others, and that iron which has much cinder can be worked with advantage to its quality, as long as the cinder holds out; to this extent it can be improved by working, but to the point at which a lack of cinder makes it work stiffly and dryly, it will no longer improve by working.

The extent to which iron should be worked should have reference to its after use. If the iron be worked till all the cinder is excluded, and just then is at its maximum of quality, then it would be unfit for any further manipulation in the hands of the user who might require to further heat and work it to his purpose; for its maximum having been attained by heating and working until the cinder is out, it but deteriorates by any further heating and working. The more work that it takes to exclude the cinder, the more will it improve by this work, but it has reached its highest capability of improvement when this is attained. Some iron, then, is at its best by one heating and rolling while other iron is the better of a second heating and rolling. Some will improve to the third heating, but of common iron not much is of this character. This is in regard to puddled iron, but the same principle applies or governs the question as to charcoal iron. The latter being more homogeneous will endure more work; but the highest point of improvement with it also is reached, when by re-heating and re-rolling it has ceased to work soft and readily in the rolls. This is a simple and practical answer to the question of how far iron is capable of being improved by working. In the rolling of odd shapes, if the iron be kept in the heating furnace a much longer time than is necessary to properly heat it, as sometimes happens through accident or delay, the iron in rolling will not so readily form itself into sharp corners and fine angles; is liable to crack if worked into beveled edges, and is afterwards found to have suffered actual deterioration in quality of fiber. —*Levis's Pamphlet.*

Sugar in Organic Substances.

Sugar, until a comparatively recent date, supposed to exist only in certain vegetables, has more recently been found a very general concomitant of vegetable, and, to a certain extent, of animal life. It exists principally in the form of cane sugar, or crystallizable sugar, grape sugar, or glucose, and lactin, or sugar of milk. In the first form it is found most abundantly in the sugar cane, in sorghum, which is, however, in fact, only a variety of the sugar cane; in the beet, and in the sap of the maple tree, from all of which it is manufactured in large quantities. Indian corn has also been tried as a producer of sugar, and in the Patent Office reports for 1844 are given, by Mr. Webb, the results of some experiments with corn-stalks. Good sugar can be made from corn, but not in quantities to make the crop profitable, as compared with other crops which might be produced upon the same land.

The second form of sugar, is partially uncrystallizable, and exists largely in the grape, hence its name, grape sugar. It exists however, in the juice of many ripe fruits, and to it they owe their sweetness. Also, in the nectariferous glands of flowers, and in connection with another uncrystallizable form of sugar, similar to the brown syrup of the sugar cane, and with certain odorous, gummy and waxy matters it constitutes honey.

The third form, lactin, exists only in the milk of mammalia, from which it may be separated by a chemical process. By action of hot dilute acids, it may be converted into glucose. Glucose is also produced in the human organism by the liver in a healthy state, and secreted abnormally in the disease known as diabetes.

The starch of grain is, by fermentation, converted into glucose, and from this to alcohol. M. A. Petit, a French savant, has recently been examining the leaves of the grape vine, as well as other leaves, and finds they contain, besides a quantity of sugar in the intervessel state (*sucrose intervessel*), a considerable quantity of cane sugar. Cherry and peach leaves also contain both cane sugar and glucose. In M.

Petit's tests, he found that a kilogramme of peach leaves contained 33 grammes of cane sugar, and 12 grammes of glucose. It is highly probable, that sugar, in one of its forms, exists in the leaves of, at least, all fruit-bearing plants. —*Artisan.*

Gold Assays.

The following is an abstract of the report of a committee on this subject, appointed by the British Association, and read at their late meeting at Bradford:—The attention of the committee was first directed to a series of experiments which were instituted with a view to ascertain to what extent the weight of pieces of pure gold and of alloys synthetically prepared would be affected by submitting them to the process of assaying, and consequently how far the results of assay operations were trustworthy. These results showed that the maximum error was only 0.001 per cent. of the original weight of the assay piece, and consequently, that the results obtained by assaying gold, represented the composition of the portion of metal under examination to the one ten-thousandth part, a fact which would doubtless appear remarkable to all who were accustomed to the ordinary methods of quantitative analysis. The committee were not unmindful that although it was possible to attain this high degree of accuracy it was nevertheless well known that a comparison of the assay reports of different analyses as to the composition of the same, might often disclose discrepancies of five ten-thousandth parts. Portions of metal from nineteen gold ingots were assayed by the assistant assayer, and were then sent to five other assayers, each of whom furnished an independent report. The discrepancies in their reports varied from four ten-thousandth parts to one part of fine gold in 1,000 of the alloy, or an average deviation of six ten-thousandth parts.

These small variations assumed serious proportions when they affected the value of large quantities of bullion. For instance, the value of gold coined at the mint during the past year was £15,200,000, and a persistent error in the assay reports of one ten-thousandth part would have been attended with a gain or loss to the department of no less than £1,500.

The report also described the investigations which the committee had entered upon, and the method of gold assaying practised in the mint. The committee held that when widely divergent results were obtained, the gold employed by one or other of the assayers was impure, and that either the amount of impurity had not been ascertained with accuracy, or that it altogether escaped detection. It followed, therefore, that the weight of the "cornets," when compared with the initial weight of the portion of metal operated upon, appeared to indicate the presence of an amount of gold which was in excess of the true amount of precious metal present in the alloy.

The committee obtained specimens of gold from different sources, and tested them side by side with gold prepared in accordance with the directions of the Lords Commissioners of her Majesty's Treasury, by the chemist of the mint, for use as a standard trial-plate in testing the coinage. Great care was taken in the preparation of this gold, eighty ounces of which were precipitated from no less than one hundred gallons of chloride of gold; and as experiments had already shown that it was very pure, it was proposed to adopt it as the basis for a new series of comparisons; and, further, to invite assayers to submit samples of gold to be tested side by side by them.

SECCHI ON SOLAR PROTUBERANCES.—At a meeting of the French Academy, on the 3rd ult., P. Secchi presented another of his valuable notes on the solar protuberances. It tabulates observations made during the six last rotations of the sun, from the 23d of April, to the 2d of October. These show a continual decrease in the eruptions throughout the period, and whereas in the early series of 1871, the number of eruptions was, on an average, fourteen or fifteen daily, with maxima of 20 to 23, and minima which rarely fell to ten, the recent rotations give an average of only eight to nine, with maxima of twelve, and minima of four or five. P. Secchi finds something like a diurnal distribution of protuberances; opposite parts corresponding. The metallic eruptions have been few and very intermittent, one on the 18th of September was very memorable, and gave rise to a group of spots. As regards direction of protuberances the law has not been so well marked, but it has always held good, that in high latitudes, the dominant direction is towards the poles, and in low, towards the equator; the change of direction being at about 40°. In periods of calm, there is a somewhat different system of direction from that in periods of activity. Dr. Rudolph Wolf has lately published an important series of sun-spot observations in various parts of Europe during 1872.

PROF. REYNOLDS, London, states that the rate of condensation of steam is in inverse proportion to the quantity of air it contains; that the only limit to the condensation of pure steam is the power of the surface to carry off the heat; that mixing air with steam before use greatly diminishes the condensation at the surface of a cylinder, thus increasing the inefficiency of the engine; and that the maximum effect will be obtained when the pressure of the air is one-tenth that of the steam. But the Professor does not state whether the ratio has been exactly ascertained.

MECHANICAL PROGRESS.

An Improved Process of Casting Metals.

Recent experiments in England with the process of casting metals under continuous and considerable pressure, an American invention, have been so successful in producing perfect and clean castings as to win for this method hearty commendation from the British press. The processes may be briefly described as follows: The article to be reproduced is a finely cut medallion, with, say, a plain reverse. It is in the first place laid face upward upon a thick, smooth metal plate, fitted with certain stops to keep the medallion in position. The latter is then coated over with a creamy mixture of kaoline, or china clay, and the fine sand flour mixed with oil, the whole resembling in consistency very thick paint. This is laid on with a soft brush. The plate and medallion are then placed in the bottom of a flask of great strength made of iron or gun metal. The very finest description of moulding sand is sprinkled over the medallion, first by hand, and then the flask is filled up about water measure with the same. This being done, and the sand being well tamped around the sides with a wooden dolly, the flask is pushed beneath a frame, in appearance not unlike a huge letter-copying press.

The screw of this press is turned by two men moving a long iron cross handle, and a plate precisely fitting the interior of the flask is forced down on the sand, after the manner of making of the semi-plastic process. The flask is then withdrawn, and the sides opened, then the plate and the sand removed, and reversed upon a surface table, and the plate lifted off. The medallion is gently heated by a gas blow pipe; this expands it slightly, still further forcing its impression into the sand; then, on cooling down, it contracts, becomes loose, and is easily lifted out. The fine clay slip makes a beautiful smooth glossy surface lining to the mold. The mold is further hardened by baking, and at the time it is ready to receive the metal, it forms a most faithful impression of the object to be reproduced. Any description of mold can, of course, either single or in halves, and with or without core, as required. More than a single casting also may be comprised within one mold block, a separate "gate" being provided for each. The mold has one large orifice going quite through it from side to side, the side gate to the matrix opening from it.

A number of these molds being complete, they are ranged in order within a proper casting case and compressed by a screw; the holes of all the molds correspond and form a pipe or tube terminating at the point where the metal is to enter. The orifice in the casting case is fitted with a circular clay collared nozzle, which nozzle is fitted with a clay plug which fits it tightly. A horizontal iron cylinder communicates with this nozzle, and within the cylinder works a piston and rod, the rod passing out of the end of the cylinder most remote from the molds. In the upper side of the end of the cylinder farthest from the molds is a hole, surmounted by a hopper. As the molten metal would at once chill solid as a ring, where it encountered the cold metal of the cylinder, the latter is coated inside with a "fetting" of some refractory substance, which is applied with a brush while in a semi-fluid state.

The *modus operandi* of casting is thus described: The piston being drawn back, the molten metal is poured into the cylinder; the piston is then guyed forward, by means of power applied behind, to the piston rod. As the piston—which is simply a solid disc fitting the cylinder itself precisely—advances, it scrapes off the lining of the latter, and this latter curling inward effectually packs the piston and prevents the escape of the metal by leakage. For a time the clay plug in the nozzle resists the pressure of the iron urged on by the piston; it, however, is at last forced in, and the metal impelled on by the piston, is forced into the minutest cranny of the mold. A great and advantageous feature of the process is the total exclusion of the air during the passage of the iron into the molds. This, from the accuracy in making the moulds by the aid of machinery, and the subsequent forcing of the metal into them while the metal is fluid, gives as a result castings perfectly homogeneous and free from air blows; and the design of the matrix is reproduced on the metal so perfectly that no subsequent tool chasing is requisite, because the original itself, perhaps a perfect example of the chaser's art, is reproduced in perfect *fac-simile*. One great merit in the application of Mr. Smith's process of casting is that it involves no operations of a complex or difficult character. The work is of a nature so simple, and as a rule so light, that women, boys and girls can perform it quite as well as men, and at the same time it supplies a means of reproducing in infinite numbers all the gems of carving, modelling and chasing that are in existence, thus largely contributing to the promotion of a more beautiful taste throughout the world by bringing objects of real beauty within the reach of the most humble household. There is practically no limit as to the nature of the metal, for any metal, from cast-iron to gold, may be employed. —*Am. Manufacturer.*

INGENIOUS NEW BALANCE.—Prof. C. Pickering, of Boston, with whose name our readers are familiar, has patented an invention thus described: The object of this invention is to

produce, for the purposes of scientific investigation and the use of the public in general, an improved balance, which consists in arranging a spirit level and adjustable weights with one end of a scale beam carrying a weighing pan at its opposite end. All the weights, large and small, are put on the scale pan, which will then balance the weight of the beam, so that the bubble of the level will come to the center of the tube. If not, a loose nut is adjusted till the exact balance of the weight is obtained. The body to be weighed is then placed on the pan and the weights removed gradually until the bubble is again in the center. The weights removed are equal to the weight of the body. The weights may also be taken off and added in the usual way till the beam is again horizontal. Those remaining give the weight of the body. —*Gastlight Journal.*

A Copper-Clad Ship for Carrying Combustible Freight.

The importation of corrosive sublimate, vitriol and similar dangerous compounds, has heretofore been carried on to a small extent, says the Jersey City Journal, owing to the damages ensuing to the ships used in their transportation, as the leakage and draining from the different named substances, when mixed in the bilge water of the vessels, has in most instances eaten the bottoms out of the vessels.

A company in England running to the East Indies first thought of using copper in the construction of their vessels as a preventive against the bugs that infest that locality, the said bugs being considered death to all wooden vessels, and instances have been shown of the successful depredations of these insects even on iron-clad ships. To obviate these drawbacks to commerce, a ship was built completely encased in copper.

The frame-work is of iron, which, however, is not exposed in the least. The outside is covered with sheets of thick copper, riveted in the same manner as the iron vessels. The whole interior of the ship is also made of copper, the inside copper being galvanized, the beams, and, in fact, every exposed part being completely protected by copper, the masts are of wood, but sheathed in copper from top to stem. The name of this copper monster is the *Adirondack*; she is a screw-steamer, and is capable of carrying 7,000 tons, Custom House measurement, and is about 515 feet in length, being some seventy-five feet longer than any of the Oceanic Company's ships.

The White Star Line have purchased this steamship for the purpose of carrying such freight as mentioned. Her upper deck has been fitted up with a large tank for carrying oil of vitriol in bulk, lunar caustic, potash, sal soda, and in fact all similar kinds of freight will be imported in larger quantities now, should the trial trip succeed, which there is every prospect of its doing. The *Adirondack* is now being got ready for her trip, and will arrive in this port in the course of a fortnight. She is coated on her outside with a preparation of fat and copal varnish, to protect her from the effects of sea water, and it is said that the reflection of the ship upon the ocean on a bright sunny day is like the reflection of the sun at sunset on a large building containing many windows, only on a larger scale. It is claimed that she can be seen at sea on such days a distance of about seventeen miles.

LEATHER BOARD.—Fish glues, or gelatines, are used to a very limited extent in the manufacture of those universally-used accessories to the production of cheap boots and shoes, commonly known as paste soles and heels. Of course in this, as in the boot and shoe business, the busiest season has gone by, but many hands are still employed in the conversion of the various refuse discarded by the tanners and curriers, and known as "paste roundings, shoulder splits, and skivings," into heels and soles of all kinds of boots and shoes. These materials are cleaned, damped, cut by dies, pasted into moulds, compressed in a powerful press, and dried, and the refuse of this business in its turn is turned over to the manufacturer of what is known as "leather board." This smooth, hard, leather-lined material is largely used in the heels, inner soles, and for the inner stiffening of heels and box toes, and some twenty mills are engaged in its manufacture, turning out from one to five tons daily. About one-third of leather, with varying proportions of canvas, old rope, straw, and other "hard stock," is used in its composition. It is manufactured like straw board, which is itself extensively used, especially in cheap slippers and children's shoes, offered in any quantity to a discriminating public at ruinous prices. As many as eighty hands are kept busy in a single establishment in the manufacture of "paste heels," and the stamping of heels and soles from leather and straw board. —*Boston Commercial Bulletin.*

NICKEL PLATED SAFETY-VALVES.—Undoubtedly one of the causes of boiler explosions, is failure of the safety-valve to perform its function. This failure is sometimes caused by the rust which so rapidly accumulates under the influence of air and moisture. Not only do such valves sometimes rust fast to their seats, and thus refuse to open except under pressure far above that the weight alone would allow, but after having been opened are prevented by the rust from closing until the pressure has fallen considerably below that for which the weight is set. The idea of plating such valves with nickel, and thus preserving their surfaces always smooth and clean, is a happy one. —*Artisan.*

Weekly Variations in Stocks.

[Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.]

For 6 days ending Wednesday, Jan. 28, 1874.

NAME OF COMPANY.	IN MINES.	SHARES IN MINES.	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.						
Alamo	300	6000	6 1/2	4 1/2	1/2	
Alpha Con.	3600	7200	6 1/2	4 1/2	1/2	
Arizona & Utah	1500	18000	7 1/2	4 1/2	1/2	
Bacon M. & M.	65	2400	2 1/2	1 1/2	1/2	
Baldwin Con.	100	2400	2 1/2	1 1/2	1/2	
Belcher	100	2400	2 1/2	1 1/2	1/2	
Belcher & Belcher	1234	2400	3 1/2	2 1/2	1/2	
Bowers	20	500	2 1/2	1 1/2	1/2	
Buckeye	1500	18000	7 1/2	4 1/2	1/2	
Bull	200	2400	2 1/2	1 1/2	1/2	
California	5000	2400	3 1/2	2 1/2	1/2	
Chollar-Potosi	130	2400	1 1/2	1 1/2	1/2	
Confidence	3434	2400	1 1/2	1 1/2	1/2	
Con. Gold Hill Quartz	1160	10800	10 1/2	7 1/2	3 1/2	
Cook & Foster	1500	2400	1 1/2	1 1/2	1/2	
Crown Point	600	10000	11 1/2	10 1/2	1 1/2	
Danby	2000	2400	4 1/2	3 1/2	1 1/2	
Dardanelles	1200	2400	5 1/2	4 1/2	1 1/2	
Empire	70	2400	2 1/2	1 1/2	1/2	
Empire M. & M.	75	8000	3 1/2	2 1/2	1 1/2	
Eschschner	40	5000	3 1/2	2 1/2	1 1/2	
Fairmount	3000	12000	2 1/2	1 1/2	1/2	
Flower	100	2400	2 1/2	1 1/2	1/2	
Franklin	100	2400	2 1/2	1 1/2	1/2	
Globe	100	2400	2 1/2	1 1/2	1/2	
Gould & Curry	1200	2400	2 1/2	1 1/2	1/2	
Hate & Norcross	400	1600	1 1/2	1 1/2	1/2	
Imperial	184	10000	8 1/2	6 1/2	2 1/2	
Indus	1000	3000	4 1/2	3 1/2	1 1/2	
Insurance	2000	3000	10 1/2	8 1/2	2 1/2	
Jacob Little	2000	3000	10 1/2	8 1/2	2 1/2	
Julia	2000	3000	10 1/2	8 1/2	2 1/2	
Justice	3000	2100	3 1/2	2 1/2	1 1/2	
Kamuck	3000	2100	3 1/2	2 1/2	1 1/2	
Kickerbocker	1200	2400	2 1/2	1 1/2	1/2	
Kosent	100	2400	2 1/2	1 1/2	1/2	
Lady Bryan	3000	2600	2 1/2	1 1/2	1/2	
McMeans	1600	5000	2 1/2	1 1/2	1/2	
Mint	3000	4000	2 1/2	1 1/2	1/2	
Nevada	3000	4000	2 1/2	1 1/2	1/2	
New York Con.	3000	4000	2 1/2	1 1/2	1/2	
Occidental	3000	4000	2 1/2	1 1/2	1/2	
Ophir	1400	1800	3 1/2	2 1/2	1 1/2	
Overman	1200	3740	11 1/2	9 1/2	2 1/2	
Phil. Sheridan	2000	3000	10 1/2	8 1/2	2 1/2	
Pine	2000	3000	10 1/2	8 1/2	2 1/2	
Rock Island	2000	3000	10 1/2	8 1/2	2 1/2	
Sage	800	1600	12 1/2	10 1/2	2 1/2	
Sag. Caledonia	100	1400	12 1/2	10 1/2	2 1/2	
Seg. Rock Island	100	1400	12 1/2	10 1/2	2 1/2	
Senator	2400	3000	2 1/2	1 1/2	1/2	
Santa Nevada	2400	3000	2 1/2	1 1/2	1/2	
Silver Hill	2400	3000	2 1/2	1 1/2	1/2	
South Comstock	2400	3000	2 1/2	1 1/2	1/2	
South Overman	2400	3000	2 1/2	1 1/2	1/2	
Tacoma M. & M.	2400	3000	2 1/2	1 1/2	1/2	
Tutro	2400	3000	2 1/2	1 1/2	1/2	
Trench	20	50	1 1/2	1 1/2	1/2	
Tyler	2200	3000	2 1/2	1 1/2	1/2	
Union Con.	1000	2000	2 1/2	1 1/2	1/2	
Utah	1400	2000	2 1/2	1 1/2	1/2	
Woodville	1400	2000	2 1/2	1 1/2	1/2	
Yellow Jacket	1200	2400	2 1/2	1 1/2	1/2	
NEVADA.						
Adams Hill	5000	5000	7 1/2	5 1/2	2 1/2	
Alpe	800	3000	7 1/2	5 1/2	2 1/2	
Amador Tunnel	1000	3000	7 1/2	5 1/2	2 1/2	
American Flag M. & M.	1000	3000	7 1/2	5 1/2	2 1/2	
Arkansas	300	3000	7 1/2	5 1/2	2 1/2	
Belmont	3000	3000	7 1/2	5 1/2	2 1/2	
Chapman M. & M.	3000	3000	7 1/2	5 1/2	2 1/2	
Charter Oak	1000	3000	7 1/2	5 1/2	2 1/2	
Chief of the Hill	1000	3000	7 1/2	5 1/2	2 1/2	
Chief East Extension	1000	3000	7 1/2	5 1/2	2 1/2	
Columbus M. & M.	1000	3000	7 1/2	5 1/2	2 1/2	
Condon	1000	3000	7 1/2	5 1/2	2 1/2	
El Dorado South	1000	3000	7 1/2	5 1/2	2 1/2	
Enterprise	1000	3000	7 1/2	5 1/2	2 1/2	
Excelsior	1000	3000	7 1/2	5 1/2	2 1/2	
Harper	1000	3000	7 1/2	5 1/2	2 1/2	
Hayes	1000	3000	7 1/2	5 1/2	2 1/2	
Hobson	1000	3000	7 1/2	5 1/2	2 1/2	
Home Ticket	1000	3000	7 1/2	5 1/2	2 1/2	
Hunn & Hunt	3000	3000	7 1/2	5 1/2	2 1/2	
Isopmar	1000	3000	7 1/2	5 1/2	2 1/2	
Ivanhoe	1000	3000	7 1/2	5 1/2	2 1/2	
Jackson	1000	3000	7 1/2	5 1/2	2 1/2	
Josephine	1000	3000	7 1/2	5 1/2	2 1/2	
Junita Con.	1000	3000	7 1/2	5 1/2	2 1/2	
K. K. Con.	1000	3000	7 1/2	5 1/2	2 1/2	
Kentucky	1000	3000	7 1/2	5 1/2	2 1/2	
Kinston	1000	3000	7 1/2	5 1/2	2 1/2	
Leitch	1000	3000	7 1/2	5 1/2	2 1/2	
Lillian Hill	1000	3000	7 1/2	5 1/2	2 1/2	
Louise	2400	3000	7 1/2	5 1/2	2 1/2	
Madison	1000	3000	7 1/2	5 1/2	2 1/2	
Marion	1000	3000	7 1/2	5 1/2	2 1/2	
Meadow Valley	2400	3000	7 1/2	5 1/2	2 1/2	
Mockingbird	1200	3000	7 1/2	5 1/2	2 1/2	
Monter-Belmont	1000	3000	7 1/2	5 1/2	2 1/2	
Murphy	2000	3000	7 1/2	5 1/2	2 1/2	
Newark	500	3000	7 1/2	5 1/2	2 1/2	
Pacific Tunnel	1000	3000	7 1/2	5 1/2	2 1/2	
Panama & Pausa	1000	3000	7 1/2	5 1/2	2 1/2	
Peavine	1000	3000	7 1/2	5 1/2	2 1/2	
Phoenix	1000	3000	7 1/2	5 1/2	2 1/2	
Pioche	1000	3000	7 1/2	5 1/2	2 1/2	
Pioche West	1000	3000	7 1/2	5 1/2	2 1/2	
Pioche-Phoenix	1000	3000	7 1/2	5 1/2	2 1/2	
Portland	1000	3000	7 1/2	5 1/2	2 1/2	
Raymond & Ely	5000	3000	8 1/2	7 1/2	1 1/2	
Rye Patch	1000	3000	7 1/2	5 1/2	2 1/2	
Silver Peak	1000	3000	7 1/2	5 1/2	2 1/2	
Silver West Con.	1000	3000	7 1/2	5 1/2	2 1/2	
Star Con.	1800	2500	7 1/2	5 1/2	2 1/2	
Starlight	6000	2500	7 1/2	5 1/2	2 1/2	
Spring Mountain	3000	2500	7 1/2	5 1/2	2 1/2	
Spring Mt. Tunnel	2000	2500	7 1/2	5 1/2	2 1/2	
Ward Beecher	200	3000	7 1/2	5 1/2	2 1/2	
Watson	200	3000	7 1/2	5 1/2	2 1/2	
Yellowstone	200	3000	7 1/2	5 1/2	2 1/2	
CALIFORNIA.						
Alpine	1200	1200	12 1/2	10 1/2	2 1/2	
Bellevue	2000	2000	12 1/2	10 1/2	2 1/2	
Calaveras	3200	2000	12 1/2	10 1/2	2 1/2	
Cedberg	2400	2000	12 1/2	10 1/2	2 1/2	
Con. Amador	2000	2000	12 1/2	10 1/2	2 1/2	
Ontonwood Creek & M.	2000	2000	12 1/2	10 1/2	2 1/2	
El Dorado	1600	2000	12 1/2	10 1/2	2 1/2	
Eureka	1600	2000	12 1/2	10 1/2	2 1/2	
Gillie	1600	2000	12 1/2	10 1/2	2 1/2	
Keynote	1600	2000	12 1/2	10 1/2	2 1/2	
Mt. Jefferson	1500	2000	12 1/2	10 1/2	2 1/2	
Okaville	1500	2000	12 1/2	10 1/2	2 1/2	
St. Lawrence & M.	1800	2000	12 1/2	10 1/2	2 1/2	
St. Patrick	1800	2000	12 1/2	10 1/2	2 1/2	
Tecumseh	3000	2000	12 1/2	10 1/2	2 1/2	
Yuba	400	1000	12 1/2	10 1/2	2 1/2	
IDAHO.						
Empire	2500	2000	7 1/2	7 1/2	1 1/2	
Golden Chariot	750	3000	20 1/2	19 1/2	1 1/2	
Ida Moore	1300	1000	2 1/2	1 1/2	1 1/2	
Idaho	720	1000	2 1/2	1 1/2	1 1/2	
Red Jacket	600	2000	14 1/2	12 1/2	2 1/2	
South Chariot	600	2000	14 1/2	12 1/2	2 1/2	
W. Eagle	1000	1000	3 1/2	2 1/2	1 1/2	
WHITE PINE.						
General Lee	1000	2000	20 1/2	19 1/2	1 1/2	
Mammoth	1800	3600	20 1/2	19 1/2	1 1/2	
Norway	1000	2000	20 1/2	19 1/2	1 1/2	
Oriz. Hidden Treas.	800	2153	20 1/2	19 1/2	1 1/2	
Silver Wave	2000	2000	20 1/2	19 1/2	1 1/2	
Ward Beecher	2000	2000	20 1/2	19 1/2	1 1/2	
UTAH.						
Deseret Con.	2400	3000	20 1/2	19 1/2	1 1/2	
Wellington	5000	5000	20 1/2	19 1/2	1 1/2	
OREGON.						
Virtue	2800	2000	20 1/2	19 1/2	1 1/2	

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq't.	Sale.	Secretary.	Place of Business.
Adams G. & S. M. Co.	Nev	50	Dec 29	Feb 5	Feb 26	J. W. R. King.	434 California s	
Buckeye & S. M. Co.	Nev	9	100	Dec 18	Feb 20	D. A. Jennings.	419 California s	
Caroline H. Co.	Ely District	4	100	Jan 17	Mar 20	R. H. Brown	402 Montgomery s	
Columbus M. & M. Co.	Esmeralda Nev	50	Nov 26	Dec 31	Jan 26	B. B. Miner.	411 1/2 California e	
Crown Pnt Ravine G. & S. M. Co.	Washoe	1	50	Dec 23	Jan 30	J. M. Buffington	Merchants' E	
Danby & S. M. Co.	Washoe	8	75	Jan 6	Mar 3	C. J. Shuman	320 California s	
Empire M. & M. Co.	Cold Hill	14	100	Dec 18	Feb 15	G. R. Spiny	320 California s	
Francis M. Co.	Cal	3	50	Dec 15	Jan 19	T. F. Cronise	438 California s	
Globe M. Co.	Gold Hill	5	20	Jan 24	Feb 19	K. E. Pierce	419 California s	
Gould & Curry S. M. Co	Washoe	21	100	Jan 23	Feb 23	M. A. A. Diurow	Merchants' E	
Hale & Norcross S. M. Co.	Washoe	42	500	Jan 20	Feb 24	J. F. Lightner.	438 California s	
O. Hidden Treasure M. Co	White Pine	10	100	Dec 13	Jan 17	D. A. Jennings.	401 California e	
Imperial S. M. Co.	Ely District	18	100	Dec 26	Jan 23	W. C. DeFord	401 California s	
Bunn & Hunt S. M. Co	Ely District	8	50	Dec 22	Jan 29	T. L. Kimball	409 California s	
Justice M. Co.	Nev	8	200	Dec 17	Jan 19	R. Wegener	414 California s	
Kentucky G. S. & M. Co.	Ely District	7	25	Jan 3	Feb 14	R. G. Smith	515 California s	
Leo M. Co.	Gold Hill	23	25	Dec 23	Feb 20	C. J. Eaton	Express Building	
Mahogany G. & S. M. Co.	Idaho	2	100	Dec 18	Jan 24	T. J. Owens	Express Building	
Newark S. M. Co.	Ely District	5	150	Dec 1	Jan 3	D. W. Bagley.	401 California e	
Overman S. M. Co.	Gold Hill	23	25	Dec 23	Mar 13	W. W. Stiles	414 California s	
Pacific & Pnt S. M. Co.	Ely District	6	100	Jan 19	Feb 15	L. Kaplan	Merchants' E	
Pioche S. M. Co.	Ely District	6	100	Jan 19	Mar 5	C. E. Elliott.	415 California s	
Portland S. M. Co.	Ely District	3	25	Jan 10		B. J. Gray	428 California e	
Portland S. M. Co	Gold Hill	7	150	Dec 31	Feb 4	W. H. Watson.	302 Montgomery s	
Portne M. Co.	Oregon	4	100	Jan 28	Apr 6	R. H. Brown	402 Montgomery s	
Portne M. Co	Idaho	4	100	Jan 28	Mar 5	L. Kaplan	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
Portne M. Co	Idaho	3	50	Dec 11	Feb 12	R. Wegener	Merchants' E	
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Portne M. Co	Idaho	3	50</					

In the Lincoln mine the winze is now completed from the 200 to the 300-foot level, and a much better ventilation of the lower level of the mine is obtained. This winze was driven through a solid body of good paying rock, and no break was found in the vein throughout the whole distance.

OUR MINES.—*Ledger*, January 24th: We have but very little intelligence from the mines throughout the county for the past ten days and therefore have no new facts to communicate. Notwithstanding the heavy storms of the past ten days, our quartz mines and mills therewith connected, have kept steadily going without interruption. The Kennedy mine holds its former fine appearance, the ledge running south still being of unknown width and of equal quality as at last reports. In the Onida, the prospect we are informed is very flattering, while the mines at Sutter Creek, Amador and Plymouth, are rendering to their owners their usual monthly yield. We have heard no discouraging reports from any of the quartz mines in the county. On some of those only partially developed, work has been temporarily suspended, but on all such, will be resumed in the spring. On the Valparaiso at Fiddletown, the last work done showed a good ledge of excellent rock, and the prospect of this mine being developed into a rich paying one is very flattering. Work will be resumed upon it in the spring and pushed on with vigor until proven. On the Casco, work is now progressing, but with what success we have not been informed. This mine however, is located on the great mother lode, and in the end, will prove a success.

Placer mining to a limited extent, is going on in different parts of the county, but to a greater extent at Fiddletown and Volcano than at any other localities, and we are pleased to learn, our placer mines are doing well generally. The tunnel at Volcano is progressing finely, and work thereon is steadily going on; a further contract of 100 feet was let a few days ago; the rock is represented as being very soft and that rapid progress in driving the tunnel can be made. The weather for the past ten days has been very unfavorable for mining generally, but the heavy rains and snows higher up in the mountains, will furnish abundance of water to supply our ditches and canals. The prospect is very favorable for extensive placer mining in the spring, particularly along the line of the Amador Canal, which we are informed will reach completion by the first of April next.

BUTTE COUNTY.

KILLED BY A CAVE.—*Record*, Jan. 24: On Monday evening a man was killed in the Spring Valley Company's claim at Cherokee, by a cave. He was a young man 24 years of age, named John Pinkston, formerly of Yankee hill.

FLOOD DOWN.—The storms of last week damaged the main ditch of the Feather River and Ophir Water Company, by raising such a flood in Woodman's ravine, above Bidwell bar, as to wash out the flume spanning the ravine. The damage was not very extensive, and was repaired in 8 or 10 days.

CALAVERAS COUNTY.

SAN BAUNO.—*Chronicle*, Jan. 24: We have seen some specimens of quartz taken from the San Bruno mine at Mosquito, that show rich in free gold. We were shown rock taken from both the upper and lower tunnels, all of which would prospect largely. In the lower tunnel the ledge is fully two feet wide. A distance of about twenty-six feet has been run on the vein since the pay chute was struck. In the upper works a shaft has been sunk to the depth of twenty-four feet below the level of the tunnel. Rock previously taken from that point in the mine—work having to be stopped on account of water—paid \$70 per ton. Running the lower tunnel has drained the upper work sufficiently to permit the resumption of operations.

WOLVERINE.—The work of running levels, north and south, in the Wolverine mine near Railroad flat, is progressing rapidly. The south level is already in a distance of sixty-five feet from the shaft, and probably ere this the middle chimney has been tapped by it. The north level has been run but a short distance, work having been only recently commenced in that direction. The levels are at the depth of 400 feet.

VEITH & CO.—Work in the hydraulic claim of Veith & Co. is steadily prosecuted with favorable results. The late storm was not permitted to interrupt operations in the least, washing being continued as though "nothing had happened."

GOON ROCK.—Splendid rock still continues to be taken from the Good Hope and Monte Christo mines at Mosquito. We learn that, rich as the latest crushings from these mines have been, the quality of rock now being taken out promises even larger yields than ever.

SHUT DOWN.—Garland's mill at Mosquito has been compelled to shut down, the snow being so deep that rock cannot be handled from the mines. The suspension of operations will only be temporary, however.

COLUSA COUNTY.

OUR QUICKSILVER MINES.—*Sun*, January 24: At the Excelsior mine a retort had just been put up and five tanks of quicksilver taken out, when the snow and rain storm came and caved the tunnel in so that they cannot work to advantage. They know they have a good thing to start in on in the spring. The Abbott mine is turning out quite a lot of quicksilver—so is the Buckeye. Mr. Chapin prophesies that within the year half the trade of Colusa will be coming from these mines.

EL DORADO COUNTY.

DEMOCRAT, Jan. 24: Last week 56 tons of rock from the "Rose"—Brewster & Sheperd's new mine, in this city,—was milled, and 320 ounces of amalgam was cleared up. At \$7.50 per ounce, which is a low estimate, this will yield \$2,400, which is pretty good considering that it was done within 40 days from the time the first pick was struck upon the ledge. Mr. Shepherd thinks that four to five hundred dollars can yet be cleared up from the tailings, and that when the entire clean up is refined it will not fall below \$3,000. The expense of this production, including the grading of a good road to the mill, about a quarter of a mile, did not exceed \$600. This ledge has been crossed daily for the past 15 or 20 years; prospecting has been done all around it, and it is only a few rods from the "Pacific" ledge, out of which millions have been taken, but its richness has been reserved for the present lucky owners. It is not improbable that there are hundreds of ledges equally as rich in the county, that will eventually be stumbled upon, and the discovery of this ledge will undoubtedly hasten the unearthing of some of them.

The work of sinking the "Ida Mitchell" ledge is progressing slowly, the rock being flint-like in hardness, but fully maintains its previous richness.

KERN COUNTY.

PROSPECTING.—*Miner*, Jan. 24: Since the last rain prospecting throughout the county has been carried on pretty generally. We anticipate hearing of some big discoveries before long, if pleasant weather continues.

MARIPOSA COUNTY.

WASHINGTON MINE.—*Gazette*, January 23d: A rumor comes from Hornitos that rich rock is being taken out of the shaft in the Washington mine that the company have been engaged in sinking for some time. That they are taking out paying quartz is said to be beyond a doubt. It is gratifying to the owners to have a prospect of being remunerated for their outlay, while Hornitos will share in the benefits of the discovery.

HITE'S MINE.—The mine at Hite's Cove, owned by John R. Hite & Co., is paying steadily this winter, and shows no sign of letting up.

NEVADA COUNTY.

WYOMING MINE.—*Transcript*, Jan. 23: The Wyoming mine has been known to the people of Nevada City and county for many, many years, it having been located in the year 1851. Since active operations were commenced in the mine, it at various times yielded an immense amount of ore to its owners. An incline has been sunk a distance of 60 feet on a fine ledge of gold-bearing quartz, which averages two feet in width. Last October the value of the mine was vastly increased by the purchase of an adjoining mine, known as the Ural or Richard's mine, which runs parallel with the Wyoming, and has been heretofore worked through a tunnel running on the ledge 1,300 feet in length. From the face of this tunnel a cross-cut is being run to cut or to intersect the Wyoming ledge. This accomplished, the Wyoming will furnish an ore supply to an unlimited extent. At the mouth of this tunnel is a mill, purchased from the Ural Company, which has recently been put in first-rate condition by the Wyoming Company, and which is now crushing ore obtained from an intermediate mine, and which is yielding good pay. Free water supplies the power for running the mill, and can be had in abundance the whole year round. We learn that it is the intention of the company to run their tunnels to intersect an incline to be sunk next spring. When this intersection occurs, the mine will then be opened over 1,000 feet in length and to a depth of between 400 and 500 feet. The Wyoming certainly possesses facilities for taking out and crushing a large quantity of ore at a cheaper rate than can be worked by any other mine in this State, and with its past record for richness while worked in a crude way, and the present facilities for work, we think it can safely be said that it will in the future prove to be one of the best mines in this county.

IDAHO.—*Tidings*, Jan. 23: To-day the regular monthly clean-up at this mine takes place; too late for report in this issue. It will be given in full next week. The main shaft is now nearly to the 800-ft. level. When that is reached, the section between the 700 and 800-ft. levels will be enlarged and timbered; after which, drifts will be started from the bottom. The ledge at all working points is looking well.

MCCOOK BROTHERS, the owners of a promising mine near Deadman's Flat, are erecting new buildings on their claim. Work is suspended for the time, but will be resumed on the completion of the buildings. The rock from this mine is said to have never yielded less than \$80 per ton.

EUREKA.—At this mine the work is progressing as usual. They are still sinking on the main shaft and are now at a depth of 1,100 ft. Also prospecting on the 5th level at the west.

PLACER COUNTY.

OUR MINES.—*Herald*, January 24th: We heard it expressed by a competent quartz miner a few days ago, that in his opinion this is the best quartz district in the State. He thought all that we need is a few enterprising men who have capital and are not afraid to invest it. He went on to reason thus: "Let a man go to work with one or two thousand dollars, and nine times in ten his money is all gone before he gets any considerable returns, and he finally gives up in discouragement; while on the other hand let the right man take hold of most any of these mines, (for he thought they

were most all good) with capital to back him and determination to go to the bottom whether he makes or breaks, and nine times in ten he would come out successful." This theory seems very plausible, from the fact that, in every instance yet where the work has been prosecuted with determination, success has crowned the efforts of the faithful. The St. Patrick company of all others have worked most systematically and spent most money, and undoubtedly have got their reward.

THE OULEANS MINE.—This mine, which is located about a mile and a half or two miles west of Auburn, has recently been bonded by T. H. Gordon of this place, who has commenced work on it. They have a ledge about three feet thick of excellent looking rock. There has never been much noise made about this mine, but we have seen specimens from it which, to use the miner's expression, were "lousy" with gold; and we have heard it whispered around that this mine has the finest prospective value of any in the district, the St. Patrick included. An expert from San Francisco recently estimated the rock now on the dump as high as \$700 per ton; a large portion of which he said would go off in the sulphurets; showing the urgent necessity of erecting chlorination works in this quartz district.

MINING.—We learn from parties from the upper part of the county, that they now have plenty of water, and that miners are busily at work. We have had an unusually hard winter thus far, and the indications are favorable for an abundance of water until late in the season. This is the element that insures prosperity to miners, and gives renewed life to Placer, in common with other mining counties.

PLUMAS COUNTY.

STARTED.—*National*, Jan. 17: The showers of the past few days have started the water through the ditches, and the hydraulic companies will soon be in full blast. The creeks are full to overflowing and a few days more rain would result in a small sized flood.

QUARTZ.—We hear that the Indian Valley Co. have struck a rich streak of quartz in their ledge and the mill is paying better than it has for several months past.

SIERRA COUNTY.

TOO LOW.—*Messenger*, Jan. 24: The tunnel run under Oak Flat, at Cooper's Ranch, is in to gravel, which prospects well, but unfortunately the tunnel is too high. When work was commenced almost everybody who knew anything about the country was sure they had started too low. The company is abundantly able and will thoroughly prospect the flat.

TRINITY COUNTY.

JUNCTION CITY.—*Journal*, Jan. 24: From Mr. Jas. M. Pickett we learn that miners in the vicinity of Junction City are all at work, and with better prospects than ever before. As at all other points in the county, the miners there better prepared for work than heretofore, and there is none of them but what are working paying ground. When "clean-up" time comes we expect a good report from Junction.

TUOLUMNE COUNTY.

FIND.—*Independent*, Jan. 24: A short time since, a squaw found two pieces of quartz gold, one worth at least \$96, the other over \$100. She refused to tell the exact locality, but said the place was at or near Shaw's Flat. She tried to "hear" the grasshopper market, but did not succeed, as the bucks were all interested in raising the stock.

The Sonora Inspector of Babcocks found, on his beat, a piece of gold valued at \$1,12½. This was on Tuesday last, on Lahatone street, back of the City Hotel. Every year gold is found at this point, and several pieces have been picked up there this winter previous to the above find.

Washing is being vigorously carried on in the old Craig claim, Sullivan's Dry Arroyo. The prospect there is reported to be good for a generous yield.

GONE TO WORK.—The miners that quit work at Blue Gravel Mining claim in Table Mountain last week, in consequence of the owners requiring ten hours for a day's work, went to work again on Monday, and are now working ten hours. Everything is progressing and active on the claim.

KINCAID FLAT MINING COMPANY.—*Democrat*, Jan. 24: This claim, is the only placer claim in the county that is worked continually, without interruption night and day, for every hour in the twenty-four, regardless of rain, snow or cold, that we have any knowledge of. Huge banks of earth are being brought to low levels, and not infrequently the eye is treated to the sight of a chispa.

CHISPA.—One day last week, a boy found a lump of gold-quartz in the Columbia and Gold Spring road, beyond the reservoir, valued at \$22. A wagon wheel had passed over it, which brought the glitter to the piece, and afterwards to the boy's eyes.

SALE.—M. C. Duchow and C. F. Tobey have sold their gravel claim, in the reservoir, adjoining Captain Eakin's, Columbia, to a company of Chinamen for \$300 cash.

The Sonora Foundry has completed two self-feeders for the Shawmut quartz mill. This is a new invention by Mr. James Tulloch, of Jamestown.

Mose Lewis has shipped from Oakdale 75 tons of iron ore from the mine near Jamestown, and has now on hand for shipment, over 120 tons more.

The first clean up was had at the Alpha T. M. Gravel mine, on Friday last, and the result was equal to a reasonable desire. The breast of gravel is widening and improving. A force of ten hands is at present employed, and more will be added as room is made for them to

work. The company will soon put up two mills.

Nevada.

WASHOE DISTRICT.

CONSOLIDATED VIRGINIA.—Gold Hill News, Jan. 24: Sinking the main shaft for the 1,400-ft. level is making steady progress: The main drift on the 1,000-ft. level has made connection with the np-ralse from the 1,200-ft. level, giving a fine circulation of air. The main drift on this level is being continued directly ahead, to cross-cut, prospect and ascertain the width of the ore vein at that point. The north drift on the 1,300-ft. level is in 33 ft., and is intended to penetrate and prospect the ground of the California Consolidated, and eventually to make a connection with the main south drift from the Ophir on the same level. No ore has been extracted from the mine on account of the ore dumps being full and the weather so stormy that it was impossible to get the ore hauled to the mills.

OPHIA.—A south winze from the 1,300-ft. level has just been started to prospect the ore body and connect with the main south drift on the 1,465-ft. level. Another winze has also been started to prospect the ore body extending downward from the 1,465-ft. level. In opening the station for this winze, a space of 15 ft. was cut in a solid body of rich ore.

HALE & NORCROSS.—Daily yield 40 tons of ore, mostly from the second, third and eleventh station levels. The east cross-cut at the 1,900-ft. station has penetrated to the east wall of the ledge. The west cross-cut from the same station has passed through a small vein of ore 12 inches thick that assays from \$8 to \$45 per ton. This ore vein lies within four or five ft. of the west wall, and although of not much importance as yet may possibly lead to a more permanent body.

SIERRA NEVADA.—The repairs to the engine are completed and the mill running to its full working capacity on ore from the mine.

ALPHA.—The main drift on the 1,500-ft. level from the Imperial shaft is making steady progress, following the line of the ledge, the face still in quartz that promises an ore development at almost any moment.

AMERICAN FLAT.—The main southwest drift, on the 500-ft. level, has been extended a distance of 200 ft. south of the Baltimore line, running nearly parallel with the ledge and some distance from it. For a distance of 175 ft., at convenient intervals of from 15 to 30 ft., crosscuts have been run to the ore body and then stopped, exposing small patches or spots of ore that show exceedingly well, samples of which will assay from \$50 to \$4,000 per ton. Just how thick, or of what extent this ore body is, has not yet been determined. The fact, however, has been fully demonstrated that the American Flat not only has ore, but some exceedingly rich; but just how much of it, must as yet be determined by further prospecting.

CROWN POINT.—The extraction of ore has been greatly interfered with during the past week, on account of the ore dumps being full and it being impossible to get the ore shipped to the mills. The railroad being unable to ship the usual amount of ore, all the teams that could be procured have been set to work hauling the ore to the mills. The Sapphire mill was started up on ore from this mine during the week.

GOULD & CURRY.—The east drift on the 1,600-foot level, after being run a distance of 585 feet through the ledge matter, has reached the east wall, and been discontinued for the present.

SITRO.—The work of sinking the winze is progressing slowly, owing to the fact that a large body of water has been encountered. The ore body appears to widen as the work of sinking the winze progresses.

SAYAOE.—The main east drift on the 1,600-foot level has been discontinued for the present. The main southwest from the 1,900-foot station is being rapidly driven ahead, the rock in the face being much softer. Sinking the south winze from the 1,700-foot level, near the south line, to connect with the main drift south on the 1,900-foot level, is making steady progress.

JULIA.—Driving the main southwest drift at the 1,000-foot level is making steady headway, the face in ore of a fine quality. The main southwest drift on the 900-foot level is still being driven vigorously ahead, parallel with the ledge with excellent indications of soon striking a continuation of the ore body found on the level below.

LEO.—Sinking at the bottom of the incline was resumed last Tuesday, since which time fair progress has been made.

BLOHEM.—Daily yield 550 tons of ore, which is extracted from the 1,000, 1,200 and 1,300-foot levels. The main incline is down 73 feet below the 1,400-foot level and is in hard ground. The drift running easterly on the 1,400-foot level is in 40 feet. The winze starting from the 1,300-foot level is down 70 feet. The mine is looking well in every part and is yielding an increased amount of ore.

YELLOW JACKET.—Sinking the main incline is being pushed ahead vigorously. The incline is down 80 feet below the 1,500-foot level. Considerable water has been encountered. Prospecting is still going on in the 1,400 and 1,500-foot levels. On Monday last a connection was made with the Crown Point mine on the 1,500-foot level.

SOUTH COMSTOCK.—The ledge is about 30 feet wide, dipping east about 40 degrees, and the shaft will be sunk perpendicularly through it to the foot wall, after which it will be fol-

"Foreign" Mines and English Owners.

The London Mining World has been writing a "Mining Retrospect" and after speaking of home affairs it thus pitches into American and other foreign mines:

The years 1872 and 1873 will always be remembered for the heavy losses incurred in the principal foreign gold and silver mines. There is a peculiar fascination about gold mining, which it appears nothing can weaken. Since the days when the Real del Monte flourished there have been excessive gold fevers, at first recurring at intervals of about ten years, but afterwards more frequently, until we have arrived at the present age of apparently chronic insanity. It would have been thought that the lamentable failures of Tanguaril and Eclipse, both brought out under the most favorable circumstances, and put to high premiums only to rapidly descend to the slough of liquidation, should have warned the public to use the utmost discretion—huh, no, the Utah Gold and Silver Mining Company, Limited, was introduced with a most influential board of directors. Specimens were sent over which the assays proved to be nearly all bullion; the £10 shares speedily went to £12 premium, and each shareholder congratulated himself upon having at last found the "little pea." But, alas! the fall was almost as rapid as the rise. Shares were bought to average, but yet the cry was "still they come," and quotations ruled at heavy discounts. To revive confidence several gentlemen were sent to personally inspect the property, who were unanimous in their glowing accounts of its inexhaustible riches. At last the inevitable general meeting was held, when the shareholders had the satisfaction of learning from the chairman and directors that the wonderfully rich ore had changed to ore of a low grade, in fact, not superior for bullion to some of our neglected home mines; that the company was heavily in debt, and that unless money was raised to discharge existing liabilities the mines would be seized by the creditors. Ill-natured persons—of course hears—stated that the furnaces were erected in the wrong place, and that ore of low grade could not be made to pay when the manager received such a high salary, and the cost of labor, carriage, and materials was so very heavy. Yet the shareholders have responded, and some who gave upwards of £20 per share would now be glad to realize for about as many shillings.

The Mineral Hill, brought out with a capital of £400,000, and the only foreign company advocated by the Times, was another rapid and disastrous failure. These warnings were, however, unheeded, and the 'cute Americans, taking advantage of the cupidity and credulity of our capitalists, succeeded in effecting some brilliant and most valuable coups. A mine was obtained having some rich ore, which was carefully worked for future dividends. It was sold to English promoters at an enormous price, who formed a company and placed it on the home market at a profit of 100 to 200 per cent. The hoards of direction were formed of gentlemen apparently above price, and yet many of the shareholders must have wondered that even with ordinary business capacity such glaring delinquencies could have been overlooked. A new system of monthly dividends was established, which, while it lasted, found great favor with the public; but, as a rule, they only continued long enough to enable the promoters to get rid of their shares. No sooner was a company started than the shares were put to a high premium, and it only requires a glance at present quotations to see the immense sums of money which have been hopelessly sunk in foreign mines to the great prejudice of our legitimate home adventures, which have in consequence been sadly neglected. The history of the celebrated Emma mine will be handed down to posterity in the category of popular delusions. The correspondence among parties interested has been most voluminous, and we can now arrive at a fair opinion upon the trickery and finessing practised both in America and this country. The principal features may be summed up very shortly: Purchased by the English promoters at a price many times beyond its value, a company was formed with a capital of £1,200,000, and the market value speedily worked up to nearly £2,000,000; dividends were paid amounting to £216,000, and the promoters realized immense profits, and the credulous public hold the shares which at present do not pay any interest. Leaving out Oboutales, Quebrada, Javali, Tanguaril, Eclipse, Great Western and Mineral Hill, which entailed a loss of upwards of £1,225,000, we subjoin a short list, which will give an idea of the losses which have recently been incurred:

MINE.	Capital.	Highest Selling Price.	Present Price.
Camp Floyd.....	£120,000	£204,000	nil.
Eberhardt.....	235,000	987,000	99,875
Emma.....	1,200,000	1,980,000	187,500
Flagstaff.....	300,000	610,000	120,000
Gold Run.....	30,000	33,750	6,000
Last Chance.....	100,000	160,000	40,000
New Pacific.....	105,000	105,000	3,750
Newfoundland.....	100,000	115,000	60,000
Rica.....	60,000	60,000	33,750
South Aurora.....	300,000	900,000	30,000
Tecoma.....	300,000	316,000	60,000
Utah.....	100,000	220,000	17,500
	£2,940,000	£5,579,750	£658,375
	£2,281,625	£4,921,375	

This list does not include Tolima, Crescent, East Sheboygan, I X L, Kansas, Malaga, Ruby Consolidated, San Pedro, Santa Barbara, Saturn, or Snowdrift, which have either collapsed or are only mentioned on the market in terms

of derision. Inventors have paid dearly for their experience; but the lesson will not be without benefit, if it only inculcates generally principles of prudence and foresight. With money easy, and an expected revival of trade and commerce in the new year, there are doubtless many specious schemes ready to be launched, which it will be well for the public to regard with suspicion. Let high premiums in newly constituted companies be shunned, as they almost invariably resolve themselves into heavy discounts.

History of the Schenectady Mine.

The Alpine Miner has been giving a series of exhaustive articles on the mining interests of Alpine county, Cal., from one of which we extract the following concerning the Schenectady mine in Monitor district. This mine, better as the Tarshish, was considered one of the great mines of the coast, but unfortunately it has not maintained that reputation by its merit in producing bullion. This is an Eastern organization, the majority of the shareholders being residents of Schenectady, N. Y., where the office of the company is located. The work of developing this property commenced in the fall of 1866, by contract to John P. Ray for the making of 600 feet of tunnel. The work was vigorously pushed, and the contract completed early in the spring of 1867. The last blasts in finishing up the contract broke through the porphyry which constitutes the east wall of the ledge, into a soft, white, putty-like substance, apparently worthless. Mr. Ray took a quantity of this kaolin matter on a shovel and "panned it out," in miners' parlance, whereupon he discovered a large percentage of black sulphurets, which, upon assay, proved immensely rich. This soft ore, in its natural state, assayed as high as \$500 the ton. A lode of this ore was immediately taken to Dall's mill, in Washoe valley, where it was worked by the Frieberg process, yielding \$400 per ton. This so encouraged the company that they immediately sold their "reserved stock," amounting to 20,000 shares, thereby raising a fund of \$40,000, with which to prosecute the work of opening the mine. A German by the name of Graff was put in charge of the works, which were pushed vigorously until the early part of the following winter, when his funds were exhausted, and not sufficient returns available from the mine to pay current expenses, and the mine closed down. There were two workings of the ore during Graff's administration, that demonstrated that it could be worked profitably provided there was enough of it. After remaining closed for a year or so, a new superintendent arrived on the ground, hailing from the home office, and being a no less person than one of the Board of Trustees of the company.

Mr. Schwerin, the new Superintendent, was sent out, not on account of his ability and skill either as a miner, mineralogist or metallurgist, but for his superior ability as a financier. This latter quality seems to have outweighed all practical prerequisites in the minds of the board of management, and the results at the mine clearly demonstrate their wisdom. Mr. Schwerin had charge at the mine for three years, during which time he extracted and sold about \$10,000 worth of ore, besides having a large amount of prospecting done, which demonstrated, in his opinion, the necessity of a mill to fully prove the value of the mine. During the entire administration of Mr. Schwerin we are told that he never once went into the mine, being of so nervous a temperament that his organization, courage, or something, would not permit of so daring a venture. However, that was nothing. Did he not have one of the ablest foremen on the coast, if not in the world? and did he not have reports, etc. etc. from a celebrated mineralogist and metallurgist? and was not the concurrent testimony of both these gentlemen to the effect that there was a body of ore in eight sufficient to keep a twenty-stamp mill running three years, that would pay thirty dollars a ton? Was there not also on the dump ore to the value of two hundred thousand dollars—enough twice told to build a first-class mill? A little calculation here is necessary to see what profit the company might expect to derive from this stage of their mine. Inasmuch as the ore had to be roasted, therefore crushed dry, the average workings of twenty stamps would not reach above 20 tons in 24 hours, which, for 300 working days would be 6,000 tons, and for three years 18,000 tons. This, at \$30 the ton, would be \$540,000, one-half of which should be net profit, which would give \$270,000, or nine per cent. interest on the full capital of the company of one million. In consideration of the fact that this stock had not, nor would with the cost of the mill added, stand the owners in above twenty-five per cent. of its par value, the nine per cent. would in reality be thirty-six per cent. on the cash outlay.

This was a grand showing, and the result was a magnificent mill of twenty stamps capacity, costing somewhere in the neighborhood of \$100,000. The mill was completed early in 1872, and just at this juncture, when all the experience and ability of Mr. Schwerin was needed to pilot the enterprise into the port of success, his health failed him, and he returned home. The vacancy was fortunately filled by the appointment of a first-class surveyor and architect, whose integrity was above suspicion,

if his mining experience was not. This splendid mill was started up, when the first thing proven was that the "White" roasting furnace, which had been adopted by the Superintendent over the Stetefeldt on account of economy, was a total failure; therefore the ores would not amalgamate for lack of chlorination. What was to be done now, and in what direction should the new Superintendent look for relief? His head amalgamator said "in wet crushing and raw amalgamation." The mill is soon converted into a wet crusher, and raw amalgamation "goes." What is the result? One hundred tons of the best average ore of the mine is run through the mill and down the creek, with no residuum in form of bullion to act as a reminder of the experiment. Result, suspension, and return home of Superintendent No. 2.

These, in brief, are the facts in the history of the Tarshish company. We now come to the merit of the mine, and the question naturally arises in the mind of the reader as to whether it has any or not. We most emphatically answer, yes. The great trouble has been in the appointment of men to the management of the mine who had no experience whatever in the business, and as in the case of Mr. Schwerin, one who did know the daily condition of the mine by personal examination, being thus left to the tender mercies of his foreman and such experts as he chose to employ. In all the vast and reckless operations in mining in California, we doubt if there is a parallel case—where the Superintendent never visited the workings of the mine. The second Superintendent is in no way responsible for the final outcome of the enterprise, for the whole thing was so blocked out that he was comparatively helpless.

During the past summer and fall Mr. B. E. Hunter, at present in charge of the mine, has been quietly experimenting in working the refuse or waste rock of the old dump, with a most gratifying result. In his first run of something like a week, where he expected a return of four hundred dollars, he got nine hundred; and in a subsequent run of like duration he got somewhere about thirteen hundred, showing that a familiarity in treating the ore increased the returns. Another run of a month gave a return quite as satisfactory as either of the foregoing. The reduction was by wet crushing and raw amalgamation.

Now, when we consider that these returns have all been from rock thrown upon the waste dump by Messrs. Graff and Schwerin, in their explorations in the mine, what might we not reasonably expect when the ore is mined and milled?

We are satisfied that this mine can be worked at a profit to the Company. We know of parties who would be glad to lease the mine, giving the company ten per cent. of the gross yield, and hiding themselves to secure the company against all debts incurred in the working.

We believe the proper way to work the ore would be to crush wet, run the pulp over long sluices, and thus concentrate the ore, say ten tons into one, bringing the average up to from \$100 to \$150, and then roast in a reverberatory or Stetefeldt furnace, by which process from 90 to 95 per cent. of its value could be saved. By such a method of treatment the mill could be far more economically run, and a lower grade of ore than otherwise could be treated. One great saving would be in quicksilver, which, by the most careful management in amalgamating, wastes not less than one pound on the ton of ore treated. By concentrating one hundred tons into ten we would save 90 pounds of quicksilver, which at present prices—\$1.30 per pound—would amount to \$117, certainly a very large item for two and a half days' run. The company's mill is capable of crushing 40 tons in the 24 hours, and could be run at an expense outside of the amalgamating department, not exceeding one dollar and a half to the ton on the amount of ore crushed. At this rate a very low grade ore could be worked at a profit. We confidently look for something of this kind being done at no distant day. It is certainly to the interest of the company to do something with their extensive and expensive property, to get even a small annual percentage on their outlay, for it is a well known fact that no species of property deteriorates more rapidly by idleness than does mining and milling. In the mine, timbers rapidly decay and caves occur, that become more expensive to repair the longer they stand, and the mill rusts and rots out by idleness quicker than it would wear out by every-day use.

HYDRAULIC RAM FOR RAISING WATER.—The following rule may be found useful for calculating the power of a hydraulic ram. Theoretically, the number of gallons per minute delivered would equal the number of gallons per minute passed through the ram, multiplied by the height in feet of the available head, and divided by the height in feet of the point at which it is required to deliver. The actual performance of a well-proportioned ram when new and in perfect order should be about 60 per cent. of this quantity; but for an average can hardly be reckoned at more than 50 per cent. If the water is liable to be dirty at times, it should be passed through a filter before going through the ram. With clean water, the pulse valve required renewal or refacing after about twelve months' constant work, and the brass "ball check" to "rising main" after about six months; but this would vary with the size and the height to which the water was thrown. In my case the height was 109 feet.—Field.

Utility of Flumes.

The Truckee Republican of the 3d instant has the following interesting article on flumes:

The utility of flumes for floating lumber, wood, shingle, lath, and mining timbers, has been practically demonstrated in this section within the past three years. Without them the wood and lumber business here would be, to a great extent, suspended; or carried on at a disadvantage. Without them mills built three or more miles from the railroad could not compete with mills built near the road, and obtaining their logs by means of the Truckee or its tributaries. But, by means of flumes, mills built at any distance from the railroad can compete successfully with those on the line thereof.

The amount of freight, of the description above alluded to, which one of these small and apparently insignificant flumes can carry is astonishing. A 20-inch V flume, with a uniform grade and a three-mile current, can deliver at its mouth, or at any given point, 10,000 feet of lumber per hour, or wood, lath, shingles or mining timbers in proportion. A flume ten miles long can deliver just as much freight as a flume one-tenth as long—its capacity not being gauged by its length. Flume property is the best and most productive of any property in this section. A few years ago lumbermen were at their wit's ends to find ways and means to get lumber to the railroad. Branch railroads, running back into the mountains where the timber had escaped the woodman's ax, were talked of and considered an ultimate necessity. Fluming experience has solved the problem as to the cheapest way to get lumber and timber to the railroad.

A mill built 20 miles away from Truckee, in the most inaccessible part of the Sierras, enjoys just as good facilities as a mill built in town if it has a flume connection with the railroad. It takes money to build one, but once furnished them with one-half the freight they can carry, and they will pay. It is a matter of surprise to us that the people of Grass Valley and Nevada city do not have their wood and lumber brought down to them in flumes. There is an abundance of timber five or six miles above Nevada city, easy of access, if a flume were used; yet by the old fashioned way of teaming wood is high there, costing from four to eight dollars per cord. The principal expense consists in hauling, the timber in the tree not being worth over fifty cents a cord, if it is that much. It costs from two to three dollars a cord to haul—say oak wood—a distance of five miles. A 20-inch flume with proper grade and from 40 to 75 inches of water, could deliver the same wood at 25 cents a cord.

But suppose a few of the enterprising men at Nevada city should build a flume such as we have suggested, and charge a toll of one dollar a cord for all the wood sent down, they would have a complete monopoly of the business and the result would be that the people of that town of 3,000 inhabitants would get their supply of fuel at least one-third less than they do now. It may be that our Nevada friends would be opposed to such an enterprise on the score of its resulting in a monopoly—a thing they detest. But as nearly every man and family in the town would be benefited by such an arrangement, they might for once be induced to let self-interest control their prejudice and rigid adherence to "principle."

Corporation Mining.

The Nevada Transcript says: In 1853, the great business of mining was almost wholly confined to individual effort, as at that time our rich gulches, ravines, and coyote diggings were paying the individual owners of small 30 and 40-foot claims a rich harvest. Now all that is changed, and mining is carried out by companies, who own and hold almost all the mining interests of the county, both gravel and quartz. It would now be a difficult thing to find a score of the old-fashioned mining claims of 30 square feet in the county. The result is, capital and combinations control all the mining interests and the laborer who does the work must depend on his daily wages for a livelihood. Then, scores and scores of the owners and workers of the small 30-foot claims were making small fortunes, and returning to the States to enjoy, with their families, the fruits of their labors—now but few return to take up their residence in their old homes east, and but fewer fortunes are made, except by those who control the capital of the country. Then, there was no stability to the proprietors; all, or nearly all, intending to return east, having come here with that intention, only intending to remain here long enough to secure a small competency; now, but few think or talk of returning, except to visit old friends and relatives.

The South Yuba Canal company, of this city, are now, and for some time past have been engaged in the construction of a dam, for reservoir purposes, at or near the site of the old Magenta flume, at Fordyce Valley, which, when completed, will hold more than one million inches of water, and supply that delectable article during the summer or fall months, when water is in the greatest demand. The breastwork of this reservoir is being constructed of solid masonry, and, when completed, will be fifty feet high and one hundred and fifty feet long. The area of land which will be covered with water, when the reservoir is full, is computed at 700 acres. The company have already expended upwards of \$20,000 on this work, and before it is completed, anticipate expending more than double that amount more.

USEFUL INFORMATION.

Taking Impressions of Leaves.

Rub vermilion, ultramarine, chrome green, or their equivalents well up with castor-oil to a thick paste or kind of printing ink, then take thin strong paper and cover it very thinly with the paint thus obtained, by means of a stiff brush. It is well to do this on a warm stone slab, so as to be able to put the paint on thin enough; then put the back of the leaf of which you wish to take the impression on this paper, put another paper over it, and rub down. This causes the paint to adhere to the projecting parts of the leaves; place the leaf thus prepared with paint on the clean sheet of paper on which you wish to make the impression, place another clean paper over it, rub down, and you will be surprised how the markings of the leaves will be printed in detail. Lace does not take the printing-ink so well, and would besides be spoiled by it; but you can make an impression of it by placing it between two sheets of thin, smooth, and strong paper; place this on top of the sheet prepared with the color as described, and this again on the sheet to be printed upon. Then you may by rubbing down form a good impression on the lace, on the principle of this multiple writer. If your prepared paper dirties the clean paper on which it lays, you have too much color on it, which you must remove by laying several times on it a clean sheet of paper, and rub. Observe that the operation requires a hard smooth table, or better, a stone slab, in order to obtain fine impressions. The above inks are indelible on paper. To make it indelible on cloth, which may be washed, rub some nitrate of silver in the black ink. If you want it to dry quick, you may mix some linseed oil with your castor oil, but then your prepared paper will not last so long, as this retains its efficacy only as long as the paint is not dried up.—*Manufacturer and Builder.*

How to PAVE STREETS.—In Manchester, England, there is a street, subjected to heavier travel than any Philadelphia thoroughfare, that has not been repaved or repaired for twenty years, and yet it is in better condition than most of our newly paved streets. The process by which such good paving is secured has not been patented, and is, in fact, no more of a novelty than the process of laying foundations for a building. Although the streets of Manchester are not subjected to the sudden changes of temperature by which in this city the road bed is expanded and contracted until well-laid surface stones are thrown from their position, yet before this Manchester street was paved the natural earth was dug away to a depth of two feet. Upon this bottom, which was considered below the penetrating power of frost, a layer of small stones, and on that successive layers of stones, of different sizes, from that of a man's head to the size of a walnut, were spread and carefully compacted together. Upon this macadamized roadway oblong granite blocks were laid, with small interstices between each stone, into which small gravelstones were put and well rammed down. The whole street was then covered with asphaltum, making it as nearly as possible waterproof. Any water which should get below the surface or rise from below would find a course between the larger stones of the foundation. The first cost of preparing such a roadway would be proportionally heavy, but would in the end be much less than the cost of relaying the pavement every year or two, to say nothing of the inconvenience arising from the tearing up of roadways at frequent intervals.—*Public Ledger.*

PURIFICATION OF TALLOW AND LARD.—Dr. Dotch states that tallow and lard may be kept from getting rancid by the following process: The tallow or lard is first treated with carbonate of soda in the proportion of 2 pounds of soda to every 1,000 pounds of lard, and is then subjected to a digestion with alum in the following manner: 10 pounds of alum are dissolved in 500 pounds of water, and 1 pound elaked lime added to the solution and boiled. This solution is stirred well with 1,000 pounds of lard at a temperature of 150° or 200° Fah. for about half an hour. The liquor is then separated from the lard, and the lard is treated with the same amount of pure water again. This lard will keep for an exceedingly long time. The fact is that the alumina in the alum applied acts very readily in a disinfecting manner upon those compounds which are liable to give rise to rancidity. The lime is added to the alum in order to render the alumina more active by its giving up some of the acid to the lime. This treatment has also the advantages of restoring the original flavor and of producing a lard of a greater whiteness.

A NEW DESTROYER FOR THE HAIR.—Under the above title Dr. Boettger says that we possess a new material for destruction of hair, of a most suitable description, in a mixture of one part of crystallized sulphate of sodium, with three parts or fine carbonate of lime mixed and reduced to a very fine powder. This mixture may be kept any length of time without alteration in well closed bottles. When moistened with a drop of water and laid by means of the back of a knife on the part of the skin covered with hair, we see in a few minutes and find the thickest hair turned into a soft mass, easily removed by means of water. If it remain on the part long, it will cause a slight irritation of the skin.

Tests for Drinking Water.

In Breelan, the Government have taken some wise precautions to prevent the introduction and spread of cholera, and among these they strongly urge the chemical analysis of drinking water. The following tests are the most important, and quite easily applied: 1. Testing for ammonia with Nessler's solution. Fresenius prepares this reagent by dissolving 3.5 grams potassic iodide in 10 c. c. water, and afterwards dissolving 1.6 grams mercuric chloride (corrosive sublimate) in 30 c. c. water, then adding the latter solution to the former gradually, till a permanent precipitate is produced. Then add a solution of potash until the fluid measures 100 c. c., and filter. A few drops of this solution added to water containing ammonia gives a yellow or brown color. If only a slight turbidity is produced, or a white precipitate, it indicates a hard water, and is caused by carbonate of lime present. 2. Testing for nitric acid. To 100 or 200 c. c. water are added 2 c. c. dilute sulphuric acid and freshly prepared starch paste, containing potassic iodide. If a blue color is produced at once, it is due to incomplete putrefaction. 3. Testing for nitric acid. To 25 c. c. of the water is added 50 c. c. pure concentrated sulphuric acid (60° B.), and, while still very warm, an extremely dilute indigo solution is allowed to drop into it. If the color of the indigo disappears immediately, even when repeatedly added, the water may be considered as suspicious, if not dangerous.—*Artisan.*

DEPILATION OF HIDES WITH CHARCOAL.—Andersen discovered that pulverized charcoal applied to sheepskins produces the depilation of the hair. Charcoal, as is well known, has the property to take up large quantities of oxygen from the atmospheric air, and the oxygen in this form seems to exert a chemical influence on the fatty substance present in the neighborhood of the glands of the hair roots. An oxidation takes place in the pores of the skin, which destroys the glands and loosens the hair. Finely powdered charcoal is mixed with efficient water to make a thin paste, and the hides immersed for 4 or 5 days and well turned over in the meantime, when the hair can be taken off at once. Hides treated with charcoal do not require further treatment, as is the case now with the lime process: and after being washed with water, they are ready for tanning. This will be a great advantage to the tanning trade, as leather treated in this way possesses more toughness, solidity, and flexibility. The other advantages of this treatment are great saving in time and labor, each hide weighs $\frac{1}{2}$ to 1 pound more, and has less spots, the work is more pleasant and healthy, the splitting with the machine is more easily accomplished, and the cost price is the same as with lime, as the charcoal can be used over again. Animal or vegetable coal can be used in any quantity, having no deleterious property whatsoever; and for each hide 6 or 10 pounds, with the necessary quantity of water, are sufficient. The temperature should be 61° or 70° Fah., and can easily be maintained by introducing steam into the vat. The tanning process is facilitated, as no lime is left behind to neutralize the tannic acid.

BRONZING IRON.—To one pint of methylated finish, add four ounces of gum shellac and half an ounce of gum benzoin, put the bottle in a warm place and shake occasionally. When the gum is dissolved, let it stand in a cool place two or three days to settle, then pour off the clear into another bottle; cork it well, and keep for finest work. The sediment left in the first bottle, by adding a sufficient quantity of spirit to make it workable, will do for the first coat or coarser work when strained through a fine cloth. Next get half a pound of finely ground bronze green, the shade of which may be varied by using a little lampblack and red or yellow ochre. Let the iron be clean and smooth, then take as much varnish as may be required, and add to the green color in sufficient quantity. Slightly warm the article to be bronzed, and lay a thin coating over it with a soft brush; when that is dry, if necessary, lay another coat on and repeat until well covered. Take a small quantity of varnish and touch the prominent parts with it, and before it is dry, lay on a small quantity of gold powder with a dry pencil, after which varnish all over.—*Spon's Workshop Receipts.*

COLORS STARCH.—To impart a temporary color to light tissues a German chemist proposes mixing a coloring matter with the starch in "doing them up." If a red shade is desired, take three parts of magenta and twenty of glycine. The magenta is rubbed down in a mortar with a little water, and the glycine added by degrees. Well pulverized starch is then thoroughly incorporated with the color in greater or smaller quantity, according as a pale or deep shade is desired, and the mass is allowed to dry in the air upon a piece of unsized paper. It is then applied to the tissues precisely in the same way as common starch. If a blue, violet, or green shade is desired, suitable colors are substituted for the magenta. Great care should be taken never to use any arsenical green colors in this way, as the dust of the highly poisonous material, becoming detached, may occasion serious mischief.

CEMENT FOR MEERSCHAUM.—Make fine freshly calcined plaster of Paris into a cream with water, by sifting or dusting the plaster into the water, and apply as a cement to the broken parts. It sets in a few minutes, but takes a few days to become dry. It is fire-proof.

GOOD HEALTH.

Hygienic Hints.

Cold Water In the Sick-Room.

Nothing could be clearer to the eye of common-sense than that thirst expresses a need of the organism. A man perspiring freely craves water because his blood is parting with its watery constituents; and drinks are demanded for a similar reason in diseases, such as cholera, attended with wasting discharges. A cholera-patient once exclaimed to me, passing as she drank a glass of ice-water, "Doctor, every swallow is worth a hundred dollars." Cold beverages have the effect in cooling down the body directly by contact, and subsequently by affording water for evaporation from the surface. And hence it is that thirst becomes the most intolerable of all the cravings of patients laboring under fever or inflammation. Children suffer immensely from thirst when indisposed. Their moans and cries, kept up for hours together, often have their origin in this distress, which they can express by no language except these cries; and it is wonderful to behold the relief frequently afforded by a draught of cold water.

Fat Meat for Consumptives.

A taste for fat meat is unfortunately not universal among children, but when it shows itself it is often most universally repressed by parents. This taste is another expression of the wants of the living system which we cannot disregard with impunity. Without fat the organism cannot be built up in perfection. Fate counteracts the tendency to consumption. Observation has established the interesting fact that persons who in early life show a taste for fat meat seldom fall victims to that disease; and, vice versa, that consumptives have generally shown an early repugnance to such food. There can be no question as to the lesson taught by this fact—that when the appetite exists it ought to be indulged, and that it ought, if possible, to be created, when wanting, by tonic and abundant exercise in the open air.

Why a Child Loves Sugar.

The craving of a child for sweets is well known to be one of the most imperious of their appetites. It has reference probably to that ceaseless activity which especially characterizes the age of childhood. It may be that sugar performs in their systems the part enacted by fatty substance in the bodies of adults. As it undergoes oxidation—is burnt up, circulating with the blood—it may be the source of the power which enables them to keep in motion from morning to night. Besides this, it is known that it renders easier and more perfect the digestion of the albuminous food upon which their growth depends. In respect to these offices it is therefore nearly essential to their well-being. And yet how strong, for generations, has been the prejudice against sugar! Under what difficulties, and in the face of what discouragements and protests, have our children obtained the luxury.—*Home and School.*

A NEENER REFORM.—Dr. Hamilton, of Buffalo, New York, tersely says in regard to ventilation, diet, labor, disease, etc.: We need for our dwellings more ventilation and less heat; we need more outdoor exercise, more sunlight, more manly, athletic, and rude sports; we need more amusements, more holidays, more frolic and noisy, boisterous mirth. Our infants need better nourishment than colorless mothers can ever furnish, purer milk than our distilleries can manufacture; our children need more romping and less study. Our old men need more quiet and earlier relaxation from the labor of life. Men, both young and old, need less medicine and more good counsel. Our cities need cleansing, paving, and draining. The Asiatic cholera, the yellow fever, the plague, and many other fearful epidemics, are called the abominations of our age, and our fellow-citizens upbraid us with feebleness and inefficiency in our resources. When will they learn that, although we do not fail to cure these maladies, the more precious secret of prevention is in our possession, and has been for these many years.

CONSUMPTION.—Dr. MacCormac, of London, advances the theory that consumption, or tubercular disease, is caused solely by breathing air that has already been breathed. The contamination of air by carbonic acid, and other organic effete substances, diminishes its power to remove these from the body, and the debris of degeneration being retained, becomes tubercle. He attributes the superiority of Vienna and St. Petersburg, as consumption producing cities, to the universal use of close cloths, and the careful exclusion of air from rooms. M. Collet concludes, as the result of thirty experiments, that the flesh of tuberculous creatures does not produce tubercle in healthy animals to whom it is fed. He believes that when experimenters produced different results, they either experimented on animals already diseased, or allowed the admission to their lungs of tuberculous matter through the air they breathed. M. G. Colvin concludes, from experiments, that the introduction of tubercle into the digestive apparatus of a healthy animal will not produce tubercle in him.

The Law of Fatigue.

Dr. Houghton, in his "Animal Mechanics," states the law of fatigue as follows: When the same muscle (or group of muscles) is kept in constant action until fatigue sets in, the total work done, multiplied by the rate of work, is constant. Suppose a man, walking at his ordinary pace, does not become tired until he has gone thirty miles. If he walks twice as fast, then by this law he would be exhausted at the end of fifteen miles, having done only half the work in a quarter of the time. If he walks three times as fast, he will be tired at the end of ten miles, having done one-third of the work in one-ninth of the time; and so on, the total work done varying as the square root of the time necessary to produce fatigue.

Where the rate of work is very rapid, as in a boat-race, it is of course impossible to keep it up for any great length of time. The actual amount of work done in such a case is thus illustrated by Dr. Houghton: A good idea may be formed of the rate in which the muscles give out work in a boat-race, from comparing this work with the average daily work of a laborer. As many kinds of labor there are 400 foot tons of work accomplished in ten hours. The oarsman performs (this is arrived at by calculation) in one minute the 100th part of his day's labor, and if he could continue to work at the same rate, he would finish his day's task in one hour and forty minutes, instead of the customary ten hours. The work done, therefore, in rowing one knot in the seven minutes, is, while it lasts, performed at a rate equal to six times that of a hard-worked laborer.

Dangers of Well-Water.

The dangers of bad milk are engrossing so much attention just now, that there is no reason to fear lest the far greater danger of bad water should for the time be overlooked. We trust this serious error will not be committed. For one sample of dangerous milk a thousand of dangerous water could be obtained in almost any part of the country. Let it never be forgotten that very few rivers or wells are safe sources of water supply, and that as many are unsafe as loaded fire-arms. The shallow wells of villages are among the pests of the country, and it is high time that a zealous and well organized crusade should be brought to bear upon them. It is sickening in most country places to observe the uniformity with which the cesspool and well are made to stand side by side, as though each were necessary for the other; and to think of the twenty feet or so of foul, sewerage-reeking soil through which the water percolates to its fabled bed! The question should engage the attention of every health officer, and will, in too many cases, tax his energies severely, for it is one of the hardest sanitary problems. It is always possible to provide a city or town with good water, but in a village, where houses are few, money scarce, and intelligence scarce, it is a matter of exceeding difficulty.—*London Lancet.*

THE REASON WHY YOU CRY.—Darwin says: Weeping is probably the result of some such chain of events as follows: Children, when wanting food or suffering in any way, cry out loudly, like the young of most of other animals, partly as a call to their parents for aid, and partly from any great exertion serving as a relief. Prolonged screaming inevitably leads to the gorging of the blood-vessels of the eye; and this will have led, at first consciously and at last habitually, to the contraction of the muscles round the eye in order to protect them. At the same time, the spasmodic pressure on the surface of the eye, and the distention of the vessels within the eye, without necessarily entailing any conscious sensation, will have affected, through reflex action, the lachrymal glands. Finally, through the three principles of nerve force readily passing along accustomed channels of association, which is so widely extended in its power, and of certain actions being more under the control of the will than others, it has come to pass that suffering readily causes the secretion of tears, without being necessarily accompanied by any other action. Although in accordance with this view we must look at weeping as an incidental result, as purposeless as the secretion of tears from a blow outside the eye, or as a sneezing from the retina being affected by a bright light; yet this does not present any difficulty in our understanding how the secretion of tears serves as a relief to suffering.

COFFEE AS A DISINFECTANT.—The *Homeopathic World* says that coffee, when roasted, is one of the most powerful means, not only of rendering animal and vegetable effluvia innocuous, but of actually destroying them. A room in which meat in an advanced degree of decomposition had been kept for some time, was instantly deprived of all smell on an open coffee roaster being carried through it containing one pound of newly roasted coffee. In another room the effluvia occasioned by the clearing out of a cesspool, so that sulphuretted hydrogen and ammonia could be clearly detected, was entirely removed within half a minute on the employment of three ounces of fresh coffee. The best mode of using it as a disinfectant is to dry the raw bean, pound it in a mortar, and then roast the powder on a moderately heated iron plate, until it assumes a dark brown hue, when it is ready for use. It must, however, be remembered that the coffee, to be effectual, should be perfectly pure. Adulterated rubbish will only make matters worse.

A Prolific Rose Bush.

The fact that the avowed mission of the *Paras* is rather utilitarian than æsthetic, does not prevent us from describing and illustrating a marvellous rose tree at Santa Rosa, Sonoma county, in this State. The photograph from which the accompanying engraving was made, was taken in June last. We would remark that this splendid specimen of a rose bush had been as full of roses throughout as on the thickest portion represented; but when the photograph was taken, portions of the bush had been left of many of them, and therefore are not represented. Mr. O. P. Fitzgerald, writing from Santa Rosa, and describing the bush, says:

This rose adorns the cottage of my friend S. A. Rendall, the photographer of Santa Rosa. It was planted in 1858, and is of the Lamarquo variety, the most beautiful of the white roses. But how describe that which is essentially indescribable? Imagine an immense bouquet of white roses, twenty-five feet high, twenty-two feet across, beautifully rounded, with a blooming surface of four hundred square feet, with four thousand full-blown roses and twenty thousand buds!

There is the truthful statement, but not the picture—my pen cannot describe it. I could as easily write a poem of the first order. The stem, near the ground, measures twenty-four inches in circumference; just above the ground it separates into three principal stems that grow over twelve feet to the cottage-eaves without lateral branches. These main stems pass between the eaves and a strong support attached to the house. Enough!—my pen is impatient of these dry details, and would leap into poetry—if it could. I have seen many of the finest paintings and statues of the great masters; I have seen the tropical flora in all its gorgeousness; but this rose-tree was the most beautiful work of Nature (with a little aid from man) my eyes ever beheld. Santa Rosa! appropriately and sweetly named! It is at this season a city of roses. They bloom in almost every yard, and shed their sweet perfume all around. Flowers are a luxury enjoyed by the poor as well as the rich. They cost nothing but a little labor, and that labor a delight to every healthy mind. That wonderful rose over friend Rendall's cottage door and roof, as a transient of the beautiful, is of more value than any painting to be found in the halls of our money-kings—yet it has never cost the price of a bad cigar. With our climate and soil, our California homes should be the pleasantest on earth, and nothing but laziness or lack of taste will prevent them from being so.

Mr. Rendall has photographed this Koh-i-noor of the roses. It makes a beautiful picture, but when I look at it I sigh to think how poorly the best productions of human art can compete with nature.

THE SIAMESE TWINS.—A dispatch from Mount Airy, N. C., gives an interesting conversation between a correspondent and Dr. Hollingworth, who was the first physician to arrive at the residence of the Siamese Twins, after their death. Dr. Hollingworth does not believe Eng's death was caused through any vital connection or artery passing through the ligament connecting the twins. He does not believe in the existence of any vital connections. He had attended them frequently when one had been sick and the other in good health. He often noticed two beats of the twins' pulses differing in time. Eng's death was undoubtedly due to shock and terror, inspired by his union with Chang's dead body. An attempt to sever the ligament, after Chang's death, would only have hastened the death of Eng, by increasing his terror. The friends of the twins maintain that an artery was contained in the ligament, and that after Chang's death the blood from Eng's body flowed into Chang, but that there was no response of the artery, and that Eng died from exhaustion and loss of blood. Up to the time of Eng's death the ligament was quite warm to a point where it entered Chang's body. The ligament was four inches wide and as thick as a man's wrist, and extended from the abdomen of one to that of the other, and the navel of the twins was in its center. The bodies have been temporarily interred. Several leading physicians have left Philadelphia for Mount Airy to make an examination of the remains. Complete arrangements have been made for the autopsy.

The next meeting of the California Academy of Science will be held in their new quarters, at the church, corner of Dupont and California streets.

Silver Bullion.

The silver bullion question of the Pacific coast is now agitating the minds of the California and Nevada Senators and Representatives in Washington. On the Pacific side of our country silver coin is a drug in the market, while on the Eastern side the Mint at Philadelphia cannot supply the demand. This month the demand for subsidiary coins exceeds the supply about \$350,000. In San Francisco silver coins must be shipped mostly East for a market, and the holder of bullion is forced to sell at a greatly depreciated value. A Washing-

at the Philadelphia Mint and the New York Assay Office, at 118 cents per standard ounce, payable in silver coin, to which price it has been reduced from 122½ cents. The ratio fixed by the Department for San Francisco is 116 cents. But it is believed, and is urged upon the Department that Secretary Richardson has power under the above quoted provision of the law to purchase silver bullion whenever he pleases, and pay for it with silver coins at the Philadelphia Mint or the New York Assay Office. It is therefore suggested that the Director of the Mint be authorized to order the purchase of silver bullion for coinage into subsidiary coins at the San Francisco and Carson Mints, and to issue certificates therefor, payable

The Stickeen River Mines.

The excitement concerning the Stickeen River mines still continues. About fifty miners left Portland, Oregon, on the 21st instant for the mines, per steamer "California." Quite a number of miners in this State are preparing to leave for that country in this spring; and we have received recently several letters asking for information as to rates of fare, route, character of the country, etc. We have published, from time to time, such information on the subject as came to our notice—but little seems to be

known of the country as yet. Last April we had a conversation with Mr. Peter Cargovitch, who had been to these mines, and who is there now. He left this city some time in May, with a party of experienced prospectors, and intended thoroughly testing the country. He represented the mines as very rich, and stated that while the bars on the river were almost "forty-nine diggings," there were also large banks partaking of the character of our California hydraulic diggings. At the time of a former expedition, of which Mr. Cargovitch was a member, several men died of scurvy and hardship. Mr. Cargovitch has written one letter since he left which was from Buck's Bar, on the Stickeen. He spoke of having made some discoveries 125 miles north of there; where, with rookers, the men made from two ounces to \$180 per day, to the hand. The gold is quite coarse. He states that all the miners coming down had full purses, and report the mines looking well and rich at that time, (October 24). He was waiting for the ice to melt before going to the mines.

The country in the locality of these mines is an inhospitable one; the season is short and hard fare and inclement weather the rule. Silver has been found in the vicinity, as well as gold. The mines are situated on the tributaries of Dease's lake in the British possessions. The route from this city is as follows: From here to Portland 733 miles; from Portland to Victoria, 308 miles; from Victoria to Nanaimo, 74 miles; from Nanaimo to Fort Wrangel 768 miles; all by steamer. The fare from here to Portland is \$30 in cabin, and steamers run three times a month. The fare from Portland to Fort Wrangel, near the mouth of Stickeen river, is \$50 in the cabin and \$35 in the steerage. At Fort Wrangel prospectors leave the steamer and go up the Stickeen river in small boats to Buck's bar, 160 miles from the mouth. This is at present the head of navigation, and if the mines hold out, steamers will be used instead of small boats. From Buck's bar to Dease's lake, 160 miles, the route is overland, with no trail as yet, and through a bad country. From the lake to Dease's creek is 15 miles, and Tibbet's creek is 25 miles further on.

The McKenzie river into which the lake empties has been prospected some 450 miles and good prospects have been obtained on it. The pay gravel is about 4 or 5 feet deep on Dease's creek and the gold is rusty. Big stories are told about the amount to the pan that has been washed out, but most of these stories should be taken "with a grain of salt." The fact that several men who have been there before, have returned, again is in favor of the country, but its distance from civilized communities, hard climate, want of roads, shortness of seasons, etc., is against it. When the trail is established across the country there will probably be a big rush for the new mines. We have no means of knowing the expense attendant on the trip after leaving Fort Wrangel, for it is performed in small

boats and overland, and would vary with different parties. Of course parties going there must be well fitted out, as the last trading port is on the Stickeen river before Buck's Bar is reached. At the latter place a number of miners are wintering.

Parties have secured from the local government a charter to cut a trail from Buck's Bar to Dease's lake, but it has not yet been made. One of our correspondents also asks about the Stickeen river, saying that he cannot find it on the maps which he has seen. The river is not marked on any but recent maps. It rises in British Columbia and empties into the Pacific ocean in the southern part of Alaska, northeast of Prince of Wales Island. It is sometimes called by the name of Francie river. The upper portion of the river is where the mines are found and they are therefore in British Possessions.

RECEIVED.—We have received from F. M. Shaw, now in London, a paper read at 55 Caele street, before the Social Science Reform Club of London and Los Angeles, California.



A FLORAL KOH-I-NOOR.

ton correspondent of the *Chronicle* is informed by Dr. Linderman, Director of the Mint, that the San Francisco and Carson Mints might easily have coined half a million dollars of silver coin more during the last month than were coined if there had been a demand for the increase. Our Pacific coast interests suffer a great loss on account of the depreciation of silver.

Senators Sargent and Stewart have been investigating the matter, and will urge the Secretary of the Treasury to take some action to benefit the interests of their constituents. How they propose to have it done is briefly stated as follows:

The 28th section of the Coinage Act provides that for two years after the passage of the Act (February 12, 1873) "silver coins shall be paid out at the Mint in Philadelphia, and at the Assay Office, New York, for silver bullion purchased for coinage, under such regulations as may be prescribed by the Secretary of the Treasury."

Under the above authority silver bullion has been purchased and paid for in subsidiary coin

in such coin at Philadelphia or New York, as desired by the depositor.

This plan would enable the holders of bullion to sell their silver at 116 cents, without trouble or commission, at the Mints of the Pacific coast. The certificates would be worth a premium for exchange, and the Government would ship its coin from the Pacific, making six per cent. profit on its investment in bullion.

The demand for silver coin from Texas and Central America is larger than can be met by the Philadelphia Mint. If the plan under consideration should be adopted, the coin made from the bullion purchased would be sent to New York on Government account to be applied in payment of checks issued in the purchase of the bullion. It is not contemplated that this coinage shall interfere with the necessary gold and trade-dollar coinage, but will keep the Mints at work to their full capacity.

THE Ruby Consolidated furnace at Enreka has shut down for a few weeks, and the K. K. furnace will close in a few days.

Mining in San Diego.

In an article headed "We Should Encourage Mining Developments," the San Diego *World* says:

We have frequently expressed the opinion that we have in San Diego county gold mines, which can be made as productive as any on the Pacific Coast. The decision of the Cuyamaca case in favor of the miners, by Commissioner Drummond, opens up the superb Julian region to the outside capitalist who had, hitherto, been repelled by the specter of an uncertain litigation. While the Julian miner might hope and believe that the issue of that litigation would be favorable to him, he had no way of overcoming an outsider's natural objection to buying into a law-suit. Very few persons would take the trouble to inquire into the merits of the controversy, and over all was the bug-bear that the right, even when made apparent, does not always prevail.

The miners having triumphed, already outside capital has begun to flow into the Julian and Baumer Districts. A San Francisco company has already purchased the Golden Chariot, giving a considerable sum for that fine mine. Our own belief is that they have bought, for a fraction under one hundred thousand dollars, a mine that can be made to yield three or four millions in the next four or five years. But the mine has not been sufficiently developed yet to make any speculation a certainty. The gentlemen who have put their money in the Golden Chariot have of course made up their minds to take the chances. They are gambling for a big stake, and we think they will win beyond peradventure. We believe they can make their mine yield \$50,000 a month when the proper improvements are made, and we think, further, that the Julian mountains are incomparably richer than Grass Valley. Yet, before the owners of the Golden Chariot can realize their expectations, they will have to expend at least thirty thousand dollars in addition to the ninety thousand they have given for the mine. These are large outlays, and there is a certain margin of risk in the operation. To encourage them they know that they own a mine which has already yielded upwards of one hundred thousand dollars, and that its rock, from the very surface, and from the first day on which the mine was discovered, has averaged \$118 to the ton.

We have no hesitation in saying that these men ought to be encouraged. Other fine mines besides the Golden Chariot, such as the Stonewall, belonging to Frary & Farley, the Owens, and many besides, invite the introduction of outside capital. There are certain drawbacks which can be removed, and from which the miners have suffered very grievously. The tax-gatherer has been unremitting in his attentions to the Julian miner. With the exception of the Owens, there is hardly a mine in those districts that has been sunk to a depth of one hundred and fifty feet. Of course mines in this condition cannot be said to be developed. They are really in their infancy. The men who are pushing their shafts into the bowels of the earth, and running levels to drag out masses of gold, should be visited very tenderly by the tax-gatherer. Yet the facts are that the miners have been quite heavily taxed, and at a time when they needed forbearance most. When the Golden Chariot was approached simply by a bridle trail, when it had not even a whim and when its ore had to be packed to the mill, three miles, on jackasses, the proprietors had to pay \$1,200 per annum to support the State and county government. At that time they had hardly burrowed their way into the ground up to their eyes. The practice has been to make the miner pay tribute from the very moment he has displaced the sod. The Stonewall has been made to submit to similar exactions. Of course this is very dispiriting to men who are struggling to develop reasonably supposed to be rich, but whose riches are as yet locked up in the bowels of the earth.

Let us take a very supposable case, that in which one hundred thousand dollars, by legitimate mining standards, is supposed to be "in sight." The wealth is there, but, until he has laboriously unearthed it, it counts no more to the miner than a similar sum, standing in somebody else's name, would locked up in the vaults of the Bank of California. To tax him on a sum which he can only hope to realize as the result of persistent, skillful and expensive labor, as though it were cash to his credit in bank, is not to encourage mining developments. A far better policy would be to offer a bonus for mining energy, instead of practically repressing it, as the present policy does.

Although the Julian people have not been loud-mouthed in the expression of their grievances we know they feel them keenly. The present is a favorable conjuncture, and outside capital can be easily diverted from Nevada to the Julian region. Our mines themselves, gauged by their present development, are of unexampled richness. We should encourage all who wish to extend them and increase the yield of gold. We should instruct our assessor to take note of such machinery, money and property as the miner has, and to assess them, but to let his mine alone. Its value is necessarily prospective and indeterminate, and all we ask is that the miner should pay tribute on his gold as he brings it to the surface. The hardships worked by the present system are felt by the miner to be intolerable. We happen to know that, last year, one of the most energetic, industrious and successful of all the Julian miners, at a time when he was paying three per cent. a month on ten

thousand dollars borrowed to develop his mine, was obliged to pay a tax of nearly six hundred dollars on its prospective value. We should set about remedying such an unnatural state of things, and the sooner the better. The Julian miner will cheerfully pay a tax on his machinery, his real estate and his personal effects and that is all he should be asked to pay.

If the course we recommend is adopted, a very great dissatisfaction will be removed at the mines and we shall really have offered a premium on their development.

Ancient Lakes of Oregon.

Professor Conder, State Geologist of Oregon, is giving a series of lectures in Portland, some of which are reported in the *Oregonian*. That paper says:

The subject for the sixth lecture was "The Ancient Lakes of our Interior," and many fossil remains, taken from various points in our State, both east and west of the Cascade mountains, were exhibited by the speaker to substantiate his theory that the great sea once covered all this coast, and extended clear to the borders of Kansas.

Several facts have been proved in prior lectures. Among them were—

First—That the whole Pacific slope was once a sea bed, a fact proven by the presence of rocks in all parts containing shells of animals known to have inhabited the sea only.

Second—That the pressure that elevated or raised this country up out of the water came from the Pacific ocean. This was demonstrated by the inclination of the strata or layers which bore any indications of having been disturbed since their deposit. The folds or strata indicate the direction in which the force that tilted them up was applied, so that there was no danger of mistake on this point.

Third—That the Pacific ocean is now deeper than it once was, which was shown by soundings made in the vicinity of coral reefs. Corals never work in water deeper than 125 to 150 feet, while their reefs are often found to exceed ten thousand feet down. That the settling of the bed of the ocean has kept pace with the rise of the reefs is the theory upon which this was explained.

Fourth—That the settling of the bed of the ocean was the result of cooling of the earth's crust. This process of cooling would crumple the earth's surface just as the shrinkage of an apple would leave the skin wrinkled in folds. So the settling of that part of the earth's crust constituting the ocean's bed would necessitate the upheaval of other portions, as in the falling in of one part of an arch, other parts are pushed outward. In this process, the pressure would be greater where there was the most water, and if we go a thousand miles to the north, where the Pacific ocean is the narrowest, we find the mountains lowest, and if we go two thousand miles southward, we find opposite the vastly wide part of the ocean, the very high mountains of the Andes.

The Pacific coast consists of three great plains. From the first or southern slope the waters which once covered them were drained by the Colorado river. From the central plain the waters were gradually dried up by evaporation, while from the northern slope the vast body of water that once covered it was carried off by the channel of the Columbia.

We infer that when the causes of disturbance operated, the strata had all been deposited. If we find two of these strata upheaved or crumpled, and a third overlying these, not so upheaved, we infer that this stratum has been deposited since the causes which produced the upheaval of the other two were in operation. The upfolding of the earth's crust which formed the Blue Mountains, in the eastern part of our State, began in the eocene period, was quite active in the eocene-tertiary, and ceased in the pliocene—and since that time no great convulsions have taken place. In the days of these upfoldings there were no mammoths, and none of their remains are found in the rocks of the eocene period. The Blue Mountains have not been connected with the older parts of the continent by the withdrawal of the water. These mountains were the nucleus of what now constitutes Oregon, and were the first part which appeared as dry land, though some parts of Southern Oregon were very old, and further explorations might upset this theory of the greatest antiquity belonging to the Blue Mountain region. In those days, plant life was abundant, and many beautiful specimens existed. Among the trees were the palm, yew, maple, alder, etc. They grew a very beautiful tree, and shed its branches instead of its leaves. Many of these branchlets are still preserved in the rocks, in a petrified form.

The surface in the vicinity of these mountains is generally of volcanic material, though granite and basalt are frequently found. The heat produced by the pressure from seaward sometimes changed the appearance and chemical character of the rocks on the coast. The Coast Range contains many more indications of being an old east-up sea bed than do the Blue Mountains or the Cascades.

The upturned edges of the folded strata can be seen along the western foot of the Cascade and eastern foot of the coast range. These strata dip under the Wallamet Valley, and the same extend northward to Sitka and southerly beyond San Francisco. The Deschutes river flows through a basaltic rock, in some places over three thousand feet thick, the southern through a basin or old lake-bed. Going eastward from the Deschutes, we come to John

Day's river. At the great bend in this last stream the basalt only capped the hills; the great molten bed which had flowed out of the Cascade mountains, cooling as it traveled, was three thousand feet thick at Deschutes and only a few feet thick at John Day's. From the high hill at the bend of John Day's one can see for sixty miles one of the most beautiful collections of rocks on the globe. They are of all forms and all colors. These rocks indicate the fact that a stream of lava once ran through this basin, visible from the hill named. The basin is the bed of an old lake. In it are found many curious remains, among them those of the three-hoofed horse and camels. Many of the same animals existed in Oregon in the pliocene-tertiary period, that are now found in Asia.

The speaker concluded by expressing his confidence in this theory of the comparatively modern origin of man, though the finding of human bones in any period would not upset a single article in his creed. He had not, as yet, been permitted to visit Southern Oregon, and exploration in that region might discover a great deal, as it seems to be an old country, perhaps older than the Blue mountains. Standing on Spencer's Butte, and looking over a large portion of Linn, Benton, Polk, and Yamhill counties, one can but feel the conviction that the vast area before him was once an inland sea, and similar impressions are felt when looking at the country from John Day's Hill, in Eastern Oregon, and the Yakima Heights in Washington Territory.

The next lecture will be on "Surface Facts in Oregon," and will treat of the course of river and mountain ranges, and the glacial theories.

White Pine Mines.

In times of general apathy and universal business stagnation, people are inclined to look upon the dark side of things, and forget for the time the really intrinsic worth of their industries. In no community is this fact more apparent than with us at this time. For a number of seasons White Pine District has been suffering from a great and overpowering reaction, naturally consequent upon a fall from a position in the mining world, second to none in the history of Nevada, to an almost total stagnation of business in all branches. But let us look at the causes of this state of facts. It is not because our mines are worked out, or fail to respond to the earnest and faithful workers in the shape of good pay ore, but it is because no systematic, legitimate mining operations have been carried on here since the commencement of our history. In only one instance have the owners of truly valuable properties in the district made mining a business, and that is in the case of the Eberhardt & Aurora. The results of their persistent efforts are becoming every day proofs of the existence of large bodies of ore in Treasure Hill, and, at the present time, the prospect for a continuation of precious mineral to an indefinite depth is fully established. While other companies have been scraping up the ground, scratching here and there for rich ore, this English corporation have been working intelligently and with a purpose. The history of the company mentioned could be repeated over and over and again did the owners of property display the same amount of energy, or have a desire to make mining a legitimate business, instead of a means to inflate and depress stocks on the market.

No man who has visited Treasure Hill during the past year, that has a grain of knowledge of mines and mining, can truthfully dispute the self-evident fact of the existence of ore in large quantities in the Ward Beecher Consolidated. Still the mines of the company have not been worked during the past winter. Not a man has been employed outside of the necessary number required to act as watchmen, etc. As in years gone by, we have waited for the inevitable "spring rise," so now we are anticipating great things the coming season; but have we any more reason to hope for better times than were experienced last summer? The winter, thus far, although we have had a number of severe storms, has not been such as to prevent working the mines, and for only a short period were the roads rendered impracticable for teams, still nothing has been done outside of the company mentioned. Rumor comes to us of a probable change of ownership in one of our leading mines, and, in common with all our people, we sincerely hope an arrangement can be arrived at. It is shameful that a country capable of producing so much bullion should be allowed to remain idle, carrying the impression among outsiders of its worthlessness, when a small amount of energy would soon bring it as prominently before the public as its merits deserve. We hope for better times. We trust that in the coming summer the clouds so long resting over us may break away and leave us a clear sky of prosperity, such as we have waited so long to realize.—*White Pine News*.

The Japan Gazette states that in future all agreements between native and foreign mining engineers must be referred to the heads of En or Ken, and by them laid before the Survey department and the Foreign office. It is also to be a *sine qua non* that the foreigners engaged do no other business than that provided for in the contract.

A New Tunnel Project.

The White Pine *News* says: During the past week a project, new to all but the projector, has been inaugurated, and seems now in a fair way to be successful in its culmination. For the past three years W. F. Walton, one of the early settlers in Hamilton, and now owner of a considerable portion of town lands, has had in view the tunnelling of White Pine mountain. In the early inception of the enterprise capitalists were favorably disposed toward the undertaking, but the sudden break in our mining interests in the last two years has detracted considerably from the interest manifested. But through all this time Mr. Walton has clung firmly to the idea of the feasibility of the project, and, other means failing, has commenced soliciting for aid among us at home. In view of the known and indisputable wealth contained in the locality named, a fact needing no other illustration than a visit to the ground, the enterprise suggests itself as one that will prove remunerative to those engaged in its development and beneficial to the whole country, particularly this district. It is proposed to raise an amount of money, small in itself, to defray the expense of visiting Washington, for the purpose of obtaining a grant and franchise from the Government, to prevent any interference with the title to the land needed for the prosecution of the work, and also to solicit the aid and support of such members of Congress as may be well disposed toward the development of a country rich in precious metals. No subsidy will be asked from the Government, only the privilege mentioned, it being the policy to form a corporation and place stock upon the market.

At first glance this would seem to be a stupendous undertaking, but, taking as a precedent the Suto Tunnel project, now nearly completed, it is made to assume proportions of feasibility, and one that can be easily carried through to completion. We are pleased to see our people taking so much interest in the undertaking, as illustrated by a subscription list shown us by Mr. Walton, and the first step seems to be indicative of the result. Our representatives now at Washington could find no project which would accrue more to the benefit of Eastern Nevada, or the State in general, than the one in question, and, in view of the fact, that no work has been laid out for them to do which might aid our prosperity, it seems to us this enterprise should demand their attention as something of more than ordinary moment. For a number of years mines have been worked on White Pine Mountain by private individuals, resulting in products of ore valuable enough to defray the cost of sending them fifty miles to mill, and leaving a large profit to the owners. There are numberless locations made on this mountain which are all more or less developed, but rendered useless through want of proper means of reduction, which could be made valuable by means of a tunnel cutting the vein at a depth. We trust our people may see their own interest in the success of this project, and aid by all means in their power its inauguration. In our next issue we shall publish the names of the parties subscribing, with the amount set opposite their names. In the meantime we hope all may see the advisability of the undertaking, and lend their influence to it.

TURQUOISE MINES IN EGYPT.—A brief but interesting account of a discovery in Egypt is published in the "Proceedings" of the Antiquarian Society. An Englishman traveling on the skirts of Sinai, noticed small blue tones lying in the beds of dried-up torrents, and brought a few to England, where he learned that they were turquoise of good quality. He went back to Egypt, made further researches, built a house at the junction of three valleys, and aided by friendly natives whom he took into his service, he discovered the turquoise mines formerly worked by the ancient Egyptians, together with some of their tools, and the places where they ground and polished the stones. So now turquoise are dug from these old rocks and sent to England. Ancient iron works have also been discovered with huge heaps of slag piled around them. A specimen of this slag on being tested was found to contain fifty-three per cent. of iron, which favors the supposition that it would pay to smelt the whole mass over again. To protect these valuable deposits, the Pharaohs built fortifications, and a barrack, and a temple, for the troops, relics of which still remain.

ALUMINUM FOR SMALL COIN.—Apocryphal to a project for remodeling the coinage of Germany, Dr. Clement Winkler has published an essay in which he strongly recommends the use of aluminum as the best metal for small coins. After giving an elaborate history of the fabrication of aluminum, the author seeks to prove that the properties of this metal are exactly those required for coinage. The density of the metal is about three and one-half times less than that of the alloy of copper and silver now in use. Dr. Winkler recommends that small coins of pure aluminum be struck off, and observe that an alloy of silver and aluminum might advantageously be substituted for the alloy of silver and copper now used for large coins. He thinks that the metal is susceptible of more numerous applications than have yet been made.

Silver City and Mines.

Silver City is the county seat of Owyhee county, where the richest and best developed gold and silver quartz mines in Idaho Territory are located. It is compactly built, in a cañon, mostly on the west side of Jordan creek, and has about 1,200 inhabitants. It is 60 miles south of Boise city, the Capital of the Territory, and 210 miles north of Winnemucca, its nearest and chief shipping point on the Central Pacific Railroad. Correctly speaking, Silver City has only two seasons—the summer and the winter—of six months each. In summer the weather is delightfully clear and pleasant; in winter snow falls to a depth of five or six feet, and violent storms occasionally prevail, although the cold is by no means severe, the mercury scarcely ever dropping to zero. Its chief resource is quartz mining, although the placers are extensively worked while the water from the melting snows continues in the spring.

Among the principal quartz mines are the Oro Fino, Ida Elmore, Golden Chariot, Minnesota, South Chariot, Red Jacket, Mahogany, War Eagle, Empire, Silver Cord, Idlewild, Illinois Central, Glenbrook, Belle Peck and others, all of which are situated on War Eagle mountain about two and a-half miles from town, and employ from 500 to 600 miners the year round. Their bullion product during 1873 aggregated about \$1,000,000, and will probably double that amount for 1874.

The houses in Silver City are mostly constructed of wood, although there are a number of fine granite buildings in the portion of the town known as Granite Block. Silver City is 6,000 feet above the level of the sea, and the summit of War Eagle is about 1,800 feet higher.

The adjacent mountains in summer, and the foothills and valleys in winter, afford a magnificent stock range, and stock raising is rapidly becoming one of the most important branches of industry in the country. Some of the mountain peaks, near Silver City, are covered with perpetual snow, which is used as a substitute for ice by the inhabitants during the summer time.

The climate is exceedingly healthy, and the people of Silver City and vicinity are among the most generous-hearted and sociable in the world. Business is prosperous, and, taken altogether, it is a good place to call home.—*Advocate.*

ALASKA COAL LANDS.—A bill to provide for the extension of the United States system of land surveys over the Territory of Alaska, has been framed, but has been nipped in the bud by opposition from the Interior Department. Last winter a bill for the sale of coal lands was passed, and provision was made so that tracts of unsurveyed land could be held by performing a certain amount of work and continuing the same until the surveys were made, when the holder would have the preferred right of entry to the land. A number of speculators, whose headquarters are in San Francisco, succeeded in getting the coal fields of Alaska included within the Act. They have formed companies and dispatched agents to take possession of large tracts of the most valuable coal lands in this Territory, the existence of which is only known to a few men, and now, in order to perfect their grabs, they expect Congress to pass a bill to extend the survey over them. Commissioner Drummond has addressed a letter to Senator Mitchell in opposition to the scheme. There are rumors also of a combination to control and monopolize the resources of that Territory, but there is a disposition among members of Congress to investigate them all. A movement will be made toward having a Commissioner appointed to examine the whole subject and at the same time to report upon the manner in which the Alaska Seal Fur Company is fulfilling its contract with the Governor.

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POPULAR LECTURES.

Prof. Neri's Lecture on Electricity.

The second of the series of lectures on electricity, by Prof. Neri of St Ignatius College was given at the hall on Jessie street, on Thursday evening of last week. It was in the main, according to previous announcement, a repetition of the first, which could not be accompanied by the usual demonstrations on account of the condition of the atmosphere at that time. A very large and most attentive audience was present, a fact which speaks well for the growing taste for scientific information in San Francisco.

The History of Electrical Science.

Electricity was but little known to the ancients. It was originally detected in amber—the electron of the Greeks, and hence the name of electricity. It was also long afterwards found to exist or be developed by friction in several other substances. The phenomenon was originally explained by regarding it as the soul of amber; hence it was regarded with awe. No progress however, was made either in determining its character, or utilizing its existence for some 2,500 years—or until about 200 years ago, when the attention of scientists first began to be especially attracted to its study. The result of this study soon developed the fact that this strange principle was the cause of some of the most important phenomena of Nature; that it extended its influence throughout the universe, and that it had an intimate connection with both animal and vegetable vitality. It also led to many developments in kindred sciences, in the introduction of new means of wealth, and in the furthering the general progress of civilization. The lecturer introduced various experiments with glass rods, sticks of sealing-wax, etc., and demonstrated the existence of two kinds of electricity—vitreous and resinous or positive and negative, and attracting and repelling.

What is Electricity—Its Nature, Etc.?

Notwithstanding the progress which has been made in modern times in studying the various phenomena of this wonderful agent, we are still quite as unable as were the ancients to answer this question. All we have been able to do is to collect and systematize facts. For a long time it was thought to be an imponderable fluid, or rather a compound of two different fluids; but that theory is now fully exploded, and the idea is only kept up for the convenience of illustration. Electricity is, probably, simply a condition of the molecules of matter. [A mode of motion—the molecules in a certain condition of motion?—REPORTER.] It is also found that this condition exists only on the surface of bodies—everywhere alike on the surface of a sphere, but tending to the points of elongated bodies. This fact was shown in various ways. In a hollow sphere—no matter how thin—there was no electricity on the inner surface; it was all on the outer. When a given, insulated sphere was encased in another and outer one, the electricity instantly left the surface of the first and arranged itself on that of the outer sphere. Even a cotton net with open meshes was electrified only on the outer side, and the electricity was reversed if the net was turned wrongside out. These facts were very distinctly demonstrated with suitable apparatus. Very delicate instruments were shown for detecting the presence and measuring the intensity of the electric fluid upon any given body.

The Principle of Induction

Was explained and beautifully demonstrated with elegant and costly apparatus. The simple apparatus first used by Volta in demonstrating this principle was shown. Inductive electricity is that which has been generated by friction, etc., and then conducted to another body by a suitable conductor. This discovery we owe to our own Franklin. The charging of the Leyden jar is made possible through this principle of induction, multiplying which, a battery is formed capable of killing by a single discharge the strongest ox. The simple experiments in this direction lead to gradual improvements in instruments for generating electricity, until from the tiniest spark which was all that Franklin or Volta could produce, we have now machines that will develop a continuous chain of sparks six or seven inches long—miniature chain lightning, which in a darkened room falls with almost blinding influence upon the eyes. Several of the various electrical machines were shown, exhibiting the gradual progress which has been made in this direction from Franklin's time to the present day—the latest of which is a novel and powerful machine lately devised by Carré of Paris, and which was received here only a few days previous to the date of this lecture. This machine combines both the frictional and inductive principle, and possesses a means of greatly intensifying the current, which was shown but not explained by the lecturer.

During the last century, as such machines have been gradually improved, experimenters have been at work with great earnestness and success. At first such experiments were conducted quite privately, and the experimenters were regarded with a species of awe and admiration. Men of learning and influence esteemed it a great favor to be admitted as spectators.

Our own Franklin was one of the most successful of such experimenters. Spirits (alcoholic) were set on fire, gas was lighted and guns were fired by this mysterious agent. [The lecturer might have mentioned here, as one of the most important experiments, that performed by Franklin of drawing lightning from the clouds, thus proving, by actual demonstration, what was only suspected before—that this electricity produced by friction was identical with that developed in the thunder cloud.]

Several Beautiful Experiments

Were here shown by the aid of the same machine, one of which consisted in causing the electric current to pass through a long glass rod, and repeatedly around a glass globe by means of a detached conductor, whereby the fluid assumed the appearance of a glowing chain of fire. The profile of Franklin was also flashed out in electrical fire by means of a similar device. The electrical chimes were also another pleasing feature. But perhaps the most interesting experiment of all was a demonstration of the power which the human body possesses of becoming an accumulator of electricity—a living Leyden jar.

Lighting Gas with the Fingers.

A young lad, standing upon a stool insulated with glass legs, when placed in connection with the same machine, was able, by merely pointing his finger near a gas burner, to light the same; eight or ten jets were thus successively lighted; and small dishes of naphtha were also set on fire by the same means, sparks were also drawn from any part of his body wherever the professor brought his knuckles in close proximity to the same. The power and influence of points was here explained by the virtue which of Franklin's invention of the lightning rod was suggested and made practical.

Electricity from a Steam Boiler.

Another interesting and quite novel experiment consisted in the demonstration that electricity is generated by escaping steam, and, when the boiler is properly insulated, diffused throughout every portion of the boiler and iron-work connected therewith. A small boiler, of locomotive construction, holding some eight or ten gallons, was put under a steam pressure of 100 pounds to the inch, and the steam allowed to escape through some three or four small tubular openings, whereby considerable steam friction was produced. Soon after the steam commenced escaping, sparks could be drawn from any part of the boiler or iron-work connected with it, thus demonstrating the interesting fact which was first discovered through accident by Sir William Armstrong—that a steam boiler may, by proper insulation, be converted into an electrical machine.

The experiments, as well as the lecture, throughout, were eminently pleasing and instructive, and were made possible, in all their completeness, in this city, only by means of the superior character of the apparatus connected with the St. Ignatius College, which is the most complete and costly of anything of the kind elsewhere on the Pacific coast.

Prof. Neri gave another lecture, which is to be considered the second of the course of six on electricity, on Thursday evening of this week, when an entirely different series of experiments was presented.

Formation of Mountains.

Prof. LeConte has delivered two Lectures, at Corinthian Hall, in this city, on the above subject, both of which were greeted with large and appreciative audiences, and in which some rather novel theories were presented.

In his first Lecture the Professor held that there are two forces operating on the earth's surface—the sun force and the earth force. The former he assigns the leveling process of rain; to the latter the elevation of mountains and continents. This he calls the *igneous* force, seemingly admitting that heat exists near the surface of the earth, of sufficient intensity to fuse the most refractory rocks, under ordinary pressure—but not at the depths where such action is supposed to take place. If this heat increases with depth, the pressure also increases to such an extent as to prevent actual fusion, keeping still solid the substance of the interior portion of the earth, whatever that may be, even to its center. Thus we have a solid earth!

In the second Lecture, the Professor, after a brief allusion to the first, remarked that the theory of mountain chain formation is pressure. The horizontal pressure of great sedimentary districts produces an uprising. A mountain range is a great bulge in the earth's surface. After being so formed they are sculptured by igneous and aqueous agencies. He did not believe that when this uprising took place it left a hollow beneath; but that the upheaval was solid; not an upending, but an upswelling.

One of the phenomena particularly noticeable, is the falling of strata, which are very complex in their formation. These foldings are generally parallel to the mountain chains themselves, and distinctly reveal the crushing process to which the strata have been subjected. Another phenomenon noticeable, is the slate cleavings, which can not be classed as laminations or stratifications, but cleaving right through the chain without regard to the stratification, and produced by the enormous pressure, and mashing together in a plastic mass, and upheaving it. Slate is nothing more than hardened clay, and the fossils found in it, distorted and crushed, plainly indicate the

direction and amount of pressure brought to bear upon the mass.

The enormous scale upon which these mountains have been mashed is wondrous, being placed, as it were, in the jaws of a great vise and elongated as well as crushed. A mass of sediment, two miles long and 1,000 feet thick, would rise to a height of 25,000 feet, and yet we have had sediment fully 45,000 feet thick in geological eras, and it is in this manner that we can account for this great height of some of our mountain chains. Mountain ranges are no more than long lines of sediment, the Sierra being a mass of sediment 20,000 feet thick.

The lecturer closed with the startling announcement that, in his opinion, this deposit of sediment is still going on, and that in this dim distant future other mountain chains will be formed to the westward, and that volcanic eruptions will again be the order of the day, earthquakes being necessary incidents.

Professor LeConte's next lecture will be upon "The Great Lava Flood of the Northwest, and the Construction of the Cascades."

The State Legislature.

Nearly two months of the session have already passed, and nothing of the really important business which has been introduced has yet been put upon its final passage. The friends of reform and honest legislation have generally been active and vigilant; but their opponents have also been active. Finding themselves in a hopeless minority, they are employing every artifice known to the legislator to stave off important work, and, if possible, drive it so far into the session, that it will be impossible to get much of it through before the day of adjournment arrives.

The No-Fence Bill.

The no-fence bill appears to be attracting the largest share of attention just now. It is almost or quite equal in importance to the subject of irrigation. With such a law the counties most interested will have to spend nearly or quite as much money for fences as would be required to introduce a thorough system of irrigation. The bill introduced by Representative Ferguson passed the Senate a few days since, but with so many changes that it was hardly recognizable, and the Assembly did well on Monday in refusing to accept the amendments. It is to be regretted that Senator Edgerton, who has thus far made such a manly fight for the people, should go back on them in this particular, and we also regret to find San Francisco's Senator, Roach, in the same boat. The sympathy of the whole State, outside of the cattle interest, is undoubtedly with the bill substantially as it stood.

Fares and Freights.

A question of still greater magnitude, also remains to be disposed of. The latest action on the bill (Freeman's) was to postpone its further discussion in the house, until Monday next. There is little doubt but the bill will pass substantially in its present form. The Railroad company has exhausted its expedients to defeat the measure. There is an evident determination on the part of a majority of the Legislature to carry out the wants of the people, by the establishment of a scale of prices which shall protect their rights.

The bill has passed the Assembly by the strong vote of 68 to 9. The absorbing question now is—"What will the Senate do with it?" That body can scarcely afford to ignore the fully expressed wishes of the people, by either unnecessarily delaying the bill, or hampering it with such amendments as to render it of no effect.

Stop False Labeling.

In the Assembly, Jan. 26, Mr. Northcutt introduced a bill, "to prevent fraudulent sales of merchandise. It provides that all packages of merchandise shall contain the quantity represented, and that any person who shall sell any package containing a quantity less than marked thereon shall be deemed guilty of misdemeanor, the penalty to be a fine of from \$25 to \$300, or imprisonment not to exceed 150 days or both." This bill or some proper modification thereof should become a law. A large proportion of the dry and fancy goods now sold by merchants is labeled with the most outrageous mendacity. Often from one-quarter to one-half the amount labeled is minus in the package. Let California be the first to stamp her foot on this practice. Let Americans teach foreign manufacturers to label their goods with truth, or keep them at home. The taking effect of the law at once might at first inconvenience merchants; but we believe the moral lesson taught by erasing false figures upon the goods now on hand would more than compensate for the trouble. In addition to the above law, we also need one to prevent adulteration of food and other salable articles.

The Apportionment Question

Is another measure of great importance to the farmers, as under the present rate, they and their allies are fully one-half disfranchised. Fifty-five days of the session have already passed, and the unnecessary delay in considering this question is beginning to look quite suspicious.

San Benito County.

The bill to create this new county bids fair to meet with strong opposition in the

Senate. The points in its favor are being prepared for presentation to the Senate committees.

Fees of Office.

Senator Gibbons has commenced a greatly needed reform, which looks to the abolition of fees to salaried officers. Every officer shall receive a salary commensurate with his services, and that shall suffice. If fees must be taken, let it be for the benefit of the State, county or municipality. The fee system as a perquisite to officers, exerts a most vicious and pernicious influence, and should be abolished at once. The Senate has adopted a resolution to convert

The Governor's Mansion.

Which has already cost some \$50,000, into a State Armory. It would furnish a costly edifice for such a purpose; but is perhaps the best one that can be made of it unless the State can sell the property as it stands, for a fair price. It is to be hoped that we have at length reached the end of this and similar foolish extravagances. The people are tired of them.

Swamp Land Frauds.

Another astounding series of frauds connected with the swamp land grants, amounting in the aggregate to over \$200,000, is reported, which will call for a searching investigation by the Legislature. The present appears to be a bad time for public swindlers, for the metaphorical whitewash wherewith they may be coated, seems to be remarkably scarce just now. There is good reason to believe that the public money will be looked after a little closer in future than has been the case in times past. The people have got their eyes open and are determined to give no quarter to the harpies who have heretofore fattened upon them. Neither past reputation, position, nor ill-gotten wealth will shield them now.

The Irrigation Question

Seems to be slumbering just now. The only reference to it which we have noticed the past week has been the presentation of a petition by Mr. Vunables, of Los Angeles, from 1,700 practical farmers, asking for a general system of irrigation; that the State be divided into irrigation districts, and that the said districts be authorized to issue bonds for the prosecution of said work. Referred.

Riot strike reported in the lower tunnel of the Jacob Little mine.

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It is the constant companion and estimable friend of the missionary and the traveler, on sea and land, and no one should travel on our Lakes or Rivers without it. It has been before the public over thirty years, and probably has a better and wider reputation than any other proprietary medicine of the present day. At this period there are but few unacquainted with the merits of the Pain-Killer; but while some extol it as a liniment, they know but little of its power in easing pain when taken internally, while others use it internally with great success, but are equally ignorant of its healing virtues when applied externally. We therefore wish to say to all that it is equally successful whether used internally or externally, and it stands to-day unrivalled by all the great catalogue of family medicines. It is sufficient evidence of its virtues as a standard medicine, to know that it is now used in all parts of the world and that its sale is constantly increasing. No curative agent has had such wide spread sale or given such universal satisfaction. It is a purely vegetable compound, and perfectly safe in unskillful hands.

After thirty years trial, it is still receiving the most unqualified testimonials to its virtues, from persons of the highest character and responsibility. Physicians of the first repute, and recommend it as a most effectual preparation for the extinction of pain. It is not only the best remedy ever known for Bruises, Cuts, Burns, &c., but for Dysentery or Cholera or any sort of Bowel complaint, it is a remedy unsurpassed for efficiency and rapidity of action. In the great cities of India, and other hot climates, it has become the Standard Medicine for all such complaints, as well as for Dyspepsia, Liver Complaints, and other kindred disorders. For Coughs and Colds, Canker, Asthma, and Rheumatic difficulties, it has been proved by the most abundant and convincing testimony to be an invaluable medicine.

Beware of all Imitations.

The Pain-Killer is sold by all respectable druggists throughout the United States and foreign countries. Prices—25 cents, 50 cents and \$1 per bottle.

PERRY, DAVIS & SON, Proprietors,
No. 136 High street, Providence, R. I.

TAKE UP YOUR LINE of march for Oritton's, No. 7 6th Avenue, all ye coughers and wheezers, and sniffers. It is the depot for Hale's Honey of Marshmallows and Tar, which for all ailments of the lungs and their air passages is an immediate and sovereign remedy. All Druggists keep it. Pike's Toothache Drops cure in 1 minute.

NO LIFE INSURANCE COMPANY has a better record of more permanently popular reputation than the CONNECTICUT MUTUAL LIFE INSURANCE CO., J. B. Roberts, 316 California Street, San Francisco, is general agent for this Coast. Send to him for circulars and information of this reliable, first-class company.

CONTINENTAL LIFE INSURANCE CO., No. 302 Montgomery street, corner of Pine, San Francisco.

(Continued from page 70.)

lowed with an incline from the bottom of the shaft.

CHOLLAR-POTOSI.—Owing to the ore dumps being filled and the weather so stormy that it has been impossible to get the ore to the mills, but little ore has been extracted from the mine during the past week.

SUCCON.—The new shaft of the hill is down 320 feet, the sinking making excellent progress. The little shaft in the canon, east of the mill, is being sunk 100 feet deeper for the purpose of opening a new level. Drifting east and extracting ore on the line of the ledge, at the 280-ft. level in this shaft, is making steady progress.

OCCIDENTAL.—Sinking the winze in the main tunnel has been suspended till the erection of the hoisting engine. The bottom of the winze at the time of the suspension of the sinking showed some fine ore.

CALABONIA.—Raising up on the third compartment of the shaft from the 600 to the 500-ft. level, is making rapid progress.

DAYTON.—Work has been resumed in the south ore breast at the third station level. Daily yield 40 tons of ore, keeping the Woodworth mill steadily running.

ROCK ISLAND.—The north drift is in 65 ft. from the main west tunnel. Both drifts have during the past week shown decided improvement.

EMPIRE.—Sinking the north winze on the 1,700-foot level is making good progress, with much more favorable indications of finding a body of ore.

NEVADA.—The main south drift from the west tunnel is still being driven rapidly ahead, the face in good ore.

SHOHEATED ROCK ISLAND.—The work of clearing out and retimbering the tunnel is completed.

BALTIMORE CONSOLIDATED.—Sinking the main shaft is being prosecuted with all the vigor possible. Preparations for opening two new levels, one at 500, and the other at the 600-foot level, are rapidly approaching completion.

INDEPENDENT AND OMEGA.—The tunnel is cleaned out and repaired a distance of 150 feet. There is still 130 feet of tunnel to repair before reaching the ledge.

BULLION.—The north drift from the 1,700-foot station of the Imperial is in 95 feet, the rock in the face working finely.

KNICKERBOCKER.—The new hoisting machinery is all in place, and is expected to start up ready to resume operations in the mine by Thursday next.

SILVER HILL.—Sinking the shaft is making good progress. There is but little change to note of either the north or south drifts at the second station.

MINT.—Sinking the main shaft is making good headway.

FRANKLIN.—The good ore found in the American Flat mine, adjoining, is a source of great encouragement to the holders of Franklin.

DANEY.—The main shaft is down 315 feet, in fair working ground.

PICTOU.—The face of the tunnel still shows porphyry, with clay seams, and small fingers or feeders of quartz.

LADY WASHINGTON.—Sinking the shaft is making good progress, and the quartz in the bottom of the shaft never looked more promising than at the present.

TYLER.—The water in the shaft is being steadily lowered at the rate of five feet a day.

BUCKEYE.—Sinking the main incline for a new level is making rapid progress.

UTAH.—Driving the main west drift to cut the ledge, is making fair progress. There is a slight increase in the flow of water from the face, but not sufficient to impede work.

IMPERIAL.—The main east drift at the 1,900-foot station is in 35 feet, the face in good blasting ground.

NEW YORK CONSOLIDATED.—The shaft is now 450 feet in depth, the bottom in good sinking ground.

JUSTICE.—Raising up on the incline to connect with the main shaft at the 300-foot level, is making fair speed.

JACOB LITTLE.—During the week the ore vein has widened and improved considerably, showing the best next to the east wall, the face of the drift at that point showing splendid ore, rich in both gold and silver.

EUROPE.—Still drifting through the ledge, which shows improvement since our last report, assays running from \$5 to \$38 to the ton.

PHIL SHERIDAN.—The new working shaft location of this company is east of the lead, and about one hundred feet north of the Sierra Nevada Company's new shaft.

OVERMAN.—Sinking the winze from the 1,000 to connect with the 1,200 foot level is making fair progress, the bottom still in rich ore.

ARIZONA, UTAH AND GLOBE.—The main west drift on the 400-foot level still continues in hard blasting rock.

ELY DISTRICT.

WASHINGTON & CREOLE.—Record, Jan. 18: Drifting east and west from the bottom of the winzes. As far as progress has been made, have found a vein from one to two feet wide. Connection has been made between the west and prospect winzes.

PROCTOR.—Shaft down 515 feet. The old workings of this company have been let out on contract, and the work is progressing satisfactorily. Sinking rapidly in the new shaft, which is to be sunk 1,000 or 1,200 feet.

HURN AND HUNT.—Still running the main drift towards the vein, which it is expected will be cut at an early day, 1,000 feet from the surface vertically.

PAGE AND PANACA.—The indications in this mine are even more favorable than heretofore. **SILVER PEAK.**—Sinking continues as usual, and everything is working advantageously. The shaft is being sunk rapidly.

CONDOA.—Since our previous notice of this mine (two weeks ago), drifting for the ledge has progressed satisfactorily. The work continues.

INGOMAR.—Work of prospecting still continues with unabated vigor.

CAROLINE.—Shaft down 725 ft., and are putting in a station preparatory to drifting.

CHIEF EAST.—Stopping from the 221-ft. level and extracting some very good ore.

ALPS.—Still drifting, with no change worthy of mention since our last.

PEAVINE.—Stopping in the second level, and ore is being taken out daily.

Laws Concerning Corporations.

[Under the New Code—January 1, 1873.]

GENERAL PROVISIONS APPLICABLE TO ALL CORPORATIONS.
WAGON ROAD CORPORATIONS.
WATER AND CANAL CORPORATIONS.
HOMESTEAD CORPORATIONS.
MINING CORPORATIONS.
LAND AND BUILDING CORPORATIONS.
ALSO, MINING PARTNERSHIP LAW.
 A pamphlet containing the above provisions concerning Corporations has been printed from the Statutes of California. It furnishes those who wish those special laws an opportunity of obtaining them for the small sum of 25 cents (post paid). Address, DEWEY & CO., Publishers, and Patent Agents, S. F.

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SECOND EDITION—REVISED AND ENLARGED.

The Explorers', Miners' and Metallurgists' Companion.

Comprising a Practical Exposition of the Various Departments of Exploration, Mining, Engineering, Assaying, and Metallurgy.

Containing 672 Pages and 83 Engravings

BY J. S. PHILLIPS, M. E.,

Of California, a Practical Operator for Thirty-four Years; Explorer, and Resident in the Pacific States and Territories for the past Eight Years.

PRICE, bound in cloth, \$10.50; in leather, \$12 (currency). Forwarded by mail for 50c. extra, by

DEWEY & CO.

SHAREHOLDERS, TRUSTEES, and SECRETARIES OF ALL MINING COMPANIES.

Should see to it that their Notices are advertised legally in the **MINING AND SCIENTIFIC PRESS**, at much less cost than the usual rates of daily publications. Every person interested in the prosperity of legitimate mining enterprises should favor such practical economy. Send for circular of convenient dates for advertising, free blanks, and a copy of the New Code Corporation Assessment Law.

Mining and Other Companies.

Owing to the time necessary to mail the present large edition of the *M. & S. Press*, we are obliged to go to press on Thursday evening—which is the very latest hour we can receive advertisements.

Diamond Silver Mining Co.—Notice.

A meeting of the stockholders of the Diamond Silver Mining Company, of Tintic District, Juab County, Utah Territory, will be held on Wednesday, the 18th day of February, 1874, at one o'clock p. m., at Sherman's Building, No. 606 Montgomery street, Room 12, for the election of Trustees for the ensuing year. The subject of dividing an assessment upon the capital stock of the company will also be determined.

By direction of the Board of Trustees,
 WM. SHERMAN, President.
 O. C. MILLER, Secretary.
 San Francisco, Cal., January 12, 1874. ja-5t

Commercial Coal Mining Company, of

San Francisco. Principal place of business, City and County of San Francisco, State of California. Location of works, Santa Cruz County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 16th day of December, 1873, an assessment of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary, at his office, No. 402 Montgomery street, room No. 23, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 26th day of January, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 23d day of February, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

S. B. HANSON, Secretary.
 Office, No. 402 Montgomery street, room No. 23, San Francisco, California. de20

Notice—Stockholders of the Hecker-

dorn Gold and Silver Mining Co. are requested to call at the Secretary's office and exchange their old certificates of stock for the new.

PAUL J. ROBERT, Secretary.
 Office, 620 Washington street, San Francisco.

Cupel and Tiger Silver Mining Company.

Principal place of business, San Francisco, Cal. Location of works, Wallapai Mining District, Mohave County, Arizona Territory.

Notice—There are delinquent upon the following described stock, on account of assessment levied on the 25th day of October, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J P Ridgeway.....	86	1000	\$200 00
J P Ridgeway.....	87	1000	200 00
J P Ridgeway.....	88	1000	200 00
J P Ridgeway.....	89	1000	200 00
J P Ridgeway.....	90	1000	200 00
J P Ridgeway.....	91	100	20 00
J P Ridgeway.....	92	100	20 00
J P Ridgeway.....	94	100	20 00

Names.	No. Certificate.	No. Shares.	Amount.
J P Ridgeway.....	95	100	20 00
J P Ridgeway.....	96	100	20 00
J P Ridgeway.....	97	100	20 00
J P Ridgeway.....	98	100	20 00
J P Ridgeway.....	99	100	20 00
J P Ridgeway.....	100	100	20 00
William Miller.....	49	500	100 00
William Miller.....	50	500	100 00
William Miller.....	51	500	100 00
William Miller.....	52	500	100 00
William Miller.....	53	500	100 00
William Miller.....	54	500	100 00
William Miller.....	55	500	100 00
William Miller.....	56	500	100 00
William Miller.....	57	500	100 00
William Miller.....	58	500	100 00
William Miller.....	59	500	100 00
William Miller.....	61	100	20 00
William Miller.....	145	50	10 00
William Miller.....	146	100	20 00
William Miller.....	147	100	20 00
William Miller.....	148	100	20 00
William Miller.....	149	100	20 00
W H Smith.....	24	25	5 00
W H Smith.....	25	25	5 00
W H Smith.....	26	20	4 00
W H Smith.....	27	20	4 00
W H Smith.....	28	20	4 00
W H Smith.....	29	20	4 00
W H Smith.....	30	20	4 00
W H Smith.....	31	20	4 00
W H Smith.....	32	20	4 00
W H Smith.....	33	100	200 00
W H Smith.....	142	25	5 00
W H Smith.....	143	50	10 00
W H Smith.....	144	1200	240 00
Henry Raymond.....	13	200	40 00
W H Raymond.....	65	500	100 00
W H Raymond.....	66	500	100 00
W H Raymond.....	67	500	100 00
W H Raymond.....	68	500	100 00
T E Jewell, Trustee.....	33	500	100 00
T E Jewell, Trustee.....	34	500	100 00
T E Jewell, Trustee.....	35	500	100 00
T E Jewell, Trustee.....	36	500	100 00
T E Jewell, Trustee.....	37	100	32 00
E Martin Smith, Trustee.....	38	1000	200 00
E Martin Smith, Trustee.....	39	100	20 00
Augustus Laver.....	9	200	40 00
Augustus Laver.....	139	1000	200 00
Julius Renault.....	85	100	20 00
Julius Renault.....	133	100	20 00
Julius Renault.....	134	100	20 00
Julius Renault.....	179	500	100 00
Horatio McPherson.....	11	200	40 00
Engene Chenot.....	46	50	10 00
Honore Lacoste.....	48	100	20 00
A Noel.....	74	25	5 00
L M Gantier.....	75	50	10 00
Joseph Vernet.....	76	100	20 00
Georges Belter.....	79	100	20 00
Georges Belter.....	81	100	20 00
Georges Belter.....	82	100	20 00
Georges Belter.....	83	75	15 00
George W Drake.....	136	50	10 00
James R Martin.....	137	50	10 00
J C Warren.....	161	50	10 00
J C Warren.....	162	50	10 00
J C Warren.....	163	50	10 00
J C Warren.....	164	50	10 00
W O Elmer.....	164	50	10 00
John M Murphy.....	165	200	40 00
M Kraszynski.....	167	30	6 00
M Kraszynski.....	168	30	6 00
M Kraszynski.....	169	30	6 00
Charles Spencer.....	17	100	20 00
Charles Spencer.....	40	100	20 00
Charles Spencer.....	42	100	20 00
Charles Spencer.....	43	100	20 00
Charles Spencer.....	101	1000	200 00
Charles Spencer.....	102	1000	200 00
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Charles Spencer.....	124	1000	200 00
Charles Spencer.....	125	1000	200 00
Charles Spencer.....	126	1000	200 00
Charles Spencer.....	127	1000	200 00
Charles Spencer.....	128	1000	200 00
Charles Spencer.....	129	1000	200 00
Charles Spencer.....	130	1000	200 00
Charles Spencer.....	131	1000	200 00

And in accordance with law, and an order of the Board of Directors, made on the 17th day of December, 1873, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the Secretary, No. 116 Leidesdorff street, on Monday, the 9th day of February, 1874, at the hour of 1 o'clock p. m., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

W. AUGUS, KEEFE, Secretary.
 Office, 116 Leidesdorff street, cor. Halleck, San Francisco, Cal.

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WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS E. MEAD.....Secretary
24v17-07

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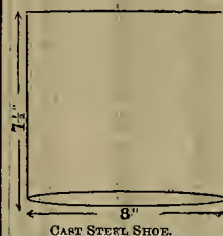
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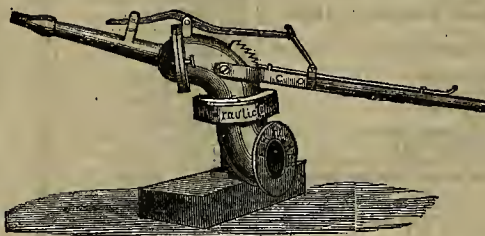


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FISHER'S KNUCKLE JOINT AND NOZZLE

IS THE Cheapest and Best Hydraulic Machine in use.



The only reliable party in the Hydraulic business who protects his patrons.
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Address V. H. FISHER, Nevada, Cal.

HYDRAULIC MINERS, TAKE NOTICE—I hereby caution Miners and Manufacturers against making, buying, selling or using a Hydraulic Machine or Joint known as the Little Giant, manufactured and sold by R. E. & J. Craig and Richard Hoskin, as the same is an infringement upon the invention of the machine known as FISHER'S HYDRAULIC CHIEF, secured by Letters Patent, No. 110,322, dated Dec. 20, 1870. All parties participating in such infringements will be rigorously prosecuted. Nevada, Jan. 13th.

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Manufactured

TO ORDER,

to throw from

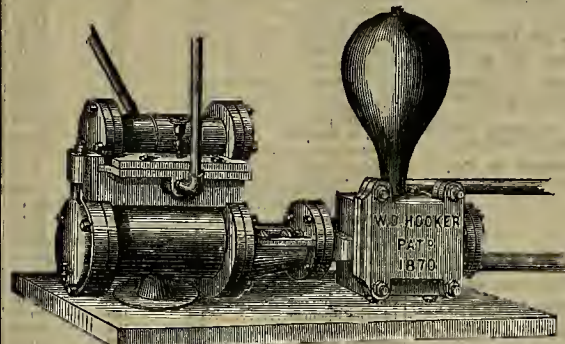
One

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eight-inch

STREAM.

Hooker's Patent Direct Acting Steam Pump.



SIMPLE, CHEAP AND DURABLE.

Adapted for all purposes for which Steam Pumps are used. Manufactured by the inventor and patentee, at Hooker's

Machine Works, No. 13 Fremont st., San Francisco

SEND FOR CIRCULAR.

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SHIP, AGRICULTURAL, STOVE, RANGE AND HOUSE CASTINGS.

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PRICES MODERATE.
J. H. WEED. V. KINOWELL

THOMPSON BROTHERS,

EUREKA FOUNDRY,

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LIGHT AND HEAVY CASTINGS,

of every description, manufactured. 24v16-9

BLISS & WILLIAMS,

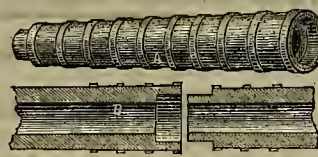
167 to 173 Plymouth street, Brooklyn, N. Y., Manufacturers of Presses, Dies and Tools

FOR MAKING

SALMON, FRUIT AND OTHER CANS, And working Sheet Metals in all forms. Catalogues furnished upon application.
20v27-3m

PUBLISHERS please say advertised in Scientific Press.

SOMETHING NEW.



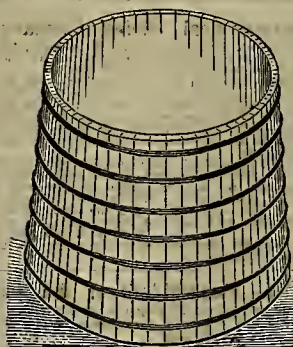
Wooden Pipe of all Sizes.

From one to twelve-inch bore, suitable for water or gas, that will stand as much pressure and last as long as iron, for half the cost.

Send for descriptive catalogue and price list to

11v27-awhp

H. F. WILLIAMS, 331 Montgomery st., S. F.



WATER TANKS of any capacity, made entirely by machinery. Material the best in use; construction not excelled. Attention, dispatch, satisfaction. Cost less than elsewhere.
—8v28-3m-sa
Cor. Mission & Fremont Streets.

McLAREN, JAMES & CO.,

DEALERS, MANUFACTURERS AND INTRODUCERS OF NEW INVENTIONS FOR THE PACIFIC COAST.

Manufacture Espey's Patent Coil Wire Door and Gate Springs; Gate's Patent Oil Blacking, etc.

—ALSO—

Real Estate and General Business Agency.
NO. 605 OLAY STREET, SAN FRANCISCO, CAL.
1a10-bp-3m

Machinery.

TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

All persons infringing on either of these patents

WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under Craig's, Rice's, Macey's and Hoskin's patents.

I Guarantee Full Indemnity to all my Customers.

Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an Improved LITTLE GIANT.

For further particulars apply to

R. HOSKIN, Dutch Flat,
R. E. & J. CRAIG, 304 Montgomery st., S. F.
Or WILLIAMSON & CORY, Marysville.
Dutch Flat, August 1 1873. 6v27-2m

CROCKER'S PATENT TRIP HAMMER QUARTZ BATTERY.



This machine, complete, weighs 1,500 lbs. Has an iron frame, with standard wheels 17 inches each, which strike 2.0 blows per minute, in a mortar provided with screens on both sides, and crushes FINE 600 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$500.

G. D. CROCKER,

316 California street, San Francisco.

17v26-1f

The New Wilson SEWING MACHINE

Has points of superiority over all others. A reliable warranty is given with each machine for

FIVE YEARS.

It is unequalled for light and heavy work. Examine and compare it with the highest priced machine in the market

G. A. NORTON, Gen. Ag't for the Pacific Coast.

337 Kearny St., S. F. 2v27-cow-bp-1y

PRICE, \$50.

THEODORE KALLENBERG,

MACHINIST,

and Maker of Models for Inventors. All kinds of Dies Stamps and Punches made. Also, all kinds of Small Gears Cut.

Repairing done on very Reasonable Terms and in the best manner. No. 32 Fremont street, S. F. 19v23-3m

STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

10v27H J. HENDY, No. 32 Fremont Street.

Diamond Drill Co.

The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

A. J. SEVERANCE & CO.
Office, No. 315 California street, Rooms 16 and 17.
24v26-1f

Jos. THORNHILL, 1612 Mason Street, near Green. C. W. WHITE, 47 Clay Street.

Bricklayer and Contractor

Particular attention paid to all kinds of FIRE WORK such as BOLLERS, FURNACES, OVENS, GRATES, RANGES, etc.

Brittan, Holbrook & Co., Importers of Stoves and Metals, Tinners' Goods, Tools and Machines; 111 and 113 California St., 17 and 19 Davis St., San Francisco, and 173 St. Sacramento. 1v27-3m

BUY BARBER'S BIT BRACE. 1v27-3m

Metallurgy and Ores.

JOHN TAYLOR & CO.,
IMPORTERS OF AND DEALERS IN
ASSAYERS' MATERIALS
Chemical Apparatus and Chemicals,
Druggists' Glassware and Sundries,
PHOTOGRAPHIC GOODS, ETC.,
512 and 514 Washington street, SAN FRANCISCO

We would call the special attention of Assayers, Chemists, Mining Companies, Milling Companies, Prospectors, etc., to our large and well adapted stock of
ASSAYERS' MATERIALS

Chemical Apparatus.
Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast, our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for computation of assays in Grains Grammes, will be sent free upon application.
7725-1f **JOHN TAYLOR & CO.**

Varney's Patent Amalgamator.
These Machines Stand Unrivaled.

For rapidly pulverizing and amalgamating ores, they have no equal. No effort has been, or will be spared to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits. They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows.
The pan being filled, the motion of the miller forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular row between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.

Settlers made on the same principle excel all others. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed. Mill-men are invited to examine these pans and settlers for themselves, at the office, 229 Fremont Street, San Francisco.

Important to Miners and Mill Men.
Silver-Plated Copper Amalgamating Plates,
for Saving Gold.

Of all sizes and in any quantity, furnished to order. Full instructions sent for operating. Particular attention given to plating goods for Builders, Plumbers, etc. Hotel and Restaurant work replated.

SAN FRANCISCO GOLD AND SILVER PLATING WORKS,
655 Mission street, San Francisco.
2v25-3m **E. G. DENNISTON, Proprietor.**

CHARLES F. KIRCHNER,
Sampler and Crusher of Ores.

NO. 11 DRUMM STREET,
San Francisco.

ORE BAGS FOR SALE
IN QUANTITIES TO SUIT.
Apply to
CROSS & CO.,
316 California street, San Francisco.

COPPER ORES.

The undersigned, agent of Messrs. POPE, COLE & CO., proprietors of the Baltimore Copper Works, purchases for cash all grades of Copper Ore above 16 per cent, paying the full value of same in Baltimore less Freight, Insurance, interest and Commission.
16v27 **HORACE D. RANLETT,**
P. O. Box 2045, 218 California st., San Francisco.

Richardson & Co., Copper Ore Wharves,
SWANSEA.

RICHARDSON & Co. have been for thirty years established in Swansea as Agents for the preparation Sampling, Assaying, and sale of Copper, Silver, Gold, Lead, Zinc, and all other Ores and Metals, for which they have extensive Warehouses and Wharves under cover, 1,000 feet of Quay Frontage within the Floating Dock, and the most complete Machinery and Appliances. They are also prepared to make advances against Ores in anticipation of realization, and to guarantee all payments when required.
25v28 1y

RODGERS, MEYER & CO.,
COMMISSION MERCHANTS,
ADVANCES MADE
On all kinds of Ores, and particular attention
PAID TO
CONSIGNMENTS OF GOODS.
4v16-3m

STRONG & CO.,
Metallurgical Works,
No. 10 Stevenson Street, near First, SAN FRANCISCO.

We purchase high grade Gold and Silver Ores, Bullion, Etc. Ores worked and tested with care; also, Ore Assays of Gold, Silver, Copper, Lead, Tin, Iron, Manganese, Olinabar, Nickel, Etc.

ANDREW CHAIG,
A. O. POTNAM.
The California Ore Crushing and Sampling Company,
Nos. 413 and 415 Mission st., San Francisco.



Our works are the largest, and afford the best facilities for CRUSHING and SAMPLING ORES on the Coast. Work done at the Shortest Notice. Prompt attention to all orders.
22v27-3m

E. N. RIOTTE, JAR. L. BRYAN, S. O. BROWN.

AUBURN MILL COMPANY,

Reno, Nevada.

Purchase Silver Ores in quantities of two tons and upward, delivered on board the cars at San Francisco or Oakland at the annexed Net Rates, WITH NO CHARGE FOR SAMPLING OR REDUCTION. On lots of less than 10 tons, freight to Reno will be deducted.

Special Rates for Gold Ores.
On Gold contained in Silver Ores to the amount of \$30 and upwards, 63 per cent. will be paid. When less than \$30, and above \$10, the amount will be added to the Silver value. Sacks promptly returned free of charge. Ores sampled by Battery or Sampling Mill as shipped may elect, and returns made promptly by cheque on San Francisco.

Rates											
Assay	Per	Assay	Per	Assay	Per	Assay	Per	Assay	Per	Assay	Per
Value	Cent.	Value	Cent.	Value	Cent.	Value	Cent.	Value	Cent.	Value	Cent.
\$ 80	25	\$ 50	38	\$ 125	41	\$ 165	57	\$ 250	66	\$ 350	76
66	27	33	39	129	48	175	58	263	67	360	77
20	28	35	40	133	50	183	59	275	69	370	78
13	30	36	41	137	51	188	61	283	70	380	79
76	31	100	42	142	52	193	62	290	71	390	80
80	33	107	43	147	53	198	63	297	72	400	81
84	35	112	44	152	54	203	64	303	73	410	82
88	37	119	45	157	55	208	65	310	74	420	83

And on intermediate values in proportion.

C. A. LUCKHARDT, Agent.
21 First St., San Francisco.
S. O. BROWN, Manager,
Reno, Nevada.
3v23-6m

Nevada Metallurgical Works,
21 First street.....San Francisco.

Ores worked by any process.
Ores sampled.
Assaying in all its branches.
Analysis of Ores, Minerals, Waters, etc.
Plans furnished for the most suitable process for working Ores.
Special attention paid to the Mining and Metallurgy of Quicksilver.

E. N. RIOTTE,
C. A. LUCKHARDT,
Mining Engineers and Metallurgists.

LEOPOLD KUH,
(Formerly of the U. S. Branch Mint, S. F.)
Assayer and Metallurgical CHEMIST,
No. 611 Commercial Street,
(Opposite the U. S. Branch Mint,
SAN FRANCISCO CAL. 7v21-8m

PLATINUM
Vessels, Apparatus, Sheet, Wire, Etc., Etc.
For all Laboratory and Manufacturing Purposes
H. M. RAYNOR,
25 Bond street, New York.
Platinum Scrap and Native Platinum purchased.

The Phelps' Manufacturing Co.,
(Late S. F. Screw Bolt Works.)

MANUFACTURERS OF ALL KINDS OF
Machins Bolts, Bridges Bolts, and Ship or
Band Bolts.
13, 15 and 17 Drumm Street, San Francisco. 4v24 1y

TO PARTIES ABOUT TO BUILD.

AUGUSTUS LAYER
Has established his office at 215 Sansome street, near California (over the bank), and is prepared to furnish plans, specifications and superintendence for the construction or renovation of dwelling houses and every description of building.
Artificer's work measured and valued.
AUGUSTUS LAYER, Architect,
8 and 9 Cochrane Building, S. F.
ja24-1m

WATER PIPE.
FOR SALE CHEAP.
WE HAVE ON HAND
5,000 FEET OF 4-INCH PIPE,
5,000 FEET OF 5-INCH PIPE,
Made of No. 10 Sheet Iron, which we will sell at a very low price.
FRANCIS SMITH & CO.,
130 Beale street.
ja24-1f

AVERILL'S
CHEMICAL PAINT
Of any desired Shade or Color,
Mixed ready for application, and sold by the gallon
It is Cheaper, Handsomer, more Durable and Elastic than the best of any other Paint.
Office, corner Fourth and Townsend streets, San Francisco. Send for sample card and price list.
15v23-3msowhp **HEALY & JEWELL, Agents.**

The California Powder Works

No. 314 CALIFORNIA STREET,
SAN FRANCISCO.

Manufacturers and have constant on hand
SPORTING,
MINING,
And BLASTING
POWDER,

OF SUPERIOR QUALITY, FRESH FROM THE MILLS. It being constantly received and transported into the interior, is delivered to the consumer within a few days of the time of its manufacture, and is in every way superior to any other Powder in Market. We have been awarded successively

Three Gold Medals
By the MECHANICS' INSTITUTE and the STATE AGRICULTURAL SOCIETY for the superiority of our products over all others.
We also call attention to our

HERCULES POWDER.
Which combines all the force of other strong explosive now in use, and the lifting force of the BEST BLASTING POWDER, thus making it vastly superior to any other compound now in use.
A circular containing a full description of this Powder can be obtained on application to our Office.
16v20-3m **JOHN F. LOHSE, Secretary.**

BLACK DIAMOND FILE WORKS.

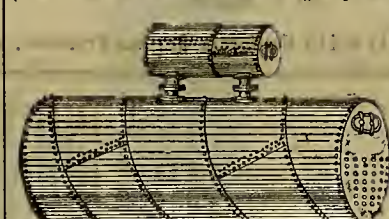


G. & H. BARNETT,
Manufacturers of Files of every Description,
Nos. 33, 41 and 43 Richmond street,
Philadelphia, Pa.

Sold by all the principal hardware stores on the Pacific Coast.
18v25-1y

San Francisco Boiler Works,
123 and 125 Beale Street.....SAN FRANCISCO

F. I. CURRY,
(Late Foreman of the Vulcan Iron Works,) Proprietor.



High and Low Pressure Boilers of all Descriptions.

SOLE MANUFACTURERS OF THE CELEBRATED SPIRAL BOILER.
SHEET IRON WORK of every description done at the Shortest Notice.
All kinds of JOBBING and REPAIRING promptly attended to.
17v25-3m

Steam Boiler Manufactory

—OF—
JAMES H. SHANLEY, Successor to D. McDonald,
Oregon street, below Front, San Francisco.

All Sorts of Steam Boilers Made to Order and Repaired.
Also, all kinds of Sheet Iron Work done promptly, and at prices to suit the times.
1v27

McAFEE, SPIERS & CO.,

BOILER MAKERS

AND GENERAL MACHINISTS,
Howard st., between Fremont and Beale, San Francisco.

SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,
Are prepared to make SHEET IRON and ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.
Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.
All kinds of Machinery made and repaired.
24v22-3m **JOSEPH MOORE, Superintendent.**

GALVANIZED IRON.

For sale for cash, at 50 per cent. less than market prices—Nos. 20 to 28. Also: Galvanized Leaders and Chimney Tops and Hydraulic Pipe manufactured.
MARTIN FRAG,
125 Clay street, below Davis.

CALIFORNIA THEATER.

BUSH STREET, ABOVE KEARNY.
JOHN McCULLOUGH.....Proprietor and Manager.
Ma. BARTON HILL.....Acting Manager.

OPEN EVERY EVENING.
With the best Dramatic Company in the United States.
Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance.

DION BOUCAULT.

Prices of Admission:
Dress Circle and Orchestra.....\$1 00
Dress Circle and Orchestra, Reserved.....1 50
Balcony.....50
Balcony, Reserved.....75
Family Circle.....25
Boxes, according to location.....\$10 & 35
Doors open at half past seven; Commence at eight o'clock.
ja24-1f

FRANCIS SMITH & CO.,

MANUFACTURERS OF

HYDRAULIC PIPE

AND

Artesian Well Pipe.

Having the Latest Improved Machinery, we can make it an object to

Mining & Water Companies

OR

WATER WORKS,

TO CONTRACT WITH US FOR

SHEET IRON PIPE.

ALL SIZES MADE AND ALL WORK GUARANTEED.

OFFICE AT 112 BATTERY ST.,
SAN FRANCISCO. ja3-1f

HEALD'S BUSINESS COLLEGE
BRYANT & STRATTON
24 POST ST. SAN FRANCISCO
SEND FOR CIRCULARS

The object of this school is to impart a thorough education in business affairs. It is open to persons of all ages and of all ages. There is an English Department for those not sufficiently advanced for the Business Course. Sessions continue day and evening throughout the year. Students can enter at any time. All wishing to be successful should secure a practical education at this College. Send for "Herald's College Journal," and learn full particulars. Sent free to all by addressing E. P. HEALD, Prop. Business College, San Francisco, Cal. 2v27-1y

MECHANICS' INSTITUTE,
27 POST STREET.

Course of 15 Lectures on Popular Science,

BY THE
PROFESSORS IN THE STATE UNIVERSITY.

Commencing Saturday Evening, Jan. 3, '74.
Tickets for the course, Two Dollars. The number of tickets being limited, application should be made at once to the Librarian's desk, Mechanics' Institute.
ja10-1f

REMOVAL.

THE OFFICE OF THE OPHIR SILVER MINING Company has been removed to Rooms 1 and 2 Hayward's Building, 419 California street.
JOSEPH MARKS, Secretary.
ja10-1f

REMOVAL.

THE OFFICE OF THE ECLIPSE, WINTERS AND Plato Consolidated (Gold Hill) Mining Company has been removed to Room 3 Hayward's Building, 419 California street.
JOSEPH MARKS, Secretary.
ja10-1f

REMOVAL.

THE OFFICE OF THE TRENCH (GOLD HILL) Mining Company has been removed to Room 8 Hayward's Building, 419 California street.
JOSEPH MARKS, Secretary.
ja10-1f

MONTGOMERY'S HOTEL.

227 and 229 Second street,.....SAN FRANCISCO.
This Hotel has been newly furnished, and is situated in a central and healthy location, and is one of the few Hotels in San Francisco conducted on Temperance Principles.

BOARD, PER WEEK, \$3.50. BOARD AND LODGING, \$4 to \$5. SIX MEAL TICKETS FOR \$1.
CHAS. MONTGOMERY, Proprietor.
Passengers and Baggage taken to the Hotel free. 2v

OUR SPECIALTY: "BEYOND THE MISSISSIPPI."
GO WEST, YOUNG MAN! GO WEST!
And by the Great Silver by the Ton!
Capital required: Nerve and Honest Industry.
THE FAR WEST.
The Great Treasure Chamber of America.
All about its Resources, Mines, Railroads, Lands, Indians, Climate, and Developments Illustrated and Described in
CROFUT'S WESTERN WORLD,
for \$1.50 a year. With 10 Premium Chromes, "AMERICAN PROGRESS,"
free to each subscriber.
Two sample Wonders sent for 10 cents. Agents wanted.

Dunn & Kewin, Pattern and Model Makers,
Globe Iron Works, Nos. 143 and 145 Fremont street, between Mission and Howard, S. F. 1v28-6m

ANDREW CRAIG,
Pres't.
A. O. PUTNAM,
V. Pres't.

JAS. W. WHITLATCH,
Supt.
JNO. L. MURPHY,
Sec'y & Treas.

CALIFORNIA

Quartz Crushing & Ore Sampling
MILLS.

Nos. 413 & 415 Mission st., bet. First & Fremont, S. F.



Ours is the OLDEST, LARGEST and MOST EXTENSIVELY KNOWN establishment of this kind on the Coast.

Our mills are under the direct supervision of one of the most experienced Samplers and Millmen in the country, and we purpose carrying on the business upon a scale commensurate with the wants of the mining public.

We have the best facilities for Crushing, Sampling and Pulverizing all classes of Gold, Silver, Copper and Lead Ores and other minerals.

We also crush and pulverize all kinds of Marble, Fire-Clay, Bricks, Coke, Cement, etc., upon the shortest notice, for which we have special mills.

Reliable information furnished to miners and ore dealers concerning shipments, freights, prices, etc.

Prompt execution of all orders. Faithful attention to business entrusted to us.

Abundant storage room without extra charge.

ja31-1f "JIM" WHITLATCH, Sup't.

EAGLE IMPROVED CHLORINIZING AND
DESULPHURIZING FURNACE.

(Patented July, 1873.)



The Cheapest and Most effective Furnace now in use. Parties desiring of building above furnace, or for any information on same, address,

I. T. MILLIKEN,

ja31-2tam No. 302 Montgomery st., room No. 14, S. F.

QUARTZ MILL FOR SALE.

Ten Stamps, Pans and Roasting Furnace, all complete for working Silver Ores, will be sold cheap enough to pay to remove. Situated in Montezuma District, Nye County, Nevada.

R. T. VAN NORDEN,

ja3-1f 607 Montgomery street, San Francisco.

NOTICE.

To Plumbers, Tinsmen, Metal Roofers, Type Founders, Iron Founders, Etc.

F. O. BELDEN & CO., METALLURGISTS, are now manufacturing at their works, No. 215 FIRST STREET, SAN FRANCISCO, a superior quality of

Solder Babbit Metal and Type Metal,

Which they can supply, in quantities to suit, at a MUCH LOWER PRICE than any wholesale house in this city.

F. C. BELDEN & CO.

1878-3m-16p 215 First Street, San Francisco.

MAGAZINES.	P. 4n	W. E. LOOMIS, News Dealer
Harper's.....	\$4 00	AND STATIONER,
Atlantic.....		S. E. corner of Sansome and
Godby.....		Washington streets,
New York Ledger.....		
Blackwood.....		
Hours at Home.....		
Good Words.....		
Peterson.....	3 00	
Arthur.....		
Lady's Friend.....		
Harper's Weekly.....	5 00	
Chimney Corner.....		
Literary Album.....		
London Society.....	6 00	
A 1 the Year Round.....		
London Ill. News.....	15 00	

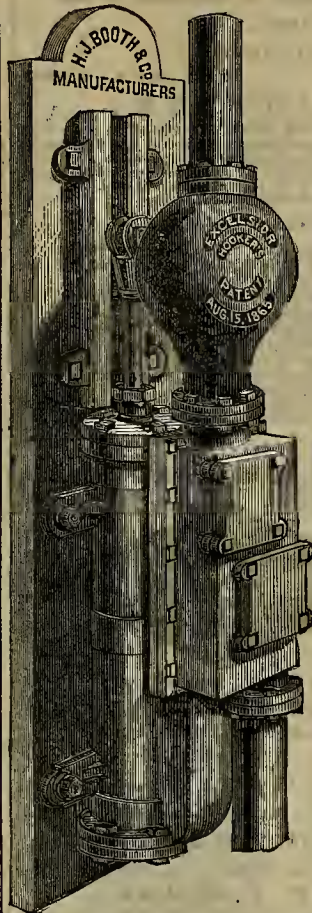
A Good Binder for \$1.50.

Subscribers for this journal can obtain our Patent Elastic Newspaper File Holder and Binder for \$1.50—containing full title of the paper on the cover. It preserves the papers completely and in such shape that they may be quickly fastened and retained in book form at the end of the volume, and the binder (which is very durable) used continuously for subsequent volumes. Post paid, 25 cts. extra. It can be used for Harper's Weekly and other papers of similar size. If not entirely pleased, purchasers may return them within 30 days just the thing for libraries and reading rooms, and all who wish to file the Press.

lanhp

EXCELSIOR MINING PUMP.

WITH SEVEN YEARS' USE OF THIS PUMP WE CONFIDENTLY RECOMMEND ITS



NO. 5.—MINING.

USE FOR MINING OR PROSPECTING.

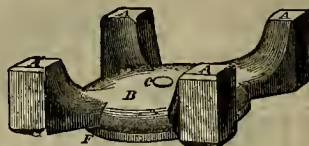
—IT IS—

The Cheapest Pump in the Market.

THERE IS NO TRADE PUMP MADE OF EQUAL
STRENGTH AND POWER.

EVERY PUMP IS TESTED BY HYDRAULIC POWER

To 125 pounds to the square inch,



VALVE.

SO EVERY PUMP, LARGE OR SMALL, IS

Warranted to Force Water 250 Feet High.

Send for Circular.

BRITTAN HOLBROOK & CO.,

111 & 113 California St., San Francisco, (and also Sacramento), General Agents.

5v28-16p-3m-sa

DATA OF CAMERON'S PATENT STEAM PUMPS, REGULAR SIZES.		DAVID STODART, Agent. 114 BEALE ST., SAN FRANCISCO.	
NUMBERS.			
0	1	2	3
4	5	6	7
8	9	10	11
12	13	14	15
16	17	18	19
20	21	22	23
24	25	26	27
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650	652	654	656
660	662	664	666
670	672	674	676
680	682	684	686
690	692	694	696
700	702	704	706
710	712	714	716
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760	762	764	766
770	772	774	776
780	782	784	786
790	792	794	796
800	802	804	806
810	812	814	816
820	822	824	826
830	832	834	836
840	842	844	846
850	852	854	856
860	862	864	866
870	872	874	876
880	882	884	886
890	892	894	896
900	902	904	906
910	912	914	916
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930	932	934	936
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950	952	954	956
960	962	964	966
970	972	974	976
980	982	984	986
990	992	994	996
1000	1002	1004	1006

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MINING AND SCIENTIFIC PRESS

An Illustrated Journal of Mining, Popular Science and Progressive Industry.

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VOLUME XXVIII
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Crouch's Steam Engine.

We mentioned some months since that a youthful genius from the backwoods of Oregon had invented an improved steam engine, and that one of these engines was being constructed by Frank Huntington in this city. The inventor is about 18 years of age, not at all familiar with machinery, but shows a wonderful inventive faculty. Provisions to his invention of the steam engine referred to, young Crouch had never seen a locomotive or modern engine, but had learned all he knew about working steam from hooks and from crude experiments at his father's house. Besides inventing the engine he also experimented in other fields and soon had completed in his own imagination several very important inventions, most of which proved upon investigation to have been previously invented. This, however, should not dim the fact that they were original with Crouch, and he is entitled to as much credit for their production as if they were actually new. For instance, when living in his backwoods home he conceived the idea of constructing a telegraph that would print the dispatches as they were delivered at the end of a line, so as to avoid the use of the telegraphic alphabet. Following out this idea he stretched a wire from his father's house to the barn. He then constructed a crude battery which he connected with his telegraph line. Then he made two type wheels, one of which he placed at each end of his line, and connected with his wire so that the movement of one wheel at one end of the line would be communicated to the one at the opposite end of the line. Thus when one wheel indicated the letter A, the other wheel responded A, and so on, thus giving a complete printing telegraph almost identical with Edison's Printing Telegraph, which has been under experiment for the past few years in New York. The inventive genius of young Crouch has several times been put to the test since he came to California, and in each instance with remarkable results.

The invention to which we wish specially to refer is that of the improved steam and air engine. The principle of the engine consists in superheating ordinary steam at the instant of putting it under the piston of a steam engine, so that the full value of the power developed by superheating it will be obtained in driving the piston. To do this the inventor constructs an engine of a peculiar style which is at once compact and cheap and which can be run with very little expense for fuel. The accompanying engraving will explain in detail the principle of operation.

A is a furnace, which may be constructed of iron or masonry, and is provided with a fire place, M.B. is an upright boiler, which is mounted upon one end of the furnace, A, so that the heat and products of combustion from the furnace will pass up through the boiler and escape in the ordinary manner. Upon the opposite end of the furnace and directly over the fireplace are set two upright, open-top cylinders, C.C., so that their lower ends extend down into the fireplace through the top of the furnace. The pistons each consist of a tube of the desired length with a partition or diaphragm passing across its middle, thus forming a double cup-shaped piston, the tube serving as a guide to the moving piston. The pistons, F.F., of each piston is secured to the center of the diaphragm at its lower end, while its upper end is secured to a crank on the crank or driving shaft. The pistons move up and down in the open-topped cylinders, being connected by their pistons so that the upward movement of one forces the other down alternately.

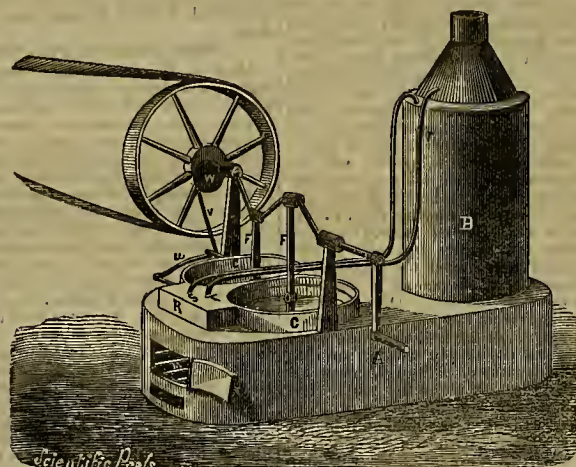
If desired, the cylinders, C, C, can each be constructed with an inner tube, which is smaller than the cylinder and inside of which the piston moves. In this case the space between the upper end of the cylinder and the tube will be closed and the tube will not extend quite to the bottom of the cylinder, thus providing a space or jacket between the two, which communicates, below the tube, with the space below the piston. Suitable packing is secured around the pistons, in order to render them steam-tight in the cylinders.

The inventor provides a tube which connects the jacket of the cylinder with the open air, and which is provided with a proper valve.

The inventor claims that at each upward stroke of the piston, a quantity of air is drawn through this tube into the jacket, and serves by expansion to aid in the subsequent stroke of the piston. This tube, however, can be used or not as desired; the improvement in working steam is not dependent upon it further than its use as an auxiliary.

R is the steam chest into which the steam is conveyed from the boiler by the pipe, S, and T is the exhaust pipe. The steam valve is operated by a crank, U, connecting link, V, and eccentric, W, from the main driving shaft. The fire which heats the water in the boiler, also heats that portion of the cylinders, C, C, which extends down into the fireplace, and when thus heated, the steam, which is admitted below the pistons, is suddenly superheated by coming in contact with these heated chambers, and its power is greatly multiplied at the very instant and in the exact situation in which it will work effectively.

Superheated steam has been used before this



CROUCH'S STEAM ENGINE.

invention, in steam cylinders, but it has always been superheated in an intermediate heater between the boiler and engine, and introduced into the cylinder in a highly heated condition, while the cylinder was at a much lower temperature; and while much better results have been obtained in this way than by using steam at ordinary temperatures, the condition was such that the cylinder and piston were soon destroyed by the action of the superheated steam. By the invention of this young man the cylinders themselves are kept at the highest temperature and made to serve as superheaters as well as cylinders, giving the additional advantage of utilizing the explosion or sudden expansion caused by superheating at the instant the expansion occurs. In the present case an ordinary slide valve is used for working the steam, but it is manifest that any of the known methods of admitting steam and cutting off at different parts of the stroke may be employed, as may be found most suitable for the style of engine to be used. Several of these engines have already been constructed and are in operation, working very well. Those who have experimented with them say that there is a great saving of fuel and that the power developed by the engine is greater than would be due to an engine of similar size working with ordinary steam.

MORE COAL.—The Oakland News says: Every now and then some one finds a "valuable coal ledge" in this county, but we never see any wagons coming in loaded from the mines. The Haywood Advocate chronicles the latest discovery, and this time it is near Corral Hollow, about eight miles from Haywood.

SIEBERT'S LUBRICATORS.—Weed & Kingwell of the California Press Works in this city, agents of Siebert's Lubricators, are now shipping them to Boston, Mass., Port Huron, Mich., and other places in the East, to fill bona fide orders.

Protection to Stockholders.

Mr. Quinin has introduced, at the Legislature, a bill to provide for the better protection of stockholders of incorporated companies. It provides that the owner or owners of \$1,000 per value of stock in any company incorporated under the laws of this State may apply, and must be granted permission by the Board of Trustees, for permission to enter upon and examine the property of the company, both on the surface and under the ground. Every demand, neglect and refusal to grant the permission shall be punished for contempt by a fine of \$200. A demand of the President shall be deemed a demand on the Board, after giving ten days' notice. Justices' Courts have jurisdiction. This bill is a good one, and ought to pass. At the same time we must confess that, as all of the mines are some distance from this

Holcomb Valley District.

We were shown this week by Mr. G. W. Perrie some handsome specimens of gold-bearing quartz from the mammoth ledge in Holcomb Valley District, San Bernardino county. Mr. Perrie has lately returned from the district and gives quite a flattering account of its richness. He thinks there is a good field for prospecting in that part of the country both for placers and quartz. The district embraces a tract about 20 miles in diameter. It comprises both Holcomb and Bear valleys. Being on the summit of the mountains there is an abundance of wood, and the creeks and springs supply all the water required for steam milling operations. Bear valley is 6,650 feet above sea level, and Holcomb valley is 7,250 feet. Both valleys are embraced in the one mining district at present, though they will eventually be separated into two districts.

At present the fare from here to the mines is quite low. It costs from here to San Pedro by steamer, \$3; from San Pedro to Los Angeles by rail, \$2.50; from Los Angeles to San Bernardino \$5 by stage. The distance by stage from San Bernardino to the summit of Cajon Pass is 25½ miles; from there to Holcomb valley is 40 miles. This is the distance by the proposed toll road, but by the present route it is about 80 miles altogether from San Bernardino to the mines. Supplies are now packed in by the trail which the new toll road will follow, and which is a road that can be easily traveled in the winter as the grades are quite easy. The present route taken by the stage is over an old and rough road which is quite circuitous and hilly.

The placer mines in Holcomb valley proper have been worked since 1860. There is very little wash, the gold having all come from ledges near by. Men have also been working for some time on narrow but very rich "stringers," which have paid well. There is one quartz mill in the valley, but placer mining is principally carried on there. The ledges in Bear valley are very large. One ledge is a vein about 60 ft. wide and crops out for over 2½ miles from 10 to 60 feet high. No work of any consequence is being done anywhere on this ledge, except upon the property of the Bear River Gold Mining Co., a location owned by E. J. Beldwin, Samuel T. Curtis and others. They are now running a tunnel in parallel with the vein at a place where the mountain breaks off into the valley. They intend to cross-cut in on to the vein; this tunnel is in now about 100 feet. Their property comprises two claims—the Moonlight and Rainbow—of 1,500 feet each, and the company is an incorporated one. Some work has also been done on the Mexican and Morris claims, but on few of the others in the district except those mentioned.

It is reported that a 50-stamp mill will soon be erected on the Bear Valley Company's property. They are now at work and in the spring will extend their operations. The rock carries principally gold, but quite a large percentage of silver is also obtained. The foot wall of the ledge is slate, and the hanging wall quartzite and porphyry. An "expert," who lately visited the property, estimates that there are \$15,000,000 on top of the ground, from the croppings alone. The ledge is pronounced by him as one of the largest of fissure veins. The Bowling Green and Archie mines are on a ledge lying about half a mile north of this property. No work has been done on them except to prospect them a little. The ore is quite rich, and the ledges will soon be worked. The placer diggings near by have paid very well.

CONSOLIDATED REFORMA.—We have seen at the office of the company, 605 Clay street, some ore from the Consolidated Reforma Lead and Silver Mining Company's property, in Lower California, and also a certificate of assay, showing that the ore carries \$263 in silver per ton, and 25 per cent. lead. The first samples of ore that were shipped to this city assayed \$28 in silver and 68 per cent. lead, from which it will be noticed that as sinking continues the rock grows richer in silver and poorer in lead. They have lately sent 15,000 feet of lumber to the mine for tunneling purposes, and 2,300 ore-cars to transport ore, so that they soon expect a shipment from the mine to arrive here.

UTAH SILVER LEAD.—At the Utah Silver Lead (Limited) of Bingham Cañon, Utah, the concentration works are now completed. They consist of six continuous self-feeding and self-discharging jiggers, several boulders, one Blake stone breaker, one pair of Cornish roller crushers, sizing apparatus, etc. They can run through 100 tons of ore per day and produce 25 tons of concentrated ore of 75 to 80 per cent. lead and 20 to 25 ounces of silver. The capacity will be increased to 150 tons per day. Some 2,000 tons of ore are on the dump and about 20,000 in the mine as reserves.

Trinity County Mines.

A correspondent of the *Bulletin* writes an interesting letter from Weaverville, Trinity county, from which we take the following:

The mining to be carried on here is chiefly hydraulic, and it may safely be affirmed that in no other portion of the State are water, gravel, outlet, pressure and all the other factors of a large and profitable production, present to such an extent as here in this county. The soundness of this position will become manifest, if we examine a little into the past history and present condition of things in Trinity.

A New Era with an Infusion of New Enterprise.

A year or two since a number of hydraulic miners, old residents of Placer and Nevada counties, learning of the good openings presented here for that style of washing, came up to Trinity, and, having looked about and become satisfied with the appearance of things, proceeded to obtain interests by purchase and location in mining grounds, water-rights, etc., several of them taking up their abode here. These men, with their greater experience and more advanced ideas, were not long in introducing the improved apparatus and modes of operating to which they had been accustomed; and to such an extent has the use of these since obtained that the production of gold dust has already been sensibly increased, and every description of mining properties much enhanced in value. To illustrate this point more fully, it may be stated that eighteen months ago the style of nozzle known as the Little Giant, by far the most effective in use, had not yet made its appearance here; the old-fashioned pipe and very often the canvas hose being still employed, while much of the hydraulic washing done consisted simply of ground sluicing. Now there are over forty of these implements at work in the county, and the number will be more than doubled the present season. Until recently, the under-current, the most complete gold-saving device yet operated in connection with hydraulic washing, was a stranger here, while the use of quicksilver was almost unknown, not a hundred flasks having as yet ever been consumed in the county. The non-employment of these new aids and inventions, elsewhere deemed indispensable to success, was due not so much to an ignorance of their existence or any great obstacle in the way of their earlier introduction, as to the fact that the miners here were able to realize good wages without recourse to this class of auxiliaries. In the deep benches, along the rivers and in the deep banks of hydraulic gravel, all found good-paying diggings, after the deposits on the low bare and along the gulches had been exhausted. Here the entire population, aided only by the crude methods and appliances of the earlier day have been able to earn much higher wages than the average throughout the other mining districts of the State. For the same reason the construction of more and larger ditches, as well as other works designed to facilitate mining operations, have been neglected.

But all this is about to be changed; with the advent of more experienced and energetic miners, new implements and apparatus have been brought into use, and new enterprises set on foot. The neglected water franchises, including reservoir sites, lakes and running streams, have been taken up and secured. Thousands of acres of auriferous gravel have been located, and much of it patented. Ditches of extreme large capacity have been projected, surveyed, and in some cases graded and partially excavated. Prospecting shafts have been sunk, roads have been built, and within a single year more than 40,000 feet of heavy iron pipe have been laid down, the whole of this advance having been accomplished in less than one year and a half. And yet the era of progression has but just commenced. For many years to come preliminary work must be active here.

Trinity as a Mining County.

Her beds of auriferous gravel are deep, rich and extensive, and free alike from overlying masses of volcanic matter and strata of barren sand and clay. So far as explored, there is here an absence of that cemented material requiring gunpowder to break it up; nor have any of those high side rims, necessitating the construction of long bed-rock tunnels, been encountered. These gravel ranges are everywhere cut at short intervals by deep ravines, through which flow large and rapid streams, fed by the perpetual snows that cover the mountains in which they have their sources. These ravines supply to almost every claim a good working face and at the same time ample fall and outlet for the escape of tailings. The water-supplying mountains stand so immediately over the gravel belts, that short and inexpensive ditches suffice to bring it upon the ground to be washed, delivering it generally under a greater head than can with safety or advantage be fully availed of. These hydrostatic conditions will be better understood with a word in explanation of

Topographic Features

With the peculiar system of mountains, gulches, lakes and streams. A glance at the map of this region shows us the main Trinity river entering the county at its northeast corner, whence it flows south, bearing a little to the west, till it has nearly reached the further edge of the gold bearing lands, when it curves around and running towards the northwest, passes out of the county at its extreme angle in that direction. This river, besides a great number of other tributaries, some of them large streams,

has a main north and south fork, also fed by many confluent. The aggregate volume of water flowing through these streams is variable, being very great when swollen by the rains and the melting of the snow, and shrinking to comparatively small dimensions during the fall and early winter. The Trinity, below its principal forks, carries about as much water as the Stanislaus or Tuolumne. Having but little fall, the main stream flows with a moderate current. Its tributaries, however, are all very rapid, some of them having an average descent of more than 200 feet to the mile. All the forks and larger branches of this river are separated from each other by mountain ridges, their lower slopes composed of slates covered with auriferous gravel, their upper portions consisting wholly of granite. These ridges are lofty, some of them reaching an altitude of more than 8,000 feet. Their upper slopes are precipitous—often mere cliffs of bleached and naked granite. As a general thing, however, they are timbered almost to the top. Their sides are deeply eroded with cañons, which, becoming the receptacles of the drifted snow, hold the water in reserve until late in the summer. At a number of points these mountains spread out into plateaus or basins near their summits. In these depressions occur little lakes, all very deep, and some of them covering several hundred acres. In these lakes many of the larger streams take their rise, and such of them as are suited to the purpose have been secured for reservoirs. By damming up their outlets, which can be done at small expense, their capacities can be increased many fold, insuring steady water to the ditches fed by them nearly the year round. With these bountiful sources of water supply, and with the gold-bearing material so prolific, plentiful and favorably situated, we have here the conditions for a large and general success in this branch of mining. Even the most extended ditches will not require to be more than thirty-five or forty miles in length, while in most cases they will need to be not more than half that long. Of the ditches constructed there is scarcely one having a linear extent of twenty-five miles, the majority of them ranging from three to ten miles in length, with water-carrying capacities proportionally restricted.

Character of the Gold-Bearing Deposits.

Overlooking the quartz, with which not much has been attempted, and still less done, the auriferous deposits which now constitute the principal field of gold-seeking labor here, consist of three classes: The mountain gulches, the benches and higher bars along the rivers, and the banks, or rather hills of gravel lying further back between the larger streams and the mountains. The first of these, as before remarked, have come to be pretty well exhausted; the second, which yields a large proportion of the gold now gathered, is rich and easily worked, the gravel varying from twenty to sixty feet in depth, being loose, free from large boulders, and readily run off. Sometimes the water here, used for washing, is raised by means of wheels placed in the river and turned by the currents. Oftener, however, it is brought from the adjacent mountain ravines through small ditches, the bed being always feeble and the supply usually running low before midsummer. These benches are very extensive, reaching along the main river for miles at a stretch, sometimes two or three tiers high, and will afford profitable mining for a great many years. With the exception of getting on water, they are attended with but little expense or trouble. The tailings are run into the river, where the accumulations of the season before are swept away with each recurring stage of high water, preventing thereby any permanent collection of waste matter at the discharging end of the sluices. In the third class of deposits, however, the large and enduring wealth of Trinity rests, and it is these that will give to this county prominence as a hydraulic region over every other in the State. Nowhere else has such a depth of pay gravel been met with as here. In the central and more southerly counties beds having a thickness of two or three hundred feet are considered remarkable. At all the great hydraulic centres of Placer, Yuba and Nevada counties, the average depth is considerably short of two hundred feet. While this is much less than the ascertained thickness of the deposits of many points here, they reach in other localities a supposed depth of six or eight hundred feet, there being places where the absence of bed rock in the intersecting cañone would seem to indicate a still greater depth than this. Along the easterly base of the mountains that separate the North Fork from the main Trinity the cañons cut the gravel ranges to a depth of 1,500 feet without anywhere disclosing along their sides the bed rock; numerous shafts sunk on the ridges above to the depth of several hundred feet having alike failed to reveal any signs of its presence there.

Another Remarkable Feature

Of these deposits, consists, as above stated, in their entire freedom from volcanic flows, ashes or other igneous matter, such as has frequently elsewhere rendered the working of the gravel exceedingly troublesome, and very often wholly impracticable. In the absence here of pipe-clay and sand, the former a difficult stuff to get rid of, and both barren of gold—the miner is relieved of another source of perplexity and hindrance. When it comes to be run off to a lower level than has yet been reached, it is possible that the gravel here will occur in a more indurated or cemented form; though as yet nothing so impacted has been encountered as to require the use of powder to break it up.

So, also, it may come to pass, when washing has been extended to much greater depths than the rim-rock formation will present itself, making the construction of bed-rock tunnels a necessity. As yet, these rocky sides of the old river channels have nowhere been reached.

Still Another Peculiarity,

Of the deep gravel banks here, remains to be noted: so far as explored, they pay all the way down, and invariably improve with depth attained. In all the shafts sunk and pits washed out, no wholly barren strata have been intersected or exposed. A good "prospect" can be obtained everywhere, even upon the surface. A pan of gravel taken from the tops of the hills never fails to give the "color." Vertically measured, every inch in the shafts sunk shows gold—always a number, and sometimes many hundred small particles to the pan. The showing made almost anywhere on top of the ground here would be considered a fair shaft "prospect" in most of the old districts, while the dirt removed at considerable depths is often rich enough to pay for drifting.

Little Work and Large Pay.

Only along the deeper ravines and at the few points where they about on the rivers and larger rivers have these high gravel ranges been much worked. Wherever washing has been done, however, the returns have been liberal and often very large, despite the careless modes of conducting it and the imperfect style of apparatus employed. It is notorious that the miners in this county have not of late years worked more than one-half their time. Few of them, unless engaged in wing damming or river fluming ever calculate to do anything through the fall and early winter. Only while the water lasts, and that, with their few and inferior ditches, is not long, do they think of making any serious exertions. So generously do their claims pay that the most of them are enabled to earn enough during this period to carry them through the year, and generally leave a handsome surplus besides. As already observed, they have not been in the habit of using either quicksilver, the under-current or any other means for saving the fine gold, which, having been suffered to go off with the tailings, has reduced their earnings considerably below what, with the observance of a little more economy and thrift, they might have been. But all this, under the new order of things about being inaugurated, is likely to meet with early correction.

Mining Properties and Franchises.

Most of the miners here own several small claims, and some of them large tracts of mining ground, often with ditches and water franchises appurtenant. The most of these are held on speculation or for sale, and as compared with prices elsewhere, the figures set upon them are not extravagant. Indeed some good bargain might be negotiated here at present, the parties in ownership being old residents who would rather sell out and leave the country than hold on to claims that they have neither the inclination nor means to put in good shape for production, yet notwithstanding their desire to sell they are constantly advancing the prices of their properties, knowing that they are every year becoming more valuable. For example, the proprietor of the McGillivray Ranch and mines lying on the river 15 miles below this place, was anxious to sell the same a little over one year ago for \$50,000. Last summer he bonded it to Postmaster Stone, of San Francisco, and his associates for \$100,000. Failing to dispose of it to these parties, he has since advanced the price to \$125,000, and there is every likelihood that they will want \$150,000 before the season is over, as he expects to net a clean profit of \$50,000 from it during the next six months. This is a splendid property, embracing an extensive area of the terraced bars along the river, rich in gold; a large ditch with valuable water franchise and several hundred acres of land, a large portion of it alluvial bottoms, highly improved, and covered with trees bearing the choicest varieties of fruits, and in such abundance that thousands of bushels of apples and pears are left ungathered, though of a quality superior to any ever seen in the San Francisco market. Apart from its value for mining and agricultural purposes, this is one of the most charming spots in the State, and it is little likely that the owner would care to sell or leave it, were it not that he has already made a good deal of money and is desirous of removing with his large and youthful family to some place where they can enjoy better opportunities for acquiring an education.

But there are others equally as good and, if large future production be consulted, even better things on the market here than the McGillivray estate; thus, we have the Atkins and Lowden property, consisting of a capacious system of reservoirs and a twenty-mile ditch having a six-thousand-inch capacity and water enough to keep it filled the most of the year; this work being surveyed, nearly all graded, and a portion of it constructed. It is in the hands of live men who will push it ahead as rapidly as their means will admit of. They will sell a part of it, using the proceeds of the sale to finish the work, they still retaining an interest, or they will sell the whole, applying the money thus realized for the construction of another large ditch, projected and under way for bringing the waters of Cañon creek and the North Fork and its tributaries upon Oregon Divide, and the benches along the main Trinity—a group of lakes lying under Mount "Bally," and other tall peaks being used as feeders. These are both important enterprises and will command a large success when completed.

The Loveridge Canal, a bold and costly scheme, contemplating the conveyance of a

large volume of water across a mountain gorge more than a thousand feet deep, by means of depressed iron pipes, ranks among the other great and useful projects of Trinity. The Davidson Flume, the largest and longest structure of the kind in the State, is another work of much local interest here. This flume has for its object the running off of the water and tailings from the Weaver Basin, and will greatly benefit a large community of miners, besides enriching the owners, should it result in the final accomplishment of the end proposed. In the above we have some of the more prominent enterprises undertaken for furthering the mining interest in this section of country, there being many others looking to the same end and projected, as well as others of minor importance already well advanced towards completion.

COPPER.—The *Virginia Chronicle* has the following: An examination of the ore brought in by William H. Nalleigh and inquiry into the geological features of the country about the copper mine recently re-located by that gentleman, convince us that the discovery is one of far more importance than we at first supposed. Samples of the ore are now in the hands of assayers in this city. The mine was located by Mr. Nalleigh ten or eleven years ago, and an incline shaft sunk to the depth of twenty feet in the croppings, but the claim was subsequently abandoned. Assays of the croppings at that time showed thirty-six per cent. copper and \$11 to the ton in silver, and an assay made yesterday to determine the percentage of copper, only, gave the same result. Samples now in the hands of assayers will determine the quantity per ton of gold and silver. We yesterday examined carefully the ore brought in by Mr. Nalleigh on Wednesday last, and found it to contain pure native copper, green carbonate of copper, golden sulphuret of copper, red oxide of copper, peacock ore, malachite or native carbonate of copper, and in the wall rock traces of gold, silver and crystallized galena. The re-location was made by the Queen of the West Copper Mining Company of this city, 1,500 feet of the ledge being located under the law of Congress. The ledge is five feet wide, crops indistinctly for 200 feet, with a north and south trend and eastern dip, and is enclosed in a country rock of syenitic granite of compact structure. It is situated seven miles from Mason Valley, in the range of mountains north-west of the main branch of Walker river, eight miles from wood and water, and seven miles due south from the rich copper mine of Carter & Ludwig, which has proved a fortune to its owners. It is in Lyon county, near the Esmeralda line, convenient to Carson, Dayton and Wadsworth, and is approached by a good natural road. The work of opening the mine will be commenced and vigorously prosecuted as soon as the weather will permit.

SILVER.—The area of country productive in silver ores is increasing very rapidly the world over, and especially in the United States. It is not more than five years since Utah was proved to be rich in that metal and not more than seven since its first discovery in any quantity in Colorado. Less than three years ago the discovery of distinct argentiferous veins along the north shore of Lake Superior took place, including the lodes upon Silver and Jarvis Islands, and a number upon the main land. These veins are proving extraordinarily rich as may be seen by the bulion product of the Wyandotte Reduction Works. These works turned out from June 1st to Nov. 25th \$403,000 in silver, three-quarters of which amount was from ore taken from the Silver Islet mine. Within the last year a large number of silver veins have been found in the northern peninsula of Michigan upon the south shore of Lake Superior, the ore from which is coming gradually into market, and proving of excellent grade. It is only a few years since Colorado was considered exclusively a gold bearing country. Now the area of territory productive of that metal is not over 350 square miles, against over 2,000 known to be rich in silver deposits.—*Mining Review.*

LOWER CALIFORNIA MINES.—A correspondent of the *Alta* writes as follows from La Paz, Lower California: "The mining interests are as prosperous as can be expected, considering that of the hundreds, and probably thousands, of leads known to exist in the Territory, scarcely a dozen have ever been touched. The three or four that have been opened are already yielding a profit. The newly discovered region above Mulege, where is located the property of the company, called, I believe, the Reforma, is attracting considerable attention. All the indications are that it is very rich, and has the merit of being virgin in its newness. Albeit, it is said here by some of the old Mexicans that the immense quantities of gold and silver found by the Jesuit Fathers, and used in part to embellish the numerous churches established by them in that region more than a century ago, were taken from that section. That the old Jesuits of the Territory devoted much of their time to mining, is sufficiently proven; and that beside the immense wealth of silver and gold used by them in embellishing their church edifices—evidence of which still exist—they made large shipments of their treasures to Spain.

The velocity of a very light breeze is 5 miles an hour; of a gentle breeze, 10 miles; moderate breeze, 15 miles; fresh breeze, 20 miles; strong breeze, 25 miles; moderate gale, 30 miles; fresh gale, 45 miles; strong gale, 50 miles; heavy gale, 70 miles; storm, 80 miles; hurricane 100 miles and upwards.

SCIENTIFIC PROGRESS.

Enameling Paint.

One of the most recent inventions for painting or coating surfaces is a new paint brought out by Mr. Griffiths of Liverpool; which has, according to the *Furniture Gazette*, the property of forming a firm, impenetrable enamel on the surface of the article to which it is applied. By this means, the surface is rendered absolutely water-proof, however porous it may be. The material is consequently intended, not only for decorative purposes, but to be applied as a water-proof coating to the walls or foundations of dwelling-houses, railway arches, bridges, tunnels, viaducts, and other structures of brick, plaster, wood or iron. It is also stated that the paint is well adapted for covering the bottoms of vessels, or submerged structures of any description. Various trials have at different times been made of it. At Portobello it was tried on some iron plates, and these were immersed for three months in sea-water. At the expiration of that time the plates were taken up and examined, when it was found that they looked fresh and clean as ever, and quite free from seaweed; and, on some of the enamel being scraped off, the metal showed no signs of rust, although similar plates, treated with other kinds of paint, and immersed in the same way, were both foul and greatly oxidized. As a second test, some of this paint was applied to the steamers trading to Africa from Liverpool, and these also showed no signs of corrosion on their return. It is also said that its smooth surface gives it considerable sanitary value, and for this reason, as well as that it defies the attacks of white ants, the huts used for the soldiers in the Ashantee expedition are to be coated with it. The walls of the huts, which the paint will make smooth, and polished like glass, can be washed with soap and water, or disinfecting fluid. This enamel is also available for painting the walls of hospitals, fever wards, etc., as the porosity of the plaster is entirely stopped, thus preventing infection from lodging. It can be made of any color. White and chocolate are generally used. Various processes for the preservation of ships' bottoms from fouling have, from time to time, been brought before the public, and the patents on the subject are very numerous. The earliest of these was taken out in 1695, (No. 341), by Charles Ardesoif, for "A new invented composition, which will preserve ships from the worms, inasmuch that any ship may, by virtue of the same, continue at sea for four or five years without receiving any damage from the worms." Since that time very various methods have been employed, with greater or less success. The chief merit claimed by Mr. Griffiths for his invention, is that of simplicity of application, as it is simply spread on with a brush, like common paint, and sets quite firm in about an hour, even on wet surfaces.

Such descriptions are certainly very inviting, but we confess, that by dint of constant reiteration, and breaking of similar promises, usually made by interested parties, we have become somewhat skeptical. We are not told what is the composition of the new paint—we presume it to be an adaptation of slate dust, or of soluble glass—these have both been long used, and in many cases with good results. But Mr. Griffiths' paint is entirely too good.

TEMPERING STEEL AND REGENERATING BURNED IRON.—M. H. Caron says: A piece of steel is generally tempered, and then reheated more or less according to the hardness and the elasticity which it requires to receive. The dry temper, commonly practiced, that is to say, plunging the red-hot metal into cold water, has the drawback of developing cracks and crevices injurious to its tenacity. Reheating does not remove these flaws; and subsequently, on use, these fissures, though invisible at first, increase and terminate in fractures. It has already been discovered that, in order to escape danger, it is preferable to temper the steel a little softer and afterwards to reheat more slightly. The author has succeeded in producing the combined effects of temper and reheating in one operation, and of removing as far as possible the chances of flaws. This is done by heating the water, into which the red-hot metal is plunged, to 55°. Tempering in hot, or even boiling, water, modifies soft steel containing from two to four thousandths of carbon. This process augments its tenacity and elasticity without sensibly altering its softness. The texture is changed and becomes fibrous, even if previously crystalline. The method for restoring burned metal is likewise to plunge it at a red heat into a hot liquid.

AMMONIO SULPHATE.—L. L. Hote proposes to utilize refuse wool, horn, feathers, and other nitrogenous bodies by digesting them with a dilute solution of caustic soda, 1 part soda to 10 of water, until they have assumed a pasty consistency. The mass is then mixed with quicklime and distilled, at first at a low heat and afterwards at a full red. The vapors are condensed in chamber acid. The residuum in the retort is carbonate of soda and quicklime. By boiling this with water the soda is recovered as caustic soda, and is ready for the next operation.

ACTION OF DILUTE SOLUTIONS OF SALTS ON LUMEN.—The following points, made by P. Muir, will be found of interest, in sequence to articles lately published by us in relation to purity of drinking water, etc.:

1. A nitrate, and particularly ammonium nitrate, increases the solvent power of water for lead more than any other salt experimented with.
2. Small quantities of nitrates seem to increase this solvent power nearly as much as larger quantities. A litre of water containing .02 grm. of a nitrate, was found to dissolve nearly as much lead in a given time as double the quantity of salt.
3. Chlorides, at least calcium chloride, do not increase, but rather diminish the action of water on lead, and that, too, when the water contains a nitrate.
4. Carbonates diminish the action of water on lead more than other salts. One part of potassium carbonate in three thousand parts of water will prevent almost entirely the action of water on lead.
5. Sulphates behave like carbonates, though they are not quite as effectual in their action as carbonates.
6. Water containing a nitrate, and at the same time a carbonate and a sulphate, will have but little, if any, action on lead.

FOCAL DIFFERENCES IN THE EYES.—A writer in *Science Gossip* speaks of the difficulty which some persons experience in the use of binocular microscopes, owing to a focal difference in the eyes. In a case mentioned one eye was far-sighted, while the other was near-sighted. For reading purposes, this person wears a pair of spectacles in which the one glass is made for the far sight, while the other is a plain glass, the left eye being near-sighted, and consequently requiring no aid from spectacles with which to read. Instances are cited of persons who, while employing both eyes for ordinary vision, usually employ only one in reading. If any difference of the kind exists between the visual power of a pair of eyes, it may be readily detected. Hold up a piece of card before one eye, so as to cut off its field of view, and then look at some object before you with the other. Then gradually bring the card before the other eye, and view the same object. If the object is seen with the same distinctness in each case, then your eyes are perfect as regards the balance of their foci; if not, then there is focal difference more or less decided. It would no doubt be advisable to take account of this very frequent difference of foci, in selecting a pair of spectacles.

ANALYTICAL PROGRESS.—In search of a method of determining the elements of organic substances by a single combustion, Mitscherlich has recently discovered a new mode by which, by direct analysis, not only the carbon, oxygen and hydrogen in an organic substance can be determined, but also the chlorine, bromine, sulphur, iodine, phosphorus, and probably also the nitrogen therein contained. The organic material is brought to combustion with oxide of mercury, the results of which process are water, carbonic acid and mercury. The two former are weighed in the ordinary manner. The weight of the mercury formed serves to determine the quantity of oxygen due to combustion, by subtracting which from that contained in the carbonic acid and the water, the total amount of oxygen existing in the substance submitted to elementary analysis is found. If, however, the body under examination contains chlorine, bromine, or iodine, these elements combine with the mercury set free, and are determined by weighing. Sulphur and phosphorus combine in the state of sulphate and phosphate of oxide of mercury.

ZINC SMELTING.—By a new process, the ore, mixed with carbonaceous powder, is placed in a heated oven situated over a furnace charged with coke or other carbonaceous matter. This furnace is supplied with air preferably heated in such limited quantity as to generate carbonic oxide, which is led hot through the oven above. The ore is thus reduced, and zinc vapor is carried by the gases through exposed passages, wherein it is condensed and from the bottoms of which liquid zinc flows. The condensation of the zinc is aided by keeping the gases under pressure, which is effected by forcing air into the generating furnace and making the gases, at their final escape, pass a loaded valve. In escaping, the gases bubble through water, whereby any portions of zinc vapor are condensed, and they may then be led to a boiler or other furnace, where such combustible ingredients as they may contain are utilized as fuel.

SEPARATION OF ZINC, COBALT AND NICKEL.—We find the following method given in *Iron*: The three metals are brought into the shape of chlorides and then mixed with ammoniac chloride, evaporated to dryness, and then gently ignited. The chloride of zinc will be volatilized. The nickel and cobalt may then be separated by means of potassic nitrite in the usual manner.

EFFECT OF ELECTRICITY ON HEATED STEEL.—MM. Treve and Chedeville find that if a current of electricity traverses a coil of wire that surrounds a cooling ingot of cast steel, the steel, when perfectly cold, shows on fracture a finer grain than when the current is not passed. The magnetized steel also had less power of resisting forces of extension and compression.

MECHANICAL PROGRESS.

A New Type-Setting Machine.

The art of printing by machinery has advanced with very rapid strides during the last twenty years; so quickly, indeed, that the variety of machines at present in use is scarcely known even to printers' engineers. But this only applies to the printing-press department, or that division of the trade which impresses the types on the paper after they have been put together into pages and locked in an iron frame termed a "chase."

Strange to say, notwithstanding all these improvements in the printing-off of the "formes" of type, the art of the compositor—the man who puts the type together—has been left where it was above two centuries ago. But this has not arisen either from oversight or from a belief that the art had arrived at perfection, but from the innumerable difficulties which attend the application of machinery to composing. For fifty years failure has followed the footsteps of inventors, notwithstanding their partial success, mainly of late years, because the advantage gained by machinery over men was too small to pay for repairs and return a decent interest on the original cost of the machine.

The earliest of these machines was that produced by Dr. Church just fifty years ago, the latest before the general public was that shown at work in the Exhibition of 1872, and which it was remarked by strangers to the art of printing was constantly getting out of order. In next year's Exhibition, however, we hope to see a new one which will find more favor with master printers than its predecessors, as it is constructed on an entirely original plan, and cannot easily be deranged, or if deranged by a vice, can be put in order in a few seconds. The machine has not yet been patented, but we have been favored with a sight of it at work, when it gave very satisfactory results.

This machine is the invention of Mr. J. Hooker, a compositor and self-taught mechanic, who has had considerable experience in the working of type setting and distributing machines, and consequently has had a capital opportunity of testing their value and observing their defects. Besides the above, the inventor is now constructing his sister machine—a distributor—without which the art of composing is not considered complete; but at the time of our visit, this machine was so little advanced that we could not test its value or detect its defects.

The composing machine can be worked singly—that is, by one man—but the inventor tells us that it is most economically worked by three men and a boy, who can produce work equal to that of twelve compositors, and with many less errors, which we believe is in the limit of its power, as we tested the speed and worked it ourselves. The inventor has been over ten years working on his ideas, and has during that time twice abandoned a partly completed machine for improved ones on new principles. He has studied every English patent, and has done wisely in constructing a perfect machine instead of patenting a model, which can never show whether an invention can be peculiarly successful or not. For his sake, and as a boon to the newspaper and reading public, we wish him every success.—*Iron*.

A NOVEL BURGLAR DETECTOR.—The *Montreal Gazette* recently informed us that "the profession of burglary, at all times a hazardous pursuit, is likely to become still more dangerous to its followers in the future—thanks to an ingenious invention which was privately exhibited at the Mechanics' Hall. We allude to Simpson's 'Excelsior Burglar Detector,' which is an apparatus of great simplicity, and one which will no doubt answer all the purposes for which it is designed. It consists of a small cast-iron block, having four chambers drilled in the surface, communication between which is managed by a fuse hole running from the bottom of the fourth to the first hole. These holes are charged with powder, ordinary gun wadding being used, and exploded by means of a strong hammer spring, which, being connected with wires to any part requiring protection, is brought down on the nipple by the slightest touch of the wire. The first chamber is thus exploded, and after an elapse of a few seconds the other chambers explode in succession, owing to the fuse at the bottom, giving an alarm loud enough to awaken Rip Van Winkle or put a regiment of burglars to flight. As many connecting wires can be used as suit the owner's fancy, and if he is inclined to inflict punishment upon the intruders, all that is necessary is to have the chambers loaded with ball, with the muzzles pointed in the direction from whence he anticipates a visit. The apparatus is certainly a very useful and effective one, and must be extensively used by those householders who desire to protect their property from burglars."

APPLICATION OF THE SAND-BLAST.—The most recent application of the sand-blast is for cleaning the fronts of buildings by removing the soot, dust, and other substances therefrom. The impact of the sand on the surface removes the soot or dust from all the crevices and indentations, without perceptibly interfering with the sharpness of the architectural ornamentation.—*Jour. Soc. Arts*.

SINGLE-RAIL RAILWAY.—In a late issue we described a novel plan, recently put in operation in Georgia, by which locomotive and cars would require only a single rail. An English exchange thus comments on it: As the railway develops, its proportions contract. The wide gauge of six and seven feet has dwindled by turns to the narrow gauge of 4ft. 8 in., to the meter gauge of 39½ in., to the *Isle of Man* gauge of three feet, to the talked-about 33 inch, and to the really executed two-foot Festiniog. The last-mentioned narrow gauges have been completely outdone by the "prismoid, or one-track railway," recently constructed at Atlanta, Georgia. This is built up of several thicknesses of plank and is said to resemble the "inverted keel of a vessel with a flat rail on the apex." A railway track of this kind can be built at the cost of three thousand dollars per mile. The engine is a four-ton locomotive, or steam bicycle, which is fitted with flanges on the outside of each wheel, locking, it is said, the rolling stock to the prism. This is probably very well suited for a street railroad in Atlanta, or any other fastly-named place that is not in a hurry. No doubt it would run, after a fashion, but the difference in the amount of friction incurred by the various parts of the broad flange would alone disqualify the invention from any claim to practical utility. Something prismoidal was, if we mistake not, tried on the Semmering some years ago, with the view of surmounting the difficulties of a steep gradient, but was abandoned on account of unequal friction. No high rate of speed can be obtained by "fancy" machines made in defiance of well-known laws, and, although it may be amusing to many to see the railway reduced to its lowest terms, the experiment will prove far more curious than useful.

HOW MIRRORS ARE SILVERED.—The following description of "silvering" plate glass for mirrors is mainly founded upon the method pursued at St. Gobin and Ravehead. After polishing, each glass tablet intended to make a looking-glass is silvered, or, more correctly, coated on one side with an amalgam of tin. In the preparation of this amalgam tin foil is used, but it must be beaten from the finest tin, and possess a surface similar to that of polished silver. The art of silvering is simple, and merely requires dexterity. The glass plate having been thoroughly cleansed from all grease and dirt with putty-powder and wood ash, the workman proceeds to lay a sheet of tin foil smoothly upon the table, carefully pressing out with a cloth dabber all wrinkles and places likely to form air bubbles. He spreads over it a quantity of mercury, taking care that all parts are equally covered, and then the glass plate is pushed gently on to the surface, commencing at one edge. The glass is allowed to remain for twenty-four hours; it is then removed to a wooden incline similar to a reading-desk, to allow of the excess of mercury draining off. As the amalgam gradually sets, the incline is increased till finally the plate reaches the perpendicular, when the process is finished, and the mirror removed to the store-room.

"IMPROVED" METHOD OF PROPELLING BOATS.—We notice the following description of a propelling apparatus in general circulation. We recollect having seen already several models of this most valuable idea, and do not understand how it can be patentable: To the bar or lever of the paddle are hinged two blades in such a way that when moving forward through the water the pressure of the water will close them. These are kept from closing against each other by one or more stops, interposed between them and attached to the bar, so that as the paddle begins to make the stroke the pressure of the water may open or spread the blades so as to present the greatest possible surface. The upper ends of the bar are designed to be attached to the shafts, which are arranged so as to be operated independently of each other. The shafts are placed in line with each other, and a pintle may be attached to the end of one shaft to enter a socket in the end of the other shaft. Levers are attached to the inner parts of the shafts, extending above and below said shafts, and having handles attached to their upper ends and foot-rests attached to their lower ends, so that the operator can apply hand and foot power.

THE ARTILLERY OF THE PEACOCK.—The monster weapon with which the turrets of the ironclads of the future will be armed, will far surpass the most powerful artillery at present in existence, the Woolwich Infants of 35 tons weight, and a bore of 12 in. in diameter, and the great guns which Krupp is now making for the Germans being alike eclipsed by the new weapon, which will have a bore of nearly 15 in., and weigh 60 tons. These guns will be built by coil upon coil of wrought-iron and a steel tube; a system which insures the greatest possible strength and immunity from danger of bursting, and practically imposes no limit to the size of the guns. They will be fitted with a movable breech-loading arrangement. The Woolwich Infant will throw a 700 pound shot six or seven miles; the new gun will hurl a projectile weighing 1,100 pounds, (half a ton), over a range which has yet to be determined. As the antithesis of this enormous gun, the new steel mountain gun has now been placed in the model room of the Royal Gun Factories. The gun weighs only 200 pounds, but it can fire a shell of 7 pounds, with good effect, up to 3,000 yards, and with its little carriage is designed to be conveyed on the backs of mules.—*Iron Monger*.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.)

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Deling't.	Sale.	Secretary.	Place of Business.
Alps S M Co	Ely District	6	25	Feb 2	Mar 13	April 6	C F Balcom	426 Montgomery st
Buckeye G & S M Co	Nev	9	100	Dec 18	Jan 20	Feb 7	J Macfure	419 California street
Caledonia S M Co	Gold Hill	7	3	Jan 30	Mar 5	Mar 6	R Wegener	414 California street
Caroline M Co.	Ely District	4	100	Jan 17	Feb 27	Mar 20	E H Brown	402 Montgomery street
Crown Point Reine G & S M Co	Washoe	1	50	Dec 23	Jan 30	Feb 24	J M Buffington	Merchants' Ex
Daney G & S M Co	Washoe	8	75	Jan 5	Feb 10	Mar 3	G R Spinney	320 California st
Empire M & M Co	Gold Hill	14	100	Dec 18	Jan 28	Feb 16	G E Spinney	320 California street
Esmeralda M Co	Cal	3	50	Jan 15	Feb 14	Mar 1	T F O'Brien	438 California street
Glohe M Co.	Gold Hill	5	50	Dec 24	Jan 27	Feb 16	J Maguire	419 California street
Gould & Curry S M Co	Washoe	21	100	Jan 23	Feb 23	Mar 20	A K Lurbow	Merchants' Ex
Hale & Norcross M Co	Washoe	42	50	Jan 17	Feb 23	Mar 17	K L Lightner	438 California street
Imperial S M Co	White Pine	1	100	Dec 13	Jan 17	Feb 11	A Jennings	419 California street
Imperial S. M. Co.	Washoe	18	100	Dec 26	Jan 23	Feb 19	W. E. Dean	419 California street
Hahn & Hunt S. M. Co	Ely District	8	50	Dec 22	Jan 23	Feb 22	T L Kimball	409 California street
Kentucky U. S. & M. Co.	Ely District	7	25	Dec 23	Jan 14	Feb 11	E Kimball	419 California street
Leah M Co	Gold Hill	7	25	Dec 29	Feb 2	Feb 20	J Eiton	Express Building
Manogany G & S M Co	Idaho	2	200	Dec 18	Jan 24	Feb 17	T J Owens	Express Building
Overman S M Co	Gold Hill	23	200	Dec 23	Jan 27	Feb 13	V W Elliott	414 California street
Page & Pannas S M Co	Ely District	6	50	Jan 15	Feb 24	Mar 17	C F Cronas	Merchants' Ex
Pike S. M. Co.	Ely District	6	100	Jan 19	Mar 5	Mar 26	C E Stetson	419 California street
Portland S M Co	Ely District	3	25	Jan 10	Mar 7	Mar 13	H J Gray	438 California street
Silver Peak M Co	Ely District	4	15	Jan 28	Mar 7	Mar 20	G R Spinney	240 Montgomery street
Sprag M & Tappan Co	Ely District	9	15	Jan 24	Mar 2	Mar 20	J M Buffington	Merchants' Ex
Succor M & M Co	Gold Hill	7	150	Dec 31	Feb 4	Feb 16	W H Watson,	302 Montgomery street
Virtue M Co	Oregon	4	100	Jan 20	Mar 5	April 6	R H Brown	402 Montgomery street
War Eagle M Co	Idaho	1	50	Jan 15	Feb 23	Mar 17	E H Brown	Merchants' Ex
Washington M & S Co	Utah	3	50	Dec 11	Jan 22	Feb 12	R Wegener	414 California street
White Beecher Con M Co	White Pine	1	50	Dec 13	Jan 19	Feb 10	D A Jennings	401 California street
Woodville G. & S. M. Co.	Nev	5	125	Jan 8	Feb 11	Mar 3	A. Noel,	419 California street

OTHER COMPANIES.—NOT ON THE LISTS OF THE BOARDS.

Adams G & S M Co.	Nevada	4	50	Dec 29	Feb 5	Feb 26	G W R King,	434 California street
American Flag M & M Co	Ely Dist	4	100	Dec 16	Jan 21	Feb 19	G R Spinney,	320 California street
Atlantic & Pacific Oons M Co	Cal	7	6	Jan 24	Feb 26	Mar 16	A Noel	419 California street
Anburn G M Co	California	6	50	Nov 17	Mar 16	Mar 16	R Wegener	414 California street
Barred Vista Petroleum Co	California	22	100	Jan 23	Mar 9	Mar 13	J Agosty	430 Jackson street
Charter Oak M Co	Ely District	5	50	Jan 9	Feb 16	Mar 9	G W R King	434 California street
Champion Cons M Co	White Pine	1	50	Dec 22	Jan 23	Feb 1	J M Buffington	Merchants' Ex
Chester Flat Blue Gravel M Co	Cal	1	50	Dec 16	Jan 26	Feb 16	C F Palmer	603 Washington street
Commercial Coal M Co	California	63	160	Jan 16	Jan 26	Feb 23	S H Hanson	402 Montgomery street
Commercial Coal M Co	Cal	50	Dec 16	Jan 23	Feb 23	Feb 23	S H Hanson	402 Montgomery street
Chief Eas Extension M. Co.	Ely Dist	10	50	Dec 30	Feb 10	Mar 10	R Wegener,	414 California street
Columbia Fld M Co	Cal	20	50	Dec 26	Feb 16	Mar 16	G J Eaton	Express Building
Extra Senca Cons. M. Co.	Nya Con.	3	50	Dec 3	Jan 8	Feb 7	A. Noel,	419 California street
Germania M Co	Utah	1	50	Feb 3	Mar 14	April 6	J W Tripp	408 California street
Glasgow G M Co	California	1	25	Jan 14	Feb 16	Mar 16	C S Curless	419 California street
Granger M Co	California	1	15	Jan 15	Feb 17	Mar 17	C F Palmer	cor Market & Spruce street
Keystone No. 1 & 2 G. & S. M. Co.	Ariz	2	25	Jan 10	Feb 16	Mar 10	T. E. Jewell,	507 Montgomery street
McMeans G & S M Co	Gold Hill	1	25	Jan 16	Jan 26	Feb 16	W H Watson	302 Montgomery street
Mina Ridge M Co	California	10	25	Jan 16	Feb 16	Mar 16	G R Spinney	310 California street
Monte Diablo M & M Aff. Co.	Cal	4	50	Dec 3	Jan 17	Feb 9	W B Jensen,	304 Fine street
North Bloomfield M Co.	Cal	29	100	Dec 22	Jan 26	Feb 13	T. Derby,	320 Sansome street
North Star T. & G. Co.	Cal	10	10	Jan 13	Feb 18	Mar 11	F. O'Reilly,	51 Washington street
Ophir Cons M Co	Cal	1	15	Jan 15	Feb 17	Mar 17	W A Knapp	116 Liedersdorf street
Pachonites G M Co	El Dorado Co Cal	50	Dec 17	Jan 23	Feb 16	Mar 16	D A Jennings	401 California street
Pacific Borax Co	Aevada	7	75	Jan 26	Mar 2	Mar 29	S Patee	210 Battery street
Red Jacket M Co.	Idaho	2	100	Dec 17	Jan 26	Feb 21	W. Willis,	419 California street
Seattle Coal & T Co	W T	1	100	Dec 11	Jan 22	Feb 19	H L Hutchinson	537 Market street
Santa Cruz Coal M Co	California	5	5	Jan 5	Feb 7	Feb 26	L Kaplan	Merchants' Ex
Sierra S M Co	Nevada	49	6	Jan 29	Mar 2	Mar 23	F F Ellmaker	53 Wash Market
St John G M Co	California	4	5	Dec 23	Feb 23	Mar 23	E B Holmes	419 California street
Storpen S M Co	Nevada	4	10	Dec 23	Feb 23	Feb 23	F Martin	534 California street
Table Mt' Alpha M Co	California	2	30	Jan 1	Feb 9	Mar 2	T P Cronise	438 California street
Tecumseh G & S Copper M Co	Cal	5	50	Jan 2	Feb 7	Mar 4	F J Hermann,	438 Kearny street
Thama Cons M Co	White Pine	2	50	Jan 30	Feb 12	April 3	Joseph Marks	419 California street
Union Belmont M. & M. Co.	Cal	5	5	Jan 14	Feb 16	Mar 17	C F Buffington	Merchants' Ex
Tuolumne Hydraulic M Co	California	10	10	Jan 6	Feb 10	Mar 10	I T Mithken	302 Montgomery street
Victoria and Imperial T & M Co	Utah	2	15	Jan 31	Mar 7	April 2	W H Watson	302 Montgomery street
Washington M Co	Cal	1	100	Jan 3	Feb 17	Mar 10	T B Wingard,	318 California street

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Alpha Cons. M Co.	Nev	Called by Trustees,	419 California st	Special.	Jan 30
Borey Cons M Co	Cal	G E Elliott	419 California st	Annual.	Feb 1
Bullion M Co	Washoe	J S Kennedy	408 California st	Special.	Feb 1
Chesterke Flat Blue Gravel Co	Cal	H Picheor	603 Washington st	Annual.	Feb 1
Diamond S. M. Co.	Utah	W. Sheahan, Pres.	416 Monte st	Annual.	Feb 1
Indus G & S M Co.	Nev	David Wilder	414 California st	Annual.	Feb 1
Justice M Co	Nev	R Wegener	414 California st	Annual.	Feb 1
Manogany G & S M Co	Idaho	Called by Trustee	414 California st	Special.	Feb 2
Omaga Table Mountain M Co	Cal	D Wilder	Merchants' Ex	Annual.	Feb 2

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz M Co.	Washoe.	H. C. Oliver,	316 California st	25	Jan. 1
Belcher M Co	Cal.	W. C. Kibbe,	419 California st	5 00	Jan. 1
Cederberg G. M. Co.	California.	D. M. Booke,	402 Montgomery st	50	Feb. 5
Con. Amador M Co.	Cal.	F. B. Latham.	402 Montgomery st	50	Feb. 5
Derby M Co.	Cal.	F. Cunningham,	404 Montgomery st	50	Nov. 2
Diana M Co.	Cal.	N. C. Fasset,	229 Clay st	1 00	Jan. 2
Eureka M Co.	Grass Valley, Cal.	R. Wegener,	414 California st	1 00	Nov. 2
Monitor-Belmont M Co.	Nevada.	B. B. Minor.	411 1/2 California st	50	Dec. 5
Providence G. & S. M. Co.	Cal.	J. M. Buntington.	Merchants' Ex.	1 00	Nov. 1

Weekly Stock Review.

THURSDAY, Feb. 5, 1874.

Stocks have been rather quiet this week, although the market has shown a better feeling and prices have advanced to a small extent. On Friday last, the market was a little stronger than at close of our last review. At the close Con. Virginia was \$6 higher; Belcher, \$2; Beat & Belcher, \$1; Ophir, \$3; California, \$3; and the market generally firmer. The inclemency of the weather interfered to some extent with business.

On Saturday, the close of the week, there was no particular change outside of Ophir, which declined \$4. In outside stocks, which consist of Ely, Eureka, Philadelphia and California stocks, there was generally an improvement. Raymond & Ely advanced to \$37 under the additional persuader of a new development at one or the other end of the mine.

On Monday the bad weather influenced the market to a great extent, and there was little business done, while prices as a general thing showed a decline.

On Tuesday the weather cleared up and with it the aspect of the Stock Market. Belcher closed \$7 better; Crown Point, \$3; Con. Virginia, \$8; California, \$2; Ophir, \$5; Savage, \$2.

Wednesday showed a still increasing atrength and activity in the market. At the close a general rise was manifest: Alpha, \$7; Belcher, \$3.50; Bullion, \$3; Crown Point, \$3; Chollar, \$5; Con. Virginia, \$5; California, \$2; Gould & Curry, \$1.50; Hale & Norcross, \$2; Kentucky, \$2; Overman, \$5; Ophir, \$3; Savage, \$3; Segregated Belcher, \$13. There are no special features in the market to report, everything being rather quiet than otherwise.

The Eastport Coos Bay Coal Mining Company have declared a dividend of \$5 per share, amounting to \$2,500, payable immediately. This is the first dividend since last April. In the meantime, considerable money has been expended in needed improvements. Two fine steamers have been built for thiertrade, and are now running regularly between Coos Bay

and this port. The Company find no difficulty in disposing of all the coal they bring to market, and at good prices.

An advertisement has been published by the Hartford Mining Company, calling upon the stockholders of the old corporation for the surrender of their stock, receiving in return twenty shares of new for each share of the old stock surrendered. A levy of five cents upon each share of new stock has been made, which will enable the commencement of work upon the mine. It is proposed to start up work and put the mine in order.

The Alpha Cons. M. Co., which has increased its capital stock, issued its new stock this week in the proportion of five shares of new stock for one of old.

The 23 mining assessments levied January footed \$748,000 against 24 in January, 1872, aggregating \$550,000. Thrsse dividends paid in January, aggregated \$827,000, against six in January, 1872, aggregating \$573,000.

SALE OF EMMA ORE.—On the 29th ult., 2 tons of first-class ore from the famous, though much defamed Emma mine, sold for \$29.60, or nearly 1,000 ounces per ton. One hundred tons of second-class ore brought \$3,800 or \$38 per ton. One hundred tons of third-class ore brought \$15,655 per ton or \$156 per ton. The length of the ore body is 50 feet and increasing and the width from 20 to 40 feet. The large pump to clear the deepest workings where the big strike was made is working admirably. This speaks well for the mine, as does the fact that the amount of Emma shares called for by several Salt Lakearamonts to about 400 shares or \$8,000. Mr. Henry Sewell, the well-known mining engineer, bought 100 shares himself, showing his faith in the mine in a substantial manner.

AMERICAN FLAT.—Nothing has been done in this mine during the past week on account of the water tapped in the Baltimore shaft, which made it necessary for the Baltimore to have the entire use of the shaft to drain the water as speedily as possible.

LOWER COMMONS M. Co.—Trustees, J. A. Pritchard,
 Robert Sherwood, H. C. Kibbe and S. A. Chapin.
 PACIFIC POWER Co.—Trustees, J. F. Pierce, J. Ba-
 ker, Jr. and J. S. N. Shepard. Secretary, J. F. Nes-
 mith.
 BEARCH & PAXTON M. Co.—Trustees, George S. Dodge,
 R. F. Bunker, Wm. Burling, John Landers and George
 Congdon.
 GLOBE MINING Co.—Trustees, R. L. Tracy, (Presi-
 dent), G. W. Fisher, (Vice-President), G. W. Deil-
 zer, Thomas Coal and M. D. Townsend. Jos. Maguire,
 Secretary and F. M. Thayer, Superintendent.
 JOACET M. Co.—Trustees, Wm. M. Lent, George
 S. Dodge, John F. Boyd, G. W. Grayson and W. O. Par-
 ker.

The following Companies have filed certificates of incorporation in the County Clerk's office, San Francisco:

PACIFIC M. Co.—Jan. 30. Location: State of Nevada. Directors, Hiram Tubbs, J. A. Pritchard, J. E. De La Montagnie, W. F. Myers and Wm. Haelehurst. Capital stock, \$4,800,000, divided into 48,000 shares.

California M. Co.—Jan. 30. Location: Napa Co., California. Capital stock, \$6,000,000. Trustees—Thos. R. Hayes, J. L. Sanford, Joseph W. Winnis, Coll. Deane and Alex. Badlam.

PACIFIC SLOPE WOOL GROWER'S ASSOCIATION. Feb. 2. Object: To raise, purchase and sell wool, to lease and purchase sheep ranges, and to acquire such real estate and other property as may be necessary for the purposes of the association. Directors—Wm. B. Doughton, Wm. O. Sleeper, Samuel D. Keith, Edwin H. Black, John E. Ayer. Capital stock, \$200,000, in shares of \$10.

Adams & S. M. Co.	Nevada	50	Dec 29	Feb 5	Feb 26	G. W. R. King,	431 California s	
American Flag M & M Co	Ely Dist	4	100	Dec 16	Jan 21	Feb 19	R. G. Spinney,	320 California s
Atlantic & Pacific Cons M Co	Cal	7	6	Jan 21	Feb 26	Mar 16	A. Noad	419 California s
Annburn G M Co	California	6	50	Nov 17	Feb 24	Mar 16	R. W. Weesner	414 California s
Arizona Petroleum Co	Cal	22	0	Jan 10	Mar 3	Apr 13	G. W. Jackson	430 Jackson s
Charter Oak M Co	Ely District	50	Jan 5	Feb 16	Mar 9	G. W. R. King	431 California s	
Champion Cons M Co	White Pine	1	100	Dec 22	Jan 23	Feb 1	J. M. Buntington	Merchants' Ex
Cherokee Flat Blue Gravel M Co	Cal	1	100	Dec 22	Jan 23	Feb 1	J. M. Buntington	Merchants' Ex
Commercial Coal Co	Cal	60	Dec 16	Jan 26	Feb 23	S. E. Hanson	402 Montgomery s	
Commercial Coal M Co	Cal	50	Dec 16	Jan 23	Feb 23	S. H. Hanson	402 Montgomery s	
Chief Ext. Extension M. Co.	Ely Dist	10	20	Feb 10	Mar 10	R. Wegner,	414 California street	
Chief Ext. Extension M. Co.	Arizona	10	20	Feb 10	Mar 10	R. Wegner,	414 California street	
East. Ancs Cons. M. Co.	N. Yra. Co.	3	50	Dec 3	Jan 8	Feb 7	N. A. Noel,	419 California s
Germania M Co	Utah	1	50	Feb 3	Mar 16	April 6	J. W. Trapp	408 California s
Glasgow G M Co	Cal	15	Feb 16	Mar 16	Apr 16	J. W. Trapp	419 California s	
Glasgow G M Co	California	5	15	Jan 15	Feb 17	Mar 14	O. C. Peters,	cor Montana
Keystone No. 1 & 2 G. & S. M. Co.	Ariz	2	25	Jan 10	Feb 16	Mar 10	T. E. Jewell,	507 Montgomery s
McMeans G & S M Co	Gold Hill	1	25	Dec 22	Feb 16	Feb 16	W. H. Watson	302 Montgomery s
Merced Coal Co	California	1	50	Feb 16	Feb 16	Feb 16	W. H. Watson	302 Montgomery s
Moran Machine Mfg. Co.	S. F.	4	0	Dec 3	Jan 17	Feb 9	W. B. Isaacs,	304 Pine street
North Bloomfield M. Co.	Cal	29	100	Dec 22	Jan 26	Feb 13	T. Derby,	320 Sansome street
North Star T. & G. Co.	Cal	10	Jan 10	Feb 18	Mar 11	Feb 9	R. E. Riely,	511 Washington s
North Star T. & G. Co.	Cal	10	Jan 10	Feb 18	Mar 11	Feb 9	W. Aug Knapp	511 Washington s
Pocohontas G M Co	El Dorado Co	50	Dec 17	Jan 23	Feb 16	D. A. Jennings	401 California street	
Pacific Borax Co	Nevada	47	75	Jan 26	Mar 2	Mar 29	S. Pattee	210 Battery s
Red Jacket M. Co.	Idaho	2	110	Feb 26	Mar 2	Mar 2	H. L. Butzblason	419 California street
Red Jacket M. Co.	V. T.	100	Dec 11	Jan 22	Feb 16	Feb 16	H. L. Butzblason	517 Market s
Santa Cruz Coal M Co	California	5	Jan 5	Feb 16	Feb 26	L. Kaplan	Merchants' Ex	
Sierra S M Co	Nevada	49	6	Jan 29	Mar 2	Mar 23	F. E. Eltzner	53 Wash. Market
S. M. Co.	California	4	Feb 26	Mar 2	Mar 23	F. E. Eltzner	53 Wash. Market	
Scorpion S M Co	Nevada	10	Dec 31	Jan 31	Feb 23	W. H. Martin,	531 California s	
Table M't. Alpha M Co	California	2	30	Jan 7	Jan 31	Mar 2	T. P. Cronse	438 California s
Tecumseh G S & Coppar M Co	Cal	50	Jan 30	Feb 16	Mar 2	T. J. Hermann,	416 Kearny s	
Tecumseh G S & Coppar M Co	White Pine	4	50	Jan 30	Mar 2	Mar 2	J. M. Buntington	419 California s
State of Maine M. & M. Co.	Cal	5	5	Jun 11	Feb 16	Mar 2	J. M. Buntington,	Merchants' Ex
Tonolime Hydraulic M Co	California	1	100	Feb 16	Feb 16	Mar 2	T. J. Milhken	302 Montgomery s
Union Pacific T & M Co	Utah	1	100	Feb 16	Feb 16	Mar 2	W. L. Wingard	312 California s
Washington H. Co.	Cal	2	1	Jan 9	Feb 17	Mar 10	T. B. Wingard,	318 California s

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

CALAVERAS COUNTY.
Chronicle, January 31st: The ledge in the San Bruno mine at Mosquito continues to show rich. The lead is also increasing in size as the tunnel progresses, showing now fully 2½ feet wide.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date
Alpha Cons. M. Co.		Called by Trustees,	415 California	Annual	Jan 3
Berry Cons. M. Co.		G E Elliott	419 California	Special.	Feb 1
Bullion M. Co.	Nav	J S Kennedy	408 California	Special.	Feb 1
Cherokee Flat Pine Grow Co	Washoe	H Pichoer	603 Washington	Annual.	Feb 1
Diamond S. M. Co.	Cal	W. Sherman, Pres.	826 Mont.	Annual.	Mar 1
Indus & S M Co.	Nav	David Wilder	414 California	Annual.	Mar 1
Justice M. Co.	Nav	R W Coker	414 California	Annual.	Feb 1
Montague & S M Co	Idaho	Called by Trustees		Annual.	Feb 2
Omega Maple Mountain M Co	Cal	D Wilder	Merchants' Ex	Annual.	Feb 2

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Black Bear Quartz Co. Co.		W. L. Oliver,	316 California st.	25	
Behr M. Co.	Washoe,	H. C. Kibbe,	419 California st.	50	Jan. 1
Cederberg G. M. Co.	California,	D. M. McKee,	420 Montgomery st.	50	Feb.
Con. Anador M. Co.	Cal.	F. B. Latham,	402 Montgomery st.	50	Dec.
Daly M. Co.		J. F. Cunningham,	304 Montgomery st.	100	Jan. 1
Diana M. Co.		N. C. Fassett,	229 Clay st.	100	Jan. 2
Eureka M. Co.	Grass Valley, Cal.	R. W. Spencer,	414 California st.	100	Dec.
Flint, Bancroft M. Co.	Nevada,	E. M. Minor,	411 California st.	100	Dec.
Providence G. & S. M. Co.		J. M. Danington,	Mercantile's Ex.	100	Nov. 1

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On Tuesday the weather cleared up and with it the aspect of the Stock Market. Belcher closed $\frac{7}{8}$ better; Crown Point, $\frac{3}{8}$; Con. Virginia, $\frac{5}{8}$; California, $\frac{3}{8}$; Ophir, $\frac{5}{8}$; Savage, $\frac{1}{2}$; much defamed Emma mine, sold for $\$29.60$ or nearly 1,000 ounces per ton. One hundred tons of second-class ore brought $\$3,800$ or $\$38$ per ton. One hundred tons of third-class ore brought $\$15,655$ per ton or $\$156$ per ton. The

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AMERICAN FLAT.—Nothing has been done in this mine during the past week on account of the water tapped in the Baltimore shaft, which made it necessary for the Baltimore to have the entire use of the shaft to drain the water as speedily as possible.

RESERVOIR.—The work of sluicing out the big reservoir, on Negro Hill, belonging to the water company, is completed. In the future there will be no lack of water for miners, and work will be vigorously pushed in all the hydraulic on the line of the ditch.

CHIAPA.—A little son of Mr. Schlund of this town, found a nugget of gold weighing \$2, in the public school-yard the other day.

EL DORADO COUNTY.
CAVED UPON.—*Republican*, January 29th: On Monday afternoon last, Mr. Levi Shepsard was caved upon in the "Roae" mine, and seriously injured. He went into this tunnel, and just reached the end when a mass of rock and dirt caved from overhead, doubling him up, and completely covering him. He was taken out in a few moments, unconcious, but immediately came to his senses, but still lies in a very critical condition.

HUMBOLDT COUNTY.
SALE.—*Register*, January 30th: The Pride of the Mountain mine was sold at Sheriff's sale last Saturday, and was knocked off to J. Ginnah for \$900. The property is worth at least nine thousand.

MINING COUNTY.—*Independent*, Jan. 24: Blawie's furnace is still running, but is expected to lay up for repairs. The Omega tunnel is working but a light force and the Union but one shift, so times are pretty dull for the time being. The water works are in good running order throughout, but have not yet ateamed up.

MONTEREY COUNTY.
THE CATARINA COAL MINE.—San José *Mercury*.
Feb. 2: The Secretary of this mine received the following letter last night from the Superintendent, dated Tres Pinos, January 27th: "I will give a statement of the mine up to the 27th of January, 1874. The tunnel is 90 ft. deep. The last 15 ft. the prospect is 100 per cent better. We have discovered a new ledge of hard coal far superior to the one we have been working, and the deeper we go the coal is looking better. The ledge pitches 45 degrees, and I expect that in 60 or 75 ft. more the two ledges will unite." This coal is certainly of superior quality.

NEVADA COUNTY.

IDAHO MINE.—Union, January 31st: This mine has been steadily at work and yielded for the four weeks past about \$54,000. This was not as heavy a run as the mine has had, and is not as heavy as the mine will have in many of the months of the future. The Trustees will meet next Monday, when a dividend of \$10 to the share of stock—\$31,000 in all—will probably be declared. We have heard of one transaction in the stock some three or four weeks ago. The transaction we heard of was fifty shares selling at \$750 per share. That would make the market value of the mine \$2,325,000. The purchaser of the stock, in the transaction of which we speak, knows all about the mine.

EUKEKA MINE.—The Eureka's principal work consists in sinking in order to find a paying ledge deep down. The prospecting shaft is now down about 1,100 feet, but is not on the ledge. When it reaches an indication of the wall, which must occur before very long, a cut will be run into the ledge, and the quality of the ore will then be determined. The 500-foot level is running to the west to develop the pay in that part of the mine. The mill has been running only ten stamps during the month and those have given more than enough to pay all expenses.

NORTH STAR MINE.—The mill has been run about 18 days during the month, and the clean up after the run was not far from \$14,000. They have one very great improvement, a railroad from the new mine to the mill. This railroad was built at a cost of \$1,000. On this road one horse hauls two tons of rock at a load, and without the railroad two horses could not haul more than half a ton. The new shaft is down 400 feet and the second level has been run some 300 feet to the east. The lode in the second level looks very well. Everything about the mine and mill is working smoothly.

EMPIRE MINE.—The shaft is now down about 1,300 ft. on the incline, and soon the 14th level will be started. Pay ore is coming from the 10th, 11th, and 12th levels. The yield for the last four weeks has been something over \$16,000 worth of gold, which gives large profits. The underground appearance of the mine is excellent.

ALLISON RANCH.—We have it from pretty good authority, that this mine, in connection with the first extension south, will be worked in the spring.

MACENTA.—In the second level, running west, this mine has a ledge from 2½ to 3 ft. thick, which shows splendidly in free gold and heavy sulphurets. The work of sinking for another level, and hauling to the mill for a crushing, will be resumed as soon as the weather permits.

TOWN TALK.—Hss been running all the month, crushing gravel. The stamps are run by water. This water plays on a wheel which is attached to the end of the cam shaft. This is something new in water-wheels, and deserves the attention of mill men. The Town Talk is yielding to its two owners something over \$2,000 a month, with an expense less than \$1,000.

BLUE GRAVEL COMPANY, of Alta Hill, is idle now, but it is only waiting for a turn in the weather to resume work.

DARTMOUTH GRAVEL has been in good luck for the past month and has taken advantage of water to run a ten stamp mill.

OTHER MINES.—Judge P. H. Paynter is Secretary for some four or five co-operative and other companies. He informs us that the stockholders in all of them—working miners they are—will be ready in a few weeks to begin active work.

NEW YORK HILL.—Ore is being continually taken out of the upper tunnel and it has been demonstrated that the poorest ore yields a handsome profit over all expenses. The upper tunnel shows a large vein of ore and stoping is going steadily on. The tunnel from the bed of the creek is in about 200 feet and indications show that they are near the ledge from the deposits of caliche and casing rock. It is pretty certain that 25 feet more will reach the main ledge in the lower tunnel.

KENTUCKY MINE.—Work is going forward only in the 100-foot level, there being too much water in the depths lower than that. The ledge in the 100 ft. level is about two ft. thick, and shows free gold and very rich heavy sulphurets.

GRASS VALLEY NEW MINING COMPANY held its annual meeting last Monday and elected the following Trustees: George Fletcher, P. H. Paynter, Wm. Prisk, J. Carter and Samuel Tyrell. Mr. Fletcher is President, and Mr. Paynter, Secretary of the company. A meeting of the Trustees was held on Friday, and an assessment was levied. The company will commence work early in the spring, and will keep work going all through the summer and fall. The stock of the company is owned by home people, mostly by working miners, making the company a co-operative one.

PITTSBURG.—The owners have divided about \$900 among the three of them, and are only about 20 or 40 ft. down. All the pay they have received has been from rock taken from the shaft. No drifts have as yet been run. The owners are putting up a whim and a building over the shaft. The mine will have to open and work itself, and no outside capital is now asked for by the McCook Brothers and E. P. Sanford, the owners.

COB has been pumping pretty much all winter, but has done no sinking stoping or drifting. Preparations are now being made to take out a

trial crushing from the lower depth of the mine, where the rock is said to be rich.

GREEN HORN shaft is now down 490 ft., and the ledge in the bottom of the shaft is about 2½ ft. in thickness. The ledge is highly metalliferous.

SLATE LEDGE, (or Perrin's,) is looking better than it has for a year past. Work is being prosecuted with vigor.

PLACER COUNTY.

MINING.—Folsom Telegraph, Jan. 31: Miners are repairing flumes and making preparations to commence operations in the claims among the hills and gulches east of Ashland. They are supplied with plenty of water from the North Fork ditch.

STANTON UP.—Herald, Jan. 31: We learn that the large hydraulic mines at Gold Run, Dutch Flat, and other parts of the county have commenced in earnest.

PLUMAS COUNTY.

DAMAGEN.—National, Jan. 24: The recent high water damaged the mining ditches to some extent. The Plumas ditch broke in several places, but it will be repaired in season for the commencement of the spring run. The rush of water cleared the dirt out of the new reservoir belonging to Garland & Dow. We could not learn what the damage was.

SIERRA COUNTY.

THE SIERRA BUTTES MINE.—Messenger, Jan. 31: This mine, now regarded as the most valuable and extensive gold mine of Sierra county, is upon a lode, which is split up into three branches with intervening lodes of hard blue slate between, of the same character as the lodes. The rock is extracted through tunnels, of which there are seven. The lowest is on a level with the mill, the horizontal distance from which to the uppermost workings is 1,400 feet. The altitude of the mine above the Yuba gives splendid facilities for working and drainage for years to come, and there is a probability of the mine being worked and drained through tunnels to the depth of 3,500 feet in the lode.

SOLANO.

ST. JOHN MINE.—Vallejo Chronicle, Jan. 31: The St. John mine has shut down its furnaces until a resumption of dry weather. The heavy rains have rendered the road between the dumps and the reduction works so bad that it is almost impossible to move the ore to the furnaces. The supply of coke is also almost exhausted, and the muddy road from Vallejo to the mine makes it very difficult to replenish their fuel. The work of getting out ore, however, still proceeds, without any reduction of the number of men employed.

TRINITY COUNTY.

A GOON BEGINNING.—Journal, Jan. 31: The first clean-up of the season—and that only a partial one—was made in the Union Hill claim, above Douglas City, last week. They had run only six days and expected to take out from \$200 to \$300, but were more than agreeably surprised at cleaning up the nice little sum of \$2,068. They have heretofore been working where the gravel was only from 3 to 6 ft. in depth, but have lately run into a gravel bed that is from 12 to 14 ft. deep. The Union Hill claim is destined to be one of the "big things" of this county.

MINING ACCIDENT.—The raise in Garden, Sydney and Ten Cent gulches, on Wednesday last, resulted disastrously to Carson & Goring. The water broke over their bulk head just below where the school house stands, and the result is that about three-quarters of a mile of their flume is now covered with from 12 to 15 ft. of tailings, which makes it a total loss, as it will never pay to unearth it. The owners of the claim intend to put in a short flume above the break.

TUNNEL CAVEN.—The flume, in the Rule Bros.' claim, runs through a tunnel 17 ft. below the surface. On Thursday last, about 40 ft. of this tunnel caved, and as they were running water at the time, the flume soon filled with dirt. A couple of days' work will put it in running order again.

HARN AT IT.—Water is now plenty, and miners everywhere in this section are making good use of it in sluicing.

TUOLUMNE COUNTY.

LADY WASHINGTON.—Independent, Jan. 31: Men have gone into the hills to work on the Lady Washington mine. Superintendent Dorsey says it is the intention of the company to sink 200 feet on the vein, to prove its stamina. Thus far, indications are favorable to good results.

GOLDEN GATE.—From a partial "clean up" of a four days' run at the Golden Gate mill, two pounds of amalgam was the product. Allowing two-thirds of this to be gold, we consider it to be an excellent showing.

GOON PAY.—Democrat, Jan. 31: The Tuolumne Hydraulic Mining Company, whose claim is in Table Mountain, and formerly known as the Rough & Ready, cleaned up three boxes at the head of their sluices last week, from which was taken \$900. It was good pay for the interrupted labor of six persons for four weeks, estimated at not more than two weeks of regular washing for that force.

Some of the stockholders in the Kincaid Flat mining claim from San Francisco, spent a few days at the claim and in Sonora, the past week. They had an investigation of a box or so at the head of the flume, where sufficient of the yellow metal was developed to satisfy them the ground being washed, is yielding very handsomely.

VENTURA COUNTY.

PURCHASE.—Signal, Jan. 31: The Sespe and Piru Mining Company have purchased the

Felician mine in this county with twelve hundred acres of land. The company is regularly incorporated, and will begin work in a few weeks. They will get their water from the Sespe and Piru, and their head-quarters will be about 25 miles from this place. The ditch will be about 18 miles long.

Nevada.

WASHOE DISTRICT.

OPHIA.—Gold Hill News, January 31st: Sinking the winze on the ore body developed by the south drift on the 1,300-foot level is making steady progress, the bottom in good ore. The up raise from the 1,500-foot level to connect with this winze is up a distance of 70 feet in good ore. Two ore bodies have been developed by the recent prospecting operations in this mine; one of 14 feet in thickness, and of exceeding richness, lying next the west wall of the ledge, and another from 60 to 100 feet in width, of good milling ore, near the east side of the ledge, with a body of barren quartz and low grade ore intervening. The west body of ore appears to incline to the westward, although it is the opinion of experts who have examined both, that the two bodies will unite at no very great depth. Both the intervening belt of quartz and the large east ore body have the inclination of ledge to the eastward. The south winze on this level was started in the west edge of the east ore body and passed through the ore during the week into the low grade ore and quartz intervening between the west and east bodies. This winze will be sunk perpendicularly until the west wall is reached, when it will incline with the dip of the ledge to connect with the main south drift on the 1,700-foot level, and thus ventilate that portion of the mine. Large and capacious ore dumps are being erected, and every preparation is being made to begin the extraction and reduction of ore, there no longer being a doubt as to the extent and worth of the ore bodies being developed.

BALTIMORE CONSOLIDATED.—On Saturday evening last a heavy flow of water was tapped in the bottom of the shaft. The next day a breakage of some of the pumping machinery ensued, following which came a small split in one of the hoilers, entirely stopping the hoisting and pumping, until the water had risen 160 feet in the shaft. The machinery, however, has all been repaired and the water lowered to within 30 feet of the bottom of the shaft, and it is expected that work at the lower station can be resumed in a day or two more.

CONSOLIDATED VIRGINIA.—The south drift is now connected with the north winze on the 1,300-ft. level. This connection has thoroughly ventilated the stopes below the 1,200-ft. level, and purified the air current throughout all the lower openings of the mine. The work of cutting out for a square set, preparatory to sinking the winze to the 1,400-ft. level, has been commenced. The north winze is now sunk 47 ft., and the shaft 42 ft. below the 1,300-ft. level. Work in both shaft and winze will be carried on without intermission. All of the ore breasts from the 1,200 to the 1,000-ft. levels continue to look well.

TYLER.—The water has been so nearly drained from the shaft that it is expected that work can be resumed in the drift at the lower level by Monday next. The new hoilers have arrived.

BELOHER.—Daily yield 550 tons of ore. The mine continues to look as promising as ever, and the daily yield of ore unabated. The main incline is down 81 ft. below the 1,400-ft. level. The north drift at the 1,400-ft. station is in 49 ft., and is being pushed ahead with all possible energy. The south winze on the 1,300-ft. level is down 86 ft.

CROWN POINT.—Daily yield of ore 450 tons, mostly from the 1,000, 1,200 and 1,300-ft. levels. Breasting out on the ore body, on the ore body on the 1,400-ft. level has been commenced, the ore being of a fine character. A drift north, which is in rich ore, has been started to connect with the cross-cut from the main drift. A winze has also been started at the east end of the north cross-cut, which is down 12 ft. in very rich ore. Since the connection has been completed between the Crown Point and Yellow Jacket the temperature of the air has been greatly lessened on the 1,400-ft. level.

JACOB LITTLE.—The whole face of the lower tunnel is now in ore, some streaks of which show very richly in free gold and black sulphurets of silver. The Superintendent is of the opinion that when the tunnel is 50 ft. further in, 50 tons of good ore per day can be extracted.

LEO.—Owing to the increase of water in the incline, Superintendent Moyle has been obliged to concentrate his forces at that point, and stop work in the main drift.

DAYTON.—Lowering the steam pump so as to drain the water from the third station is making good progress. But little ore has been extracted from the mine during the week, owing to inability to get the ore hauled to the mills. The services of two additional mills, the Devil's Gate and Briggs, have been secured and will be started up on ore from the mine as soon as the roads are in condition.

OCCIDENTAL.—The engine is not yet in operation on the main adit level. The winze is being sunk directly in the ore body, the quality of the ore being good and the size of the body unknown.

UTAH.—The west drift, on the 400-ft. level, is steadily advancing through soft picking ground. There is reason to suppose that this drift is now in close proximity to the ledge.

JULIA.—The main southwest drift, on the 1,000-ft. level, is still driven ahead, following the ledge and running through ore which aver-

ages by assay \$40 to \$60. Of what extent this ore body is, has not yet been determined.

HALE & NOBSCROSS.—Both drifts are still carried forward to the northward and southward in the vein on the 1,900-ft. level. Two cross-outs have been made in the vein on this level. No ore has been encountered. Daily yield of ore, 40 tons, mostly from the upper levels of the mine.

LADY WASHINGTON.—The usual good progress is being made sinking the main shaft, there being no water to interfere with the work. The Justice and the New York Consolidated shafts are only 800 ft. southerly and northerly from the Lady Washington, and from 450 to 600 ft. deeper, therefore they keep this shaft well drained, which is an important item in the saving of firewood, machinery, etc.

SEQUEBOAT ROCK ISLAND.—On passing through the clay wall last Monday into the ledge, a large body of water was encountered, rendering it necessary to put a bulkhead in face of the tunnel to prevent caving. A drift was immediately started north from the tunnel, which will be run about 100 ft., when a crosscut will be made to prospect the ledge.

CALIFORNIA.—The drift running north on the 1,300-ft. level (of the Consolidated Virginia), is now in 130 ft. from the shaft. It is intended to connect this drift with the south drift on the 1,300-ft. level of the Ophir, and secure the ventilation of both mines.

CHAPIN AND EAST COMSTOCK.—Work was commenced some months ago on the shaft of these two companies, located on the Gold Canyon branch of the Comstock, a few hundred feet east of the Overman new shaft. It has been sunk to a depth of 133 ft. by the use of a windlass, when, steam power becoming necessary, the requisite machinery for hoisting works has been procured and is now in course of erection. It will be ready for resumption of work in about 15 days.

CHOLLAR-POTOSI.—An important ore development has been made during the week in the prospecting drift south from the 1,000-ft. station. The extent of this ore body has not yet been determined, but the indications are favorable for a fine development.

SILVER HILL.—Sinking the shaft for a new level is making rapid progress. The south drift, at the 2d station, has developed a fine body of good ore, which in looks and character, can not be distinguished from the ores of the regular Comstock lode.

ROCK ISLAND.—Commenced cross-cutting at end of the drift, north from main tunnel, last Tuesday.

GOULD & CURRY.—Still carrying forward the east cross drifts on the 1,500 ft. level, also the north and east drifts on the 1,700 ft. or lowest level. Re-opening the drift at the 6th station level is being vigorously prosecuted.

NEW YORK CONSOLIDATED.—Sinking the main shaft is making better progress, the rock being softer and becoming more and more so, with considerable porphyry coming in.

SIERRA NEVADA.—Daily yield 60 tons, keeping the mill steadily running. Sinking the new shaft is making rapid progress.

INDEPENDENT AND OMEGA.—The contractors are making four ft. per day sinking the new shaft.

CROWN POINT EXTENSION.—Work is resumed for the development of the lodes of this company by means of the new shaft of the Ohapin and East Comstock, about 1,000 ft. south. The shaft is to be sunk to the depth of 1,000 ft. as soon as possible.

ANDES.—This company are erecting hoisting works, and are placing the hoisting engines at the west shaft of the Consolidated Virginia Company.

SENATON.—Sinking the shaft making steady progress, the quartz in the bottom of the shaft continuing to improve in looks, and the streaks of ore in quality as the sinking progresses.

FARMOUNT.—The northeast drift from the main west tunnel has been driven a distance of 45 ft. the entire distance through ore of a fine character.

SOUTH COMSTOCK.—Now shaft down 18 ft. and making good progress, sinking through quartz and gypsum ledge matter, which improves in appearance.

BULLION.—The north drift from the 1,700 ft. station of the Imperial making steady headway.

ARIZONA, UTAH AND GLOBE.—The main west drift on the 1,400 ft. level is still driven ahead, the face in hard blasting ground. Raising up to connect with the old upper works of the Globe is making steady progress. Sinking the incline making good headway.

SUCOR.—Sinking the little shaft for a new level making rapid progress. Drifting on the ledge at the 200 ft. level is pushed vigorously, the face of the drift still in good ore. Sinking the new shaft east of the hill making rapid progress.

SUTRO.—The prospect for striking a good body of ore in the winze is very flattering. Assays average \$18. The north drift is in 90 ft. Will commence crosscutting at a distance of 100 ft. From present appearances there is no doubt a good ore development will be made.

OVERMAN.—The winze, from the 1,000 to the 1,200 ft. level, is down 200 ft., following the dip of the ledge, the bottom still in rich ore. The main west drift on the 1,200 ft. level is still pushed vigorously ahead, the face in hard blasting ground. A portion of the air pipes, and machinery for the air compressor and engine have arrived, and the remainder is expected in a very short time.

SAYAOE.—The main southwest drift, on the 1,900 ft. level, is still driven vigorously ahead, the face in hard blasting rock.

Practical Miners.

Sombody signing himself A. C. is writing "notes on metallurgy" for the *White Pine News* and his first article under that title, though saying little on the subject, is well worth reading. It is as follows: To contribute to matters of special interest to our community I propose to deliver a few articles on metallurgy and kindred subjects, but, as a preliminary, copying the example of the fond mother, who, to ensure good behavior, commenced the day by turning up the little fellow and spanking him heartily, I propose to be "a little rusty" on the miner. Twenty years' connection with him, exposes his crotchets to a lamentable and often a ludicrous view. Earnest and honest, he runs but does not read, and is more he-d deviled than the swine that ran down the mountain. Professing the most profound contempt for science, he is the greatest theorist alive. But such theories! They would startle the man in the moon, though he is presumed to be familiar with moonshine.

Exactly in proportion to his ignorance, is he positive in his absurdities, which give all the hues of the rainbow. The practical man has his own experience only, and must be long lived to acquire much knowledge, while the "scientific cuss," as he calls him, can have the experience of all, united in many cases with individual practice. Practice may remark a fact, and it may fatally mislead. A thousand ships crossed the ocean, commanded by practical seamen, and Lieutenant Manry took their log-books and dispatched them back safely in half the time. The weatherwise foresees a storm in the evening, while the Topographical Bureau gives notice three days in advance. A practical miner, of twelve years' experience, deposes in a mining case, in Nevada, California, that "he never knew one vein to cross another," and a *practical jury* made a consonant decision. A two hundred and fifty foot tunnel has been run through bed-rock, at \$30 per foot, to cut a vein at fifty foot depth. Tunnels to investigate Treasure Hill have been run on the east side, and, owing to the dip of the rock, every foot driven approaches the surface. A mobilization of White Pine Mountain is proposed, and accepted by practical men, in despite of geometry and geology. Incongruities are the sure result of practical views, unless they accord with rules dictated by scientific observation. A thousand *perpetual motions* have been invented by thinking men unversed in the philosophy of mechanics. A builder of twenty years, framing the hip-roof of a warehouse, was unable to raise a perpendicular on an oblique surface, and detained some twenty hands, was in a peck of troubles, until relieved by a bystander, when he said a few naughty words, and told his son, a youth of seventeen to drop his tools and go immediately to school and study geometry, and not be such a stupid as his father.

It is amusing to hear the miner descant on his *sulphates*, his *grey carbonates* and magically convert harmless matter into horn silver, and at the same time torturing innocent veins, by his *spurs and angles*, entirely unconscious that the poor things were like Jeff Davis praying (I had almost written praying) "to be let alone" and take their rectilinear course. But the acme of absurdities is the speculations respecting White Pine and Limestone districts. Tom Noodle will squarely allege: "there is no fissure vein on Treasure Hill. I have seen it, and ought to know," while another eapient, to soften the asperity of the remark, says "well, if there isn't a fissure, there is a *break*." Another wiseacre, in punishment for being such a fool, refuses to ride and packs his blankets, crying, "there is no fissure vein there!!" "Montgomery street, taking the cue from *honest miners*, peeps knee-deep into the rock, cries "quantum snf," and throws up the sponge. The mishaps that befell early smelting operations here, were the legitimate results of practical manipulations, unguided by science. A resumption will demonstrate no infirmity in either the silver or lead, and that adequate fluxing was only needed to a triumphant success. And now, my good friend, if you are sufficiently *warned* to be like a good boy and attend to your lessons, in our next, we will discuss the rudiments of metallurgy and show the need of many brains to reduce ores. You may, in spite of pigheadedness, stumble on a rich vein, but your inability to enjoy it will be manifested unless you can intelligently aid in its elaboration.

ALUMINUM.—J. S. Howard, of Springfield, Massachusetts, has, it is said, after three years of patient experiment, succeeded in extracting from clay, at a price which will compete with the foreign production, the aluminum for plating which has been used extensively in Europe, but which has never been manufactured to any extent in this country, owing to the cost of extracting it under the old method. Mr. Howard affirms that by this method the aluminum can be furnished nearly a third cheaper than the retail price for the foreign production.

IMPROVED BUTTER PRINT PRESS.—A patent has been granted for an invention, the object of which is to furnish to farmers and dairymen an improved butter print or press, by which the butter may be quickly and evenly formed into cakes of required weight, with suitable print marks thereon, without previous weighing. It consists in a sliding box, into which the butter is introduced and pressed on a printing block, by a follower block and lever, into suitable shape and weight.

San Joaquin Mines.

Following are extracts of a letter from Harvey Boone to his partner in Pioche, Mr. Dolman, dated at Del Norte, on the head waters of the Rio Grande, Colorado Territory, January 7, and published in the *Pioche Record*, of the 24th ultimo:

Parties fitting out in Pioche can take their choice of three routes. First, go up to the mouth of the Grand River, and strike for the Indian agency on the Uncompahgre, thence down the west side of the San Juan Peaks. From the agency down, wagons have passed over—or, at least, such statements have been made. Second, the way we came, in which case they will wish they had gone some other road. Third, by Lee's Ferry, across the Colorado, following the Mormon road until the road leading to Fort Defiance is found—following it to the fort; thence to or near the mouth of the Animas, and following it to the mines.

Parties choosing the northern route should start early, so as to cross the streams entering into the Grand river, before or by the first of May. By following up the south side of the Grand river, until the Uncompahgre is reached, thence following up its south bank to its head, it will carry you to the summit within a few miles of the mines. But the surest plan would be to leave the river and strike south across the San Miguel and Dolores, to near the head of the Mancos river. A good trail will be found up these streams, and a wagon road could be made without much difficulty. Besides some very rich surface diggings have been found near the head waters of some of these streams. I have talked with three different parties who crossed this section of country last summer. They all think they can find good ledges, as well as pay gravel, if the Indians will let them prospect.

I have said a good deal about the routes that may be traveled. Now I will say something about the distances, feet, etc. Commencing at Pueblo, thence via Sangre de Cristo, or by the Aheya Pass to Del Norte, a distance of 150 miles; thence up the Rio Grande and over a summit 13, 500 feet high—distance 100 miles—making 250 miles of wagon road; that is, when it is finished, which will not be before next September. Some 60 miles of the road is completed, leaving 40 miles of heavy road to be done. Travelers can find no feed, except a little grain, after leaving Pueblo until they reach the San Juan mountain. Grain sells at four cents per pound. The Rio Grande Valley is pastured off as bare as cattle and sheep can eat it.

I have talked with a few men who are willing to acknowledge that they don't know that any of their claims are valuable, but agree in this: that there are more lodes well defined, and more mineral than they have ever seen in any district before. A little may be good milling ore, but most of it is smelting ore. Furnaces must be built on the south side of the mountain, as it is plain to see that no ore, except the very richest, can ever be hauled up from 2,000 to 3,000 feet over a summit that is impassable six months of the year.

Good coal has been found within 15 miles of Animas City (or Hermosa, as it will be called). The stage fare is \$20 from here to Pueblo, and \$10 from there to Denver. Everybody thinks we will have a rush, and I feel satisfied that many thousands will come here in the spring. The mines will not be developed as fast as most people think.

The Little Annie, a discovery made last summer 35 miles north of here, and near the summit, has produced some of the richest quartz ever exhibited in any country—some of it more than half gold, and rock that showed no gold assayed very high. There is some doubt here among the miners about the true lode being found. However, it is bonded at \$410,000.

It is the intention of the Pioche miners now at Tierra Amarilla to do some prospecting along this mountain range. The range is very extensive, and must average near 100 miles from the summit to the valleys, and about 150 miles in length. Near the line of the road from Tierra Amarilla to Animas, is where the rock formation changes from a sandstone to other kinds of rock. It is along this sandstone formation that the almost endless beds or fields of stone coal commence.

The winter and early spring route from Pueblo to the mines will be via Abiquia, on the Rio de Chama and Tierra Amarilla to Animas City. This route, avoiding as it does, the snow line and summits of the Rocky mountains, will probably be the established freight route.

NEW AGRICULTURAL IMPLEMENT.—English patents have been granted for improvements in agricultural apparatus for thinning turnips, or other roots or plants. In these the frame is supported on a pair of wheels fixed on an axle, and there is loose on the axle a bevel wheel which is in gear with a bevel wheel on the front end of a longitudinal shaft having fixed on its back end a wheel center on which the hoe or other thinning parts are fixed. A transverse bar is fixed on the underside of the frame, and carries a pair of paring coulters or small shares for paring or slicing the sides of the drill. The hake is fixed on one side, so that the horse may walk along the furrow on one side of the drill that is being thinned, and the haulers are also set to the same side, so that the agriculturist may follow in the same furrow. A light wheel is fixed adjustably to one of the handle bars to regulate the depth at which the thinners work.

Eberhardt & Aurora Mines.

Through the courtesy of Capt. Frank Drake, Manager of the Eberhardt & Aurora, we were enabled to visit Treasure Hill in his company. It being our purpose to view the workings of the mines belonging to the company, we were taken in tow by Mr. Maxwell, the obliging mine superintendent, and escorted underground, by way of the Earl and Dn Pas chambers, to the present scene of operations in the Peerless chamber. Since our last visit of some three months ago, the magnificent body of ore contained within the walls of this celebrated locality, has continued to yield abundantly, and, as yet, show no signs of diminution. Standing on the floor of this immense excavation one is lost in amazement while speculating on the everywhere visible amount of rich rock still remaining, after months of constant work, and conjecture fails to limit the quantity yet in sight. On the western side of this chamber the foot-wall has been reached and shows itself a distance of two hundred feet, as smooth as glass, lying at an angle of some thirty or forty degrees, pitching east. Taking into consideration the fact that the same character of wall is found in the Wheeler tunnel, of the Hidden Treasure, having the same inclination of pitch, then again seen in the Ward Beeber, north of the Peerless chamber, one cannot but arrive logically at the conclusion that the permanent wealth in mineral lies east of Treasure City, and that the ore found on Chloride flat and vicinity is not indicative of large and continuous bodies. The daily shipment of rock from the chamber described is from thirty-five to forty tons, supplying the thirty-stamp mill of the company, at Eberhardt, with a sufficiency of ore to keep the stamps constantly in motion.

Recent developments in the near vicinity of the famous chamber have demonstrated a very important fact of which we are not now at liberty to speak, but we can confidently predict a sensation in mining circles from the discovery ere many weeks. Manager Drake has been laboring under many difficulties since his assumption of the charge of affairs, foremost among which has been the lack of necessary funds with which to prosecute work as he would have desired, but, we are glad to say, that, through his energy and perseverance, the successful completion of the mill has been accomplished, and the expenses in its construction, as well as labor on the mines, will soon be liquidated. In fact he has made the property a self-sustaining institution from the start. We trust the directors, across the water, may see the necessity of allowing Capt. Drake to manage the mine as he proposes and we can confidently guarantee a perfect success. Prospecting is needed, and, at this time, with the knowledge obtained by actual exploration, but a short time will elapse before a second Eberhardt, in both richness of ore and extent will be found and make our English cousins dance with joy.

We do not write thus for "buncomb," but from a firm conviction and absolute belief in the state of facts as they exist. It has been our aim to tell only that we know from personal observation, and, from the start, we have predicted a glorious future for much abused Treasure Hill. It is only a question of time, short at that, when our camp, now so dull and deserted looking, will "loom up" as it deserves, and take its place among the very best mining sections of the known world; and to those who have clung to White Pine through all the years of apparent decay will be due the praise for persistency and faith, and their reward will be certain. We shall be furnished with accurate information of the new developments in the mines of the Eberhardt & Aurora Company when "assurance becomes doubly sure" of the extent of the rumored strike.—*White Pine News*.

IMPORTANT ORDER FROM WASHINGTON.—One of the regulations of the Treasury Department provides that all importations of coal and salt shall be weighed in official tubs at the time of discharge, that the Government may not be defrauded out of any legitimate revenue. Some years ago the importers conceived a strong prejudice against this law, because of the trouble it imposed upon them, and, through official sources, obtained a kind of agreed modification whereby cargoes of coal and salt could be loaded in bulk and so weighed. That is, the importers or purchasers were allowed to send carts to wharves and remove the coal and salt, by the load, to scales in various portions of the city, where it could be weighed by employes of said importers or purchasers. The United States weighers were then supposed to accept the figures of the private weighers as strictly accurate. This practice has obtained ever since its inauguration, and, of course, has worked like a charm for importers or purchasers. There has been shortage in numberless cases, and every discrepancy has been a loss to the Government. Some cargoes have fallen short hundreds of tons. Special Agent Vernon observed that importations of coal and salt were made in direct violation of the law, and so notified the Secretary of the Treasury. And now comes an order from Washington to have the coal and salt weighed in regulation tubs, as the law provides. The order will be carried into effect as soon as practicable. The importers will not be pleased to learn of this change.—*Bulletin*.

About one hundred and twenty car loads of ore are now daily shipped from the Constock to mills on the Carson river, and at Silver City.

North Idaho.

From all the reports received from North Idaho of late, the value of that country is becoming more generally appreciated than heretofore. Formerly it was supposed that the placer mines would soon be worked out, and that then the country would be abandoned as of no further value. But it now seems that if the mines were actually worked out, there is enough fine grazing and agricultural country to make it at some day a very rich and prosperous section of country. The advantages of soil and climate are already attracting many settlers, and there is now being laid the foundation for a permanent and prosperous agricultural and stock-raising community. But the supposition that the placer mines would soon be worked out is also unfounded. For twelve years they have been worked, and still there is a considerable yield of gold from these placers. They are not so rich as when first discovered, but may, and probably will, pay wages for the working for many years to come. But in addition to these, the quartz mines of that section are beginning to attract attention, and will soon, we believe, be extensively and profitably worked. The country in places seems to be a perfect net work of quartz ledges; and those that have been fairly tested, have yielded good returns. There are quartz mills now in the mines that have crushed ore sufficient to show that these mines are rich; and so far as that is concerned, no one seems to doubt it. One reason why these mines have not been worked more extensively, is that they are difficult of access at all times, and especially so in the winter. This, however, is a difficulty that can be overcome, and no doubt soon will be. When this is done, and when these quartz mines become developed, and their richness and productiveness known, then the real value of North Idaho as a mining country will begin to be appreciated. This, added to the other advantages which she possesses, will make her of no little importance in a few years at furthest.—*Walla Walla Union*.

PASSEN THROUGH.—We met Mr. Kimball, a gentleman from San Francisco, to assume charge of the fine 20-stamp mill at Egan Canon. He precedes J. R. Murphy but a few days and will at once get matters in shape to commence work with vigor. We are informed by the gentleman mentioned that Mr. Murphy, accompanied by Mr. Taylor, of the London firm of Taylor & Sons, large operators in mines and mining, and connected with the property at Mineral Hill, will arrive this morning from below. It is in view to look at the prospects of Cherry Creek and report upon them. We trust the parties mentioned may be satisfied of the advisability of investing in the new camp, as men of their stamp do much toward bringing out a country. The present inclement season of the year, we fear, may operate to the disadvantage of the district, but we hope for better weather soon, which will place a different aspect on matters generally.—*White Pine News*.

MINT CRAZY.—The American people are seemingly getting crazy in regard to the mints—not mint-jinlepe, nor "mint-drops," but the establishments that turn out the "drops." Every mining locality, almost, wants a mint. We have one at Carson to accommodate the miners of Nevada and Utah. Montana has for some time past been asking for a mint establishment, and now comes Salt Lake City with a demand for a like institution. As soon as Alpine leaves off her swaddling clothes we had better ask for a mint for Silver Mountain. And, we had forgotten, Chicago wants one, and if her wants are supplied her rival, St. Louis, will want one. Our people are continually growling about high taxes and foolish expenditures of the public money, and at the same time they ask Congress to spend some five or six millions of dollars to establish mints when the mints we now have fully meet the wants of the country.—*Alpine Chronicle*.

AMERICAN FLAG MILL.—The American Flag mill has just finished making thorough repairs, and is prepared to do the best of work. A new dry kiln, twenty-one feet square, has been built, provided with two furnaces, which dries the ore quickly and thoroughly. The capacity of the mill is thus much increased. The mill has always done satisfactory work; and, with increased facilities, must still retain the confidence of the public. The mill is now working ore from the Washington & Creole mine, and extracting eighty per cent. of the silver contained therein. A. G. Moore, the foreman of the mill, has had much experience in the treatment of ores in this camp, and understands the processes best adapted to obtain good results from the different classes and grades of ore the camp produces.—*Pioche Record*.

ABOUT THE YEAR 1300 coal was first discovered on the banks of the Tyne, and was introduced as fuel into London about the year 1350, in the reign of Edward I. Its use, however, was in 1373 forbidden by proclamation, in consequence of the gas being considered to be deleterious to health through corrupting the atmosphere, and for many years after it remained unused. At the close of the century, however, the value of coal became recognized, and its application and consumption extended.

The number of industrial establishments in France at present is 150,000, employing two million of hands and steam power equal to 650,000 horses. The business done amounts to twelve thousand millions of francs.

USEFUL INFORMATION.

New Dyeing Recipes.

Reimann's *Farber Zeitung* contains a recipe for a safflower rose on glazed calico. The dressing consists of 50 lbs. of wheat starch, 20 lbs. of wheat flour, 4 lbs. of white wax, and 6 lbs. of cocoa nut oil, a little sulphuric acid being added to the water in which the starch is mixed.

There are also recipes for light and deep Prussian blues on glazed calico; for a green (extracts of indigo and of quercitron) on jaconnet; a peach wood crimson on glazed calico and jaconnet; a brown on calico with Bismark brown and magenta; a gray drab on wool, and a scarlet on woolen cloth and flannel; also a blue (soluble aniline blue) and a coffee brown on plush; a violet on woolen yarn. The mordant in this case consists of $1\frac{1}{2}$ ozs. of tannic acid, dissolved in hot water in which $\frac{1}{4}$ oz. of Marseilles soap is next dissolved; $\frac{1}{4}$ oz. rapo oil is next added, and stirred up till it forms an emulsion. The liquid is used at 167° Fah. The bleached yarn is worked in this mordant for fifteen minutes, and then withdrawn. The color bath, at the same temperature, is prepared with 5 nzs. of alum and the clear solution of 1 oz. of methyl violet.

There is also a prescription for a light green on cotton yarn, the color being methyl green fixed with tannic acid.

The editor gives a recipe for a brown on shoddy containing a mixture of cotton, called on the continent *velour*. To 100 lbs. of this material, make up a bath of 30 lbs. of fustic, 3 lbs. of alum, 2 lbs. of prepared tartar, and 1 lb. of blue vitriol, in which the shoddy is boiled for half an hour. To the same lot are then added 1 lb. of chromate of potash and $\frac{1}{2}$ lb. of aniline red, ruby, or aniline crimson, known on the continent as *rossin*. The dyeing is carried on at a gentle boil, and turmeric added to modify the shade. Logwood may be used, if needful, to darken. Aniline is refuse magenta; it is dissolved in hydrochloric acid and boiled in water previous to use.—*Chemical News*.

VENEERS are readily dyed upon the surface, but in this condition are much more liable to disfigurement than when the color is made to permeate the mass. Those colored throughout are therefore the most sought after, and before the late war were chiefly furnished from Paris. During the war, the supply being cut off, some German cabinet-makers took up the subject, and, after numerous experiments, perfected a process which secures the desired result. The veneers are first soaked for 24 hours in a solution of caustic soda, and then boiled therein for half an hour. They are then washed with water until all the alkali is removed, when they are ready to receive the dye. This treatment with soda effects a general disintegration of the wood, whereby it becomes, in the moist state, elastic and leather-like, and prepared to absorb the color. Veneers thus treated, if left for 24 hours in a hot decoction of logwood, and, after superficial dyeing, immersed for 24 hours more in a hot solution of copperas, become of a beautiful and permanent black throughout. A solution of picric acid in water, with the addition of ammonia, gives a yellow color, not in the least affected by subsequent varnishing. Coralline dissolved in hot water, to which a little caustic soda and one-fifth its volume of soluble glass have been added, produces rose color of different shades, dependent on the amount of coralline taken. After dyeing, they are dried between sheets of paper and subjected to pressure to retain their shape.—*Manufacturer and Builder*.

CASTING NICKEL.—Nickel can be cast; it is now done in Berlin, Prussia, where nickel plates of 16 inches square and $\frac{1}{4}$ inch thick are made from the ordinary small cubes under which it comes in the trade. The way to do it is to place the nickel in crucibles in the ordinary furnaces used in brass foundries, but the melting requires a constant and careful watchfulness, while a proper liquid condition is only attained after a heat of at least six hours. As soon as it flows it must at once be cast in sand molds, because if allowed to cool in the least it will at once form a compact lump, which it is impossible to melt again in any ordinary smelting furnace. Such a very large cast of nickel plates were to be seen at the late Vienna exhibition. They are of course very useful for nickel-platers.—*Manufacturer & Builder*.

A USEFUL DEVICE.—A tin tube made like a siphon, driven into the vent of a barrel of wine or cider, and the other end inserted into a vial of water, will prevent the air from entering the barrel, while the gas escapes through the water. Make the barrel otherwise tight. When the cider or wine is done working, the water in the bottle will cease bubbling. It requires no filling up, as there is no loss.—*Boston Journal of Chemistry*.

DETECTION OF ADULTERATION IN COFFEE.—In order to ascertain whether ground coffee has been mixed with either roasted corn or amylaceous substances generally, it is only necessary to treat the powder, first with dilute caustic potassa, and after filtration and addition of a large quantity of pure water, a solution of iodine is added, whereby the starch is detected.—*Dingler*.

Gluing the Ends of Leather Belts.

The first requisita in naiting leather belts with glue is to drass off each piece at a true taper, for a distanca equal to the width of the belt. The two pieces should be made to fit as nearly as two pieces of planed boards when dressed with a jointer. Now, procure some glue of the very best quality, and prepare it the same as for gluing pieces of wood together. Then, let the leather be warmed, lay on the glue quickly while it is hot, and apply pressure with a vise or hand screw. In lieu of either of these appliances, place the leather between two pieces of plank, put two carriage-bolts through them, screw them up tightly, and let it remain in the clamp until the glue is thoroughly hardened.

We have united leather belts with glue of a common quality, which were in use for several years; and the glued joints did not separate until the leather was allowed to get wet.

An exchange contains the following directions for making a cement for uniting leather belts: Mix ten parts of sulphide with one oil of turpentine, and then add enough gntta percha to make a tough, thickly-flowing liquid. One essential requisite to a thorough union of the parts consists in freedom of the surface to be joined from grease. This may be accomplished by laying a cloth upon them and applying a hot iron for a time. The cement is then applied to both pieces, the surfaces brought in contact, and pressure applied until the joint is dry.—*Ex.*

UTILIZATION OF GAS LIME.—An English engineer claims to have discovered that the waste lime from gas purifiers, hitherto considered as almost useless refuse, may be used to great advantage in the manufacture of mortar, beton, and concrete. He states that it is simply requisite to grind it up in the usual mortar mill or to mix it as ordinary lime with sand, ashes, and similar material. When used in making concrete or beton, the lime may or may not, as required, be moulded into bricks or flags in the ordinary manner. The addition of Portland cement to the mixture is said to render the product much harder. This use of gas lime has been patented in England by the inventor, Mr. Humphrey Chamberlain Round, Green Barnsley, York.

PENPANS the item in which method brings the largest returns is that of keeping machinery in constant use. Not only by this means is its usual profit obtained, and the interest on its first cost saved, but the mechanism, if kept in good repair, will last much longer; for it is well known that when in daily operation, a machine, like an engine-lathe, will deteriorate but one-half as fast as when entirely idle. This should be kept in mind when selecting for manufacture a line of staple articles; that which will keep the machinery running regularly throughout the year, other things being equal, pays a better interest on time, money, and labor than that which for any cause must be allowed to stand idle at intervals.—*American Car Builder*.

DETERMINATION OF WATER IN ESSENTIAL OILS.—All the volatile oils distilled from vegetable matter may contain water even when perfectly free from turbidity. If to samples of such oils several times their volume be added of petroleum ether (light petroleum spirit), a turbidity arises from drops of water which are separated out, and which appears the denser the larger is the proportion of water present. The following oils were thus found to contain water:—Lavender, clove, spike, cinnamon, rosemary, sassafras, juniper, and bergamot. Traces of water were found in neroli and oil of *Gaultheria procumbens*. Turpentine, cedar, citron, rue, and amber were free from water.

DENTIST'S SOLDERS.—For gold solder, use 8 grains American silver coin and 4 grains best copper wire (or copper from an old style cent) to each pennyweight of gold plate of the same fineness as that to be soldered. For silver, use 8 grains best brass wire to each pennyweight of silver coin. Melt with borax, cool, and roll into plate.—*Scientific American*.

INCREASING THE FELTING PROPERTY OF HATS BY THE USE OF CHEMICALS.—According to *Reimann's Farber Zeitung*, a mixture of nitric acid and treacle is now proposed as a substitute for the use of mercury dissolved in nitric acid, formerly employed for enhancing the felting properties of rabbit's hair in the manufacture of felt hats.

IMPROVED DRAWING INK.—The addition of one part of carbolic acid to 80 parts of the fluid India ink, while it does not impair its fluidity, causes it to dry rapidly even in heavy lines, so that they can be varnished over. The proper amount of carbolic acid to be added in any case may be ascertained by adding drop by drop, the ordinary apothecary's solution of it in alcohol until varnishing does not effect the definition of a test line by causing it to run. The addition of too much carbolic acid is indicated by the transparency of the line and the inability to draw fine lines, a condition which may be easily remedied by the addition of more of the fluid ink.

DANDREFF can be removed by washing the head with buttermilk and thoroughly cleansing with pure soft water afterwards.

GOOD HEALTH.

Hints for Nurses.

The following sensible suggestions are from the pen of Florence Nightingale: "Conciseness and decision are, above all things, necessary with the sick. Let your thought expressed to them be concisely and decidedly expressed. What doubt and hesitation there may be in your own mind must never be communicated to theirs, not even (I would rather say especially not) in little things. Let your doubt be to yourself, your decision to them. People who think outside their heads, the whole process of whose thought appears, like Homer's, in the act of secretion, who tell everything that ed them towards this conclusion and away from that, ought never to be with the sick.

Irresolution is what all patients most dread. Rather than meet this in others, they will collect all their data and make up their minds for themselves. A change of mind in others, whether it is regarding an operation, or rewriting a letter, always injures the patient more than the being called upon to make up his mind to the most dreaded or difficult decision. Further than this, in very many cases, the imagination in disease is far more active and vivid than it is in health. If you propose to the patient change of air to one place one year, and to another the next, he has, in each case, immediately constituted himself in imagination, the tenant of the place, gone over the whole premises in idea, and you have tired him as much by displacing his imagination, as if you had actually carried him over both places.

Above all, leave the sick room quickly, and come into it quickly, not suddenly—not with a rush—but don't let the patient he wearily waiting for when you will be out of the room, or when you will be in it. Conciseness and decision in your movements, as well as your words, are necessary in the sick room, as necessary of absence of hurry and bustle. To possess yourself entirely will insure you from either failing, either loitering or hurrying.

If a patient has to see, not only to his own, but also to his nurse's punctuality, or perseverance, or readiness, or calmness, to any or all of these things, he is far better without that nurse than with her, however valuable and handy her services may otherwise be to him, and however incapable he may be of rendering them to himself.

THE PULSE.—The pulse of a healthful grown person beats seventy times in a minute; there may he good health down to sixty; but if the pulse always exceeds seventy, there is a disease—the machine is working too fast; it is wearing itself out; there is a fever or inflammation somewhere, and the body is feeding on itself, as in consumption, when the pulse is quick, that is, over seventy, gradually increasing with decreased chances of cure, until it reaches one hundred and ten or one hundred and twenty, when death comes before many days. When the pulse is over seventy for months, and if there is a slight cough, the lungs are affected. Every intelligent person owes it to himself to learn from his family physician how to ascertain the pulse in health; then by comparing it with what it is when ailing, he may have some idea of the urgency of his case, and it will be an important guide to the physician. Parents should know the healthy pulse of each child, as now and then a person is born with a peculiarly slow or fast pulse, and the very case in hand may be that peculiarity. An infant's pulse is one hundred and forty; a child of seven, about eighty; and from twenty to sixty years it is seventy beats a minute, declining to sixty at four score. There are pulses all over the body, but where there are only skin and bone, as at the temples, it is most easily felt.—*Home and Health*.

DOCTORS AND MEDICINES.—A Chicago man says: "We are told that doctors never take medicine of their own or of any one else's recommending. I was reminded of this a few months ago. I went into the office of one of Chicago's most celebrated physicians to obtain a prescription for a cold and hoarseness. While he was writing it out he casually mentioned that, having been out in the terrible storm of the previous day, a severe cold had resulted, and that in the morning he could scarcely speak aloud. As I folded the prescription—which was Egyptian to me, but seems to be the mother tongue of druggists—I ventured to inquire what he had taken for his hoarseness. 'Loaf sugar and lemons,' was the placid reply. Well, that prescription for drugs was never used, and I found 'loaf sugar and lemons' excellent."

TO REMOVE ADHESIVE PLASTER.—Every surgeon, doubtless, is familiar with the appearance of a part which has been enveloped in adhesive plaster, after the straps have been removed. The appearance is not one in very good keeping with a cleanly and neat surgical dressing. The portion of the plaster which is left adhering to the skin may be quickly and completely removed by the use of oil of turpentine and sweet oil. Use a little more than half turpentine. This compound, carefully rubbed over the parts with a bit of cloth or sponge, and then washed off with warm soapsuds, will leave the surface as clean as nature ever intended.—*Exchange*.

COFFEE WATER AS A REMEDY FOR GOUT.—Dr. Monchaux, in the *Revue de Therapeutique*, gives the following: Put a tablespoonful of green—that is, unroasted—coffee in a half a tumbler of pure water, at the temperature of the surrounding air, and after allowing it to stand for twenty-four hours, drink off the liquid immediately upon getting up in the morning. Fill the glass with water again as before, and again drink the liquid as before, so that the same coffee serves twice. The liquid obtained is of a green color, more or less tinged with blue, according to the kind of coffee used. I do not, know the chemical composition of the water, but the grains well considerably, and sometimes sprout, throwing off little bubbles of gas, which I suppose to be carbonic acid. I have not observed very long relative to this remedy upon the uric acid diathesis. If I am to give an opinion upon it, I am at present inclined to think that it attacks rather the effects of the maldy than the disease itself, suppressing the former from day to day, if I may so express myself, while the latter remains. It will be, therefore, necessary to continue the daily use of the remedy as above.

POTATOES PROSCRIBED.—Several German writers upon races predict that nations, far from improving, will deteriorate both in physical and mental characteristics, if potatoes become a principal article of diet. The celebrated Carl Voigt says that "the nonriehing potato does not restore the wasted tissues, but makes our proletariats physically and mentally weak." The Holland physiologist, Mulder, gives the same judgment when he declares that the excessive use of potatoes among the poorer classes and coffee and tea by the higher ranks, is the cause of the indolence of nations. Leidenfrost maintains that the revolutions of the last three centuries have been caused by the changed nourishment; the lowest workman, in former times, ate more flesh than now, when the cheap potato forms his principal subsistence, but gives him no muscular or nervous strength.

FOON MEDICINE.—Dr. Hall relates the case of a man who was cured of his hilloousness by 'oing without his supper and drinking freely of lemonade. Every morning, says the Doctor, this patient arose with a wonderful sense of rest and refreshment, and feeling as though the blood had been literally washed, cleansed and cooled by the lemonade and fast. His theory is that food can be used as a remedy for many diseases successfully. As an example, he cures spitting of the blood by the use of salt; epilepsy by watermelons; kidney affections by celery; poison, olive or sweet oil; erysipelas, pouched cranberries applied to the part affected; hydrophobia, onions, etc. So the way to keep in good health is really to know what to eat—not to know what medicines to take.

DANGER FROM WET CLOTHES.—Few persons understand fully the reason why wet clothes exert such a chilling influence. It is simply this: Water, when it evaporates, carries off an enormous amount of heat in what is called the latent form. One pound of water in vapor contains as much heat as nine or ten pounds of liquid water, and all this heat must, of course, be taken from the body. If our clothes are moistened with three pounds of water—that is, if by wetting they are rendered three pounds heavier, these three pounds will in drying, carry off as much heat as would raise three gallons of ice-cold water to the boiling point. No wonder damp clothes chill us.

FEVER AND AGUE PROPHYLACTIC.—We hear that several of the officers upon Sir Garnet Wolseley's staff provided themselves before starting with the prescription for bilious remittent fever so strongly recommended by Dr. Livingstone. It will perhaps be remembered that in his interesting volume on the Zambesi expedition, the Doctor published the ingredients of a pill which was found to be of the greatest service to every one accompanying him. The formula includes resin of jalap, powdered rhubarb, quinine and calomel, and was always administered previous to the employment of quinine.

CHAPPED HANDS.—The easiest and simplest remedy is found in every storeroom. Take common starch and grind it with a knife until it is reduced to the smoothest powder. Take a clean box and fill it with starch thus prepared, so as to have it continually at hand for use. Every time hands are taken from the suds or dishwater, wipe them, and, while they are yet damp, rub a portion of starch thoroughly over them, covering the whole surface. The effect is magical. The rough, smarting skin is cooled and healed bringing and insuring the greatest degree of comfort and freedom, from this by no means insignificant trial.—*Artisan*.

TO STOP BLEEDING AT THE NOSE.—It is worth while to know how to stop the bleeding from the nose when it becomes excessive. If the finger is pressed firmly upon the little artery that supplies the blood to the side of the face affected, the result is accomplished. The two small arteries branching up from the main arteries on each side of the neck, and passing over the outside of the jawbone, supply the face with blood. If the nose bleeds from the right nostril, for example, pass the finger along the edge of the right jaw till the beating of the artery is felt. Press hard upon it, and the bleeding will cease. Continue the pressure five minutes, until the ruptured vessels in the nose have time to contract.



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New Imitation of Silver.

In the *Scientific American* of January 24, is described a patented process for obtaining a metallic alloy which resembles silver better than any substance yet known, with respect to color, specific gravity, malleability, ductility, sound and other characteristics. The new alloy is a compound of copper, nickel, tin, zinc, cobalt and iron. If this new metal is as perfect as represented, there may be a good chance for coin-counterfeiting, etc., to start a flourishing business in making trade dollars, halves, quarters, etc. We had a call this week from a distinguished personage in this city, whose authority and influence is well known to members of our community. He thinks the metal referred to should not be made, and has therefore issued the following

Proclamation:

Fearing that the granting of a patent for the imitation of silver such as mentioned in the *Scientific American* of the 24th day of January, 1874, may lead to endless frauds in the silver currency of the country, now, therefore, we, NORTON I. DE GRATIA Emperor of the United States and Protector of Mexico, do hereby command the Commissioner of Patents to cancel the said patent, and declare the manufacture of such a metal a penal offence.

NORTON I.

Given in San Francisco, California, this 3d day of February, 1874.

AMERICAN IRON AND STEEL.—The American iron and steel convention met at Philadelphia, on the 4th instant. The report of the Secretary says it is the plain duty of Congress to repeal the Act of 1872, requiring a duty of ten per cent. on iron. The general iron trade of the country is pronounced to be but little better than at the beginning of the panic. Returns show that out of fifty rail mills only twenty-one are working. Of 385 foundries, 138 are idle. The stock of iron on hand is 308,000 tons, and over 12,000 hands are unemployed.

The Price of Quicksilver.

Mr. Gilman of Calaveras county has introduced in the assembly a bill to regulate the price of quicksilver in California. It provides that the maximum price at the mines and reduction works shall not exceed 35 cents per pound. In San Francisco, Sacramento, Oakland, San José, Santa Clara, Vallejo, Napa, Los Angeles and San Diego, the maximum price is fixed at forty cents per pound. At all other localities, the vendors of this commodity are allowed to sell it at the San Francisco price, with the cost of transportation added. This is the substance of the bill.

Mr. Gilman is from a mining county and no doubt has the interests of the miners at heart, but his method of reducing the price of quicksilver is utterly impracticable—not to say nonsensical. Reforms in politics, railroad management, etc., are all very well, but what authority the Legislature has to meddle with the rights of private parties, we fail to see. These quicksilver men are real producers and have as much moral and legal right to charge as much as they can get for their quicksilver as the farmers have to get as much as possible for their grain. The legislature would have as much authority to regulate the price of wheat because poor people could not afford to pay high prices for flour, as they have to regulate the price of quicksilver.

The "quicksilver monopoly" of three or four mines was broken up entirely last year through force of circumstances. A large number of new mines were discovered and worked in California, which could, and did, undersell the monopoly until it no longer had any power. The price is now regulated by the well known laws of supply and demand. The increased demand for the large number of new gold and silver mines on the coast and the decreased supply from the principal quicksilver mines, raised the price of quicksilver as a natural consequence. The New Almaden mine, which produced 18,763 flasks of quicksilver in 1871 and 17,753 flasks in 1872, only produced 12,000 this year. The New Idria, which produced 8,597 flasks in 1872, produced but 7,600 in 1873. The total production for the year showed a falling off of nearly 2,000 flasks of quicksilver. Nearly all of what has been produced in California has been needed here on this coast. We exported in 1868 over 44,000 flasks and in 1872 only 13,093, while in 1873 the exports only amounted to 6,359 flasks. When we remember that the Almaden used to produce 3,500 flasks per month, and now only produces 1,000, it will be easily understood that that fact makes a considerable difference in price, especially as the demand has increased as the supply has decreased.

Now we know very well that the present price of quicksilver is an exorbitantly high one and its continuance will work great injury to the mining interests; but, candidly, how can we blame the mine owners for getting as much as possible for their metal? They do the same kind of a business as other people; that is, they want to make money, and if they can get \$1.25 per pound for an article, they will not sell it for 40 cents. Such a bill as the one referred to would not prevent this at all. If the bill became a law it could of course only apply to California and would do more harm than good to the State. Nevada is estimated to consume alone 1,100,000 pounds per annum, and as the law would not apply there, all the quicksilver would be sent to that State, sold there at the present high prices and the California miners would have to pay in addition to the price, what it cost to be taken there and back. Or if the quicksilver men could be compelled to sell here for 35 or 40 cents per pound after it came back, they would block that game by not selling any in California at all.

In fact we do not believe that any such law could stand even if it passed, and if it did stand it would be a dead letter. Did Mr. Gilman even inquire how much it cost to produce a pound of quicksilver? Take into consideration the cost of furnaces and the equipment of a mine, working on one two or three per cent. ore, and at 35 cents per pound for quicksilver, how much profit would these men get? They would shut down their mines until the law was repealed. The whole bill is so ridiculous that we begin to think that typographical errors must have crept into it in giving the figures to which the price is limited. At all events the originator of the bill must have had an exaggerated idea of the profits of the quicksilver business. Perhaps he thinks the price the product brings is all profit.

Quicksilver is bound to remain where it is, or go even higher, unless there are more mines opened and a greater production. There is not the least doubt as to that proposition. The quartz and gravel mines must have it if they have to pay \$2.50 per pound, and the quicksilver men know that as well as the miners. If there were more quicksilver mines producing, there would be a greater supply, more competition and a consequent reduction of price, and until that happens we must pay for it what the laws of trade demand.

We do not wish it to be inferred from these remarks that we believe quicksilver should be as high as it is, but that bills of the kind referred to are not only unjust, but impracticable. There is a better way to reduce the price than this. Let some of our California street men, interested in mining, help along the poor proprietors in Napa, Sonoma, Monterey, San Luis Obispo, Solano, Lake, San Bernardino

and other counties of California. Let them take hold of some of the many claims and develop them. Let them lend the aid of their capital to the labor of these poor miners to open up their claims. Let some of the big quartz mines, as a Virginia City cotemporary has suggested, buy and work their own quicksilver mines. There are plenty of them all over the State only needing capital to develop them. Keep some little capital from quartz and put it into cinnabar. If this is done for a year or so and some of the many promising deposits discovered during the past year, properly prospected and developed, quicksilver will come down of its own accord without any foolish and unjust legislation.

Mining Legislation.

We notice that a meeting of the miners of Railroad Mining District, Elko county, Nevada, was held on the 26th ult., at which they passed a series of resolutions condemning Senator Sargent for the proposed amendment to the mining laws, and also for having drawn up the mining law of May 10th, 1872. We quote the preamble and one of the resolutions as follows:

WHEREAS, The Congress of the United States, on May 10, 1872, having passed a number of laws to govern mining locations, which seem to be made entirely in the interest of monopolies and capitalists, at the instigation of Congressman Sargent and his friends, and to the detriment and almost ruin of the ordinary miners and prospectors, who are the discoverers and men who develop the mines and mineral resources of the country, and to whom the country is entirely indebted for its vast and rich mining districts; and

WHEREAS, The same Sargent is now attempting to pass through Congress another, entitled "A Bill supplemental and amendatory to the Act entitled an Act to promote the development of the mining resources of the United States, approved May 10, 1872," which amendatory Act requires that all persons owning or claiming lodes upon the public domain shall, within one year after the passage of this amendment, do at least five hundred dollars worth of improvement upon each and every location and apply for a patent; therefore

Resolved, We pronounce the last amendment, as introduced by Sargent, an infamous outrage upon the entire number of men who are engaged in prospecting and developing the mineral resources of the United States, and that not one miner or prospector in one hundred can comply with said Act; and in consequence thereof will be compelled to abandon all claims held by them.

The miners who passed these resolutions were somewhat hasty in their action. Mr. Sargent has not introduced any such bill, but Mr. J. D. Ward of Chicago has done so. We commented on Mr. Ward's bill in a recent issue of the PRESS, and give Mr. Sargent's bill in this issue. The two bills are entirely different. The California delegation, including Mr. Sargent, are reported as being strongly against Ward's bill which provides that parties must expend \$500 on each claim, and procure a patent within one year.

The bill is an outrageous one, but the odium of its introduction should rest where it belongs, and the miners of Railroad District, before they poured out "the vials of their wrath," should have looked out where the contents lodged. Sargent is "pitched into" enough for things he does, without being abused about measures opposed by him. We do not believe Ward's bill will ever become a law, for it is only one of the many plans to pay the national debt. As it would ruin the mining interests of the coast, for a time at least, Congress will hardly dare to pass so outrageous an Act.

ACTIVE PREPARATIONS FOR MINING.—Active preparations are at present being made in all directions in this section of the State, says the *Territorial Enterprise*, for the opening and development of mines along the Comstock. More work will be done at the north end of the Comstock than ever before, and if no other good shall result, this work will at least serve to trace the lead and give our people more clearly defined ideas than they now possess in regard to where the great lode may run after passing to the northward beyond the Ophir. If the lead continue north it will be found, and if not its absence will be very likely to be ascertained. To the southward a great number of companies are busily engaged in making preparations for active operations early this spring. Many of these companies will erect powerful and substantial hoisting works and prospect their ground in a most thorough and workmanlike manner, and (where so many are deeply delving) we may reasonably hope to hear of some among them making valuable discoveries. In a thoroughly mineral country—one in which the digging of a cellar is liable to lay bare some treasure, in the store-house of nature—no work undertaken for the exploration of the bowels of the earth should be looked upon with disfavor or discouraged. No doubt not a few of these works are undertaken for speculative purposes, most of the originators intending to sell out as soon as they shall be able to obtain a fair price for their shares, still, as far as the country is explored, the shafts sunk and the drifts and tunnels run are valuable. So great is the number of shafts sunk and being sunk, and so great is the length of the tunnels run and running, below Gold Hill, that the mystery regarding the direction of the Comstock in that region must soon be solved, as all the ground will be dug over ere long.

THE Camp Floyd mine is still waiting for the promised funds from England, but Mr. Sewell keeps the mill running right along.

A Growing Institution.

The California Academy of Sciences, which has for a number of years been struggling for existence against adverse circumstances, is now in a very prosperous condition. They removed from their old and dingy quarters on Clay street, last month, and now occupy the building on the corner of California and Dupont streets, which was formerly the First Congregational Church. The body of the church is used as a place of meeting, a platform for the President, Secretary, etc., having been erected over the pulpit. The gallery has been remodeled, the benches removed, the floor leveled up and the mineralogical specimens of the Academy are now displayed there. Additional cases are being constructed, to be placed around the gallery, in which will be exhibited other interesting objects from the Academy's museum. The basement of the church has also been put in order and renovated. The lecture room is now used as a library and museum. Another room has been fitted up neatly for Trustees and Secretary. A working room for the Curators has also been set apart. Another apartment is used to keep the publications of the Academy and specimens not prepared for exhibition. The long room under the entrance to the church is used for displaying the alcoholic specimens, which are arranged on shelves on both sides of the room. Altogether, the new quarters are very comfortable and commodious, and afford an opportunity for displaying the interesting and instructive collections of the Academy.

The church has only been rented temporarily, until such time as they can enter the proposed new building on Market street. It has been secured for a monthly rental of \$250 from H. M. Newhall, who donates to the Academy \$100 per month as long as they occupy it, making the actual rent only \$150 per month. This generous action of Mr. Newhall is much to be commended, and is even more appreciated when it is understood that he refused \$400 per month rent from Chinamen, who desired to secure the place.

Altogether, the Academy has been in luck for the past year. The munificence and liberality of James Lick has placed it on a permanent footing, and one which will make it a credit to the city and State. His first gift was a lot of land on Market street, near Fourth, worth about \$250,000. He then decided to erect the mammoth Observatory on the Sierras, of which we have before spoken, and will appoint the Academy of Sciences as trustee for its management. He then allowed the President of the Academy to make public the fact that he intended to erect the building on the lot on Market street with his own money. Moreover, he has announced his intention of endowing the institution with sufficient funds to make it a first-class and self-sustaining one. The building itself will cost some \$250,000, if built according to Mr. Lick's plans. It will be seen from this that the future prospects of the Academy are bright, indeed, and that we have on our coast at least one individual who has an appreciation of scientific research sufficient to cause him to assist it in a most liberal and practical manner.

Including all classes of members the Academy has now a membership of 472, and the list is continually increasing. Some 30 life members were elected last year, who pay \$100 each for that privilege. The published proceedings of the Academy, which show more than anything else what work is being done, are in very good repute abroad. The volume printed last year contained 243 pages of printed matter and a number of engravings. The field for original scientific investigations on this coast is large and the size of the Academy's last volume shows that it has not been neglected. Much interest is manifested in the proceedings of the Academy and the increased attendance during the past year necessitated the removal to more commodious quarters. The curators are now busy in arranging and classifying the museum material, and even now quite a creditable collection is displayed. As soon as the necessary cases are made, the wall room of the church will be entirely filled and the collection will be well worth a visit. Most of the objects are of Pacific Coast origin and many of them of new species or varieties, rendering them doubly interesting.

A POCHEE COLLECTOR.—A miner from Pioche named John O'Malley has attempted to collect a debt in this city in the manner in vogue in Pioche. From his account it seems that he had been employed at the Raymond & Ely mine once, that he gave J. B. E. Cavallier, a broker of this city, the sum of \$1,740 to invest in stocks for him. Cavallier afterwards suspended payment and O'Malley was out and injured. Cavallier, however, promised to pay the gentleman from Pioche but failed to do so. On Wednesday of this week the parties met on Kearny St. and Cavallier offered O'Malley \$250, which he refused to take. They had some words, when the miner drew his revolver and fired two shots, breaking some plate glass windows and frightening some milliners in an adjacent store, but no one was injured. Cavallier is such a bulky man and judging from the reputation of the residents of Pioche as marksmen, Mr. O'Malley has not lived there very long or he would have had more practice. Probably he was so frightened at breaking a large plate glass instead of only hitting a man that his second shot was no truer than his first. Mr. O'Malley now languishes in jail.

Sargent's Mineral Land Bill.

The Mineral Land Bills of both Sargent and Ward now pending in Congress are exciting much discussion and comment on this Coast, where we are more directly interested. The miners agree in condemning both the bills. That of Ward of Chicago, compelling miners to pay \$10 per acre, to which we have before referred, is even opposed by our California delegation in Congress. The miners everywhere denounce it as outrageous.

Concerning Sargent's Bill, on the 31st inst., the Commissioner of the Land Office wrote to the House Committee on Mines and Mining, recommending that Sargent's bill authorizing joint entries and fixing a uniform price for both agricultural and placer mineral lands, be so amended as to confine it to what is commonly known and designated as placer mining land, as contra-distinguished from lands containing quartz or lands bearing gold, silver, copper or other valuable minerals, or lands containing coal. The Commissioner also recommends a proviso that nothing contained in that bill shall authorize any person or company to locate more than 160 acres as a mining claim.

The following is the full text of the amended bill as telegraphed to this coast:

Be it enacted by the Senate and House of Representatives of the United States in Congress assembled, that the public lands in the State of California, other than those containing veins or lodes of quartz or other rock in place, bearing gold, silver, lead, tin, copper, or other valuable minerals, or lands containing coal, shall not be excluded as mineral lands from pre-emption or homestead entry, unless it shall be shown that bona fide mining claims exist thereon, or that the land is necessary for the outlet of other mining easements. Permits of railroad grants shall be \$1.25 per acre; provided that nothing herein contained shall be construed to change any preemption now existing, either by law or departmental regulation, that lands within the railroad grants are mineral in character.

Section 2 provides that where two or more settlers have improved on the same legal subdivision, whether agricultural or placer mining, or both, it shall be lawful for each settler to make joint entry of their lands at the local land office, or for either of said settlers to enter into a contract with his co-settlers to convey to them their portion of said land after the patent is issued to him, and after making such a contract to file an application for such land in such manner and to the same effect as provided by law for agricultural settlers upon the same legal subdivision, provided that proof of the improvement under the mining rules of the portion of said land claimed as a mining claim may be made in said proceedings by the applicant, as now provided by law, and notice of said application where a patent of a mining claim is sought shall be given and have the same effect as is now provided in the case, the same as if it were an application for a mining claim.

Section 3 provides that in case where placer mining claims are only located under the mining law, it shall be lawful for parties applying for a patent for the same to make their application to purchase lands to the extent of the smallest legal subdivision containing said claims, when such applications do not conflict with the rights of other parties, and the patent shall issue accordingly; provided, that nothing herein contained shall authorize any person or company to locate more than 160 acres as mining claims.

Section 4 provides that all affidavits and proofs required by law may be made before any local officer in mining or pre-emption cases, may be taken before any officer authorized to administer oaths, and when filed with the Register and Receiver shall have the same effect as if taken before the officers. Effect shall be given to this Act by regulations to be prescribed by the Commissioner-General of the Land Office, provided that when such affidavits or proofs are taken at any place other than with the land list, it shall be by the Clerk of any Court of Record in the United States.

WATER RIGHTS.—A practice has grown up in California regarding water rights different from anywhere else in the world—that is, of allowing persons, upon giving certain notices and complying with certain conditions, of asserting ownership to the waters of settlers running through public lands. This has arisen from the necessities of mining, but like other privileges, it has been grossly abused. The *Bulletin* correspondent at Sacramento writes that Swift has introduced a bill into the Assembly to put an end to this practice, and to prevent people from asserting ownership of the waters of streams except where they are to be used for mining purposes. The bill was considered at the meeting of the Assembly Committee on Corporations, last night, and it was resolved to recommend the passage of the same with some amendments, intended not to prevent ditches mainly used for mining purposes from being also incidentally used for irrigation.

The Richmond mining company at Eureka paid off 30 hands on the 4th. The reduction in force was caused by the difficulty in transporting ore to furnaces. The snow is falling very heavily.

H. J. BOOTH & Co. recently cast a pulley wheel for the new mint, which weighs seven tons.

Farming in the Foothills of the Sierras.

We would say a word to the grand army of farming immigrants now pouring into California from the eastern side of the continent, and it is this: That there is a vast tract of country lying along the western base of the Sierras, at least four hundred miles in length and from fifty to seventy miles in width, between the higher mountains and the great plains and valleys below, which is known as the "Foothills," and which is worthy your careful attention.

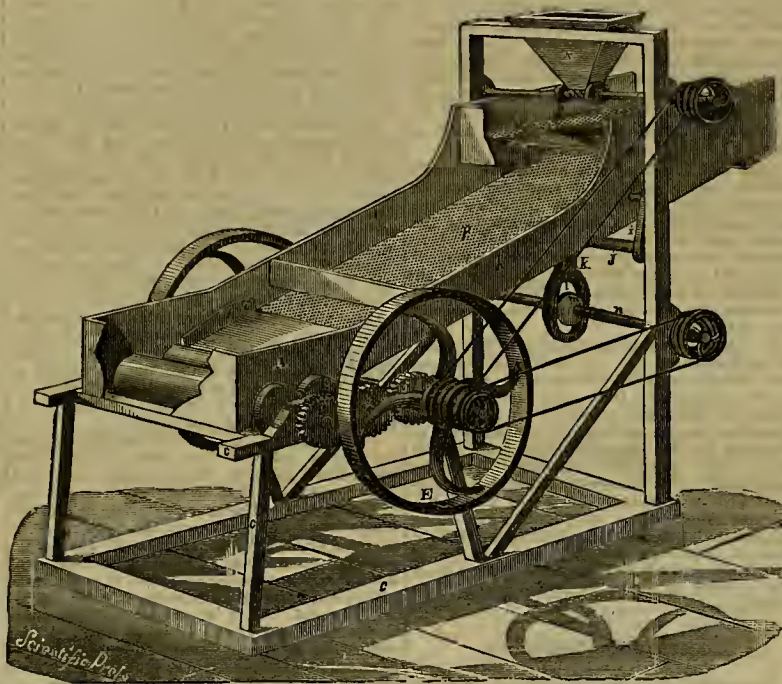
Our reasons for saying this, are these: There is a diversity of hill and valley, well wooded, and in many places splendidly timbered. The country is well adapted to grazing and dairying, while all the cereals, at least wheat, oats and barley, are a sure crop in seasons at all favorable. There are no better lands for vineyards than the lower foothills, in the whole State; while the middle and upper, with a climate partaking more of the character of an eastern winter without the intensity of its cold, is unsurpassed for the production of the staple orchard fruits, apples, pears and peaches.

Even above the highest limit to which we would expect to carry the cultivation of these fruits, we find in the greatest abundance all manner of wild fruits and berries, indigenous to the country; the wild plum or apricot, the

Thielen's Grain Cleaner.

We illustrate this week an improved grain and malt cleaner, and crusher; invented by Mr. Nicholas Thielen, of Sacramento; and patented through the Scientific Press Patent Agency. The machine is a durable one, and well adapted to its work. The grain or malt is cleaned before crushing. By employing the spreader and extra screen, hereinafter described, the grain is evenly distributed along the entire length of the rollers, so as to cause them to wear uniformly, and not in one place more than another.

The cut represents a side view of the machine. A is a three-sided box, inside of which the crushing rollers, B B, revolve; and which is mounted upon one end of a frame, C O C, in the usual manner. Instead of driving the rollers by belts, applied directly to pulleys on the extremity of each shaft, the inventor employs an additional or supplementary shaft, *d*; outside of the box, A, and parallel with the rollers, B B, a large fly-wheel, E, is secured to each end of this shaft, and inside of one of the fly-wheels, a spur-wheel, *f*, is secured, which engages with the spur-wheels, *g g*, on the extremities of the roller shafts, so that by driving the supplementary shaft, *d*, the rollers are also revolved. The shaking-screen frame, *h*, has its upper end supported at the upper end of the frame, C O C, opposite the rollers, between two upright arms, *i*, of the rock shaft, *j*; an arm, *k*, depends from the middle of the rock shaft, and



GRAIN AND MALT CLEANER AND CRUSHER.

choke cherry, huckleberry and hawberry in abundance, showing the perfect adaptability of soil and climate to their growth.

As an inducement to those who are not afraid of an occasional snow fall, and who would glory in a healthy mountain home, and a mild winter's cheerful fireside, we can say that there are millions of acres of such lands yet unclaimed, nor have the government surveys as yet been extended over them. Here are limpid streams of water, ever cold from the everlasting banks of snow above. No finer places for the artificial culture of trout, than among these foothills, where large springs and cold waters abound.

Only a few objections can be brought against a foothill home and life—the summer season is not quite as long as in the low valleys of the State. Vegetation does not start as early, nor can the more tropical fruits be grown as they are where snow never falls; but for all else than these, give us a foothill or even a mountain home, for health, happiness and a thousand comforts unknown to the torrid valleys.

HUNTINGTON'S PORTABLE SAW MILL.—We mentioned some weeks since that Frank A. Huntington's machine-shop had been removed from the old stand, 18 Fremont street, to the Globe Works, better known, perhaps, as the building formerly occupied by the machine-shop of the Vulcan Iron Works. Mr. Huntington's facilities for business have been increased at least three-fold in his new location. He makes a specialty of a patent portable saw-mill, a cut of which appears in our advertising columns this week, to be followed shortly by that of a shingle machine, also an invention of Mr. Huntington. Both mill and machine are built in the most substantial manner. The mill is capable of driving any saw up to sixty-four inches; is furnished with increased friction-feed and gig-back, both operated by the same lever. It can cut from 8,000 to 12,000 feet per day. The shingle machine has been pretty generally introduced among the mill men of this coast, and has a cutting capacity of 4,000 per hour.

has an oval slot, *l*, at its lower end. A transverse shaft, *m*, the ends of which bear in the side of the frame, passes through this slot; and a cam, *n*, in this shaft revolves in the slot, and serves to give the necessary rocking motion to the rock shaft, through which the necessary longitudinal motion is given to the rocking-screen frame. The lower end of the screen frame is supported by springs, or double-pointed hinged arms; *p* is the main screen which extends from one end of the screen frame to the other; and *q* is a short screen of coarser texture, which is secured either in a horizontal position, or at a slight inclination, opposite to the angle of the screen, *p*, at the upper end of the screen frame, just below the hopper, *r*.

A spreading plate, *s*, is secured upon this short screen, *q*, directly below the opening through which the grain or malt is fed from the hopper, so that as the grain or malt falls, it will be spread evenly on the screen. This spreading-plate is made triangular in shape, with its sides inclining to a ridge formed by bending it along a line drawn from its acute angle to the middle of its hypotenuse, so that the grain or malt will, by striking this ridge, be directed, by the inclining sides, in each direction upon the screen.

The short screen, *q*, can be adjusted so as to stand at a greater or less angle, as desired. The entire machine is driven by power applied to the supplementary shaft, *d*, belts being used to transmit the required motion to the screw-shaft and cam-shaft. An apron, *t*, at the lower end of the main screen, *p*, serves to deliver the grain or malt between the crushing rollers.

In cleaning grain without crushing it the set screws which adjust the rollers are withdrawn so that the rollers can be separated, thus permitting the grain to pass through without crushing.

Parties desiring further particulars concerning this machine can obtain them by addressing the inventor, Box 320, Sacramento, Cal.

The Mining Stock Board, New York City, dissolved Saturday, and Gilbert L. Haight was appointed receiver. The Board had a surplus fund of \$20,000.

Academy of Sciences.

The regular semi-monthly meeting of the California Academy of Sciences was held on Monday evening last in their new quarters at the corner of California and Dupont street. The following new members were elected: A. S. Halliday, A. D. Smith, W. M. Wherry, resident members, and Albert A. Harris, life member.

Donations to Museum.

Mr. Henry G. Hanks presented to the museum specimens of borax from the crude to finished product. There were nine different samples in this donation, as follows: Bi-borate of soda, crude, from Nevada; li-borate of soda, refined by Pacific Chemical Co.; bi-borate of soda, native, from Borax Lake; tincal or crude borax from Slato Range, Cal.; tincal from Thibet Lakes; crypto-morphaite (borate of lime) from Oregon; nlexite (borate of lime) from Nevada; individual borax crystals, from Pacific Chemical Co; residual crystals from rats.

Mr. I. O. Woods presented specimens of *limnoria*, a species of wood-eating worm from piles in the wharves of the bay. They were taken from near high water mark when the tide was out. They lived 24 hours in the wood after being removed from the piles. A sample of wood accompanied them to show how they penetrated it.

Mr. P. S. Shout presented ten samples of ores from mines in Humboldt county, Nevada. Mr. S. G. George, of Porterville, Montana, sent to the Academy the head and horns of a Rocky mountain goat. The animal was captured near Deer Lodge, Montana, and belongs to a species which Mr. George believes to have escaped the notice of naturalists. It has a musk sack behind each horn, and closely resembles the Thibet goat, the wool of which is so rare and high priced. Several of the animals have been captured alive and one will shortly be exhibited in this city. It is designed to cross the species with the Angora goat, in expectation of producing the most valuable goat in the world.

The Ophir Mine Skull.

Dr. Blake exhibited the cast of a skull that had been taken out from the Ophir mine, on the Cometock lode, Nevada. The skull had been brought up with some dirt from the 400-foot level, but it is probable that it had been carried down in dirt from a neighboring ravine, which, at an earlier period, had been used to stop some of the former workings. But, independently of its history, the skull presents some features which render it extremely interesting, from an ethnological point of view. The principal of these were the presence of a large interparietal bone, extending almost to the occipital protuberance, the heavy superciliary ridges, the very low forehead, and great development of the posterior portion of the skull, the peculiar structure of the cavity for the articulation of the lower jaw, and the great development of the processes for the attachment of muscles. Unfortunately the whole of the palate portion below the orbits and a large part of the base of the skull were missing, but from what remained the Doctor considered that it presented a form the farthest removed from that of any existing race of human beings of any skull that had been found. The skull was sent to Dr. Blake by Professor Whitney to make an anatomical description of it. The original skull was covered with a thin metallic scale deposited by the water, and it had been broken somewhat by the pick-axe of the miner when excavated. A more detailed account of its possible history and peculiarities is promised from Professor Whitney.

Easter Island Hieroglyphics.

At a meeting of the Academy in November last, photographs of strange but beautiful hieroglyphics, cut in wood, and found on Easter Island, were received from Mr. Thomas Croft, of Papeeti, Tahiti. From vague traditions among the natives, they were supposed to represent the written language of some prehistoric nation. The stone idols found on the island exhibit a refined form of art, and other relics found there go to prove that the present population has gradually degenerated from a previous occupation. In the letter accompanying the hieroglyphics, Mr. Croft stated from the best information he could obtain, that none except the priests and a chosen few could decipher these strange characters. A letter was read from this gentleman at the last meeting, in which he stated that he had found a native of the island who could read them and who was going to teach Mr. Croft the language, so that he will shortly be able to translate them. Mr. Croft thinks that he has discovered the relics of a great Malayan empire, which extended its power over that part of the ocean at some former period of the island's history.

Dr. Blake stated in reference to a paper read by him at a former meeting on the "nickeliferous sands of Frazer river," that having ascertained from Prof. Wolcott Gibbs, that the mineral he obtained from Frazer river sands, described as a magnetic oxide of nickel, and had never before been discovered, he had given it the name of "Frazerite."

ORE SHIPMENTS.—Mining operations are progressing favorably. Ore shipments for the week ending February 4th, from Little Cottonwood, are as follows: Flagstaff, 300 tons; Emma, 80 tons; Victoria and Imperial, 25 tons; Prince of Wales, 50 tons.

San Diego Mines.

We clip the following from the San Diego *World*: In a conversation with our friend Mr. Joseph Coyne, late of the Golden Chariot mine, we have learned a number of interesting things relative to the progress of mining developments in the Julian and Banner districts. Mr. Coyne thinks the present year will be one of unusual activity, and that the yield of bullion will be far in excess of anything ever known in the San Diego county mines. Preparations are on foot to develop much new territory, and the yield of the old mines will be much increased. In reply to a question of ours, Mr. Coyne says that any competent miners can obtain employment at fair wages at Julian. The largely increased scale of work will call for a large additional force of miners.

The new Golden Chariot company propose to open up their superb mine at once on a considerably extended scale. They are sinking on a new main shaft, which they propose to sink to a depth of 235 feet—one hundred feet deeper than the present shaft. Their ledge is now thirteen feet wide, and our people know the extreme richness of this rock. Their five-stamp mill will be converted into a ten-stamp one, with five concentrators. The engine and boiler for this purpose are already on the way to the mountains, drawn by ten-oxen teams, and will arrive towards the end of the week. Their old engine will be hauled over to the mine, and used in their hoisting works. They will be perfectly prepared to go to crushing rock in six weeks, if the roads keep good. The Golden Chariot company at present employ twenty-six men at the mine, and eight around the mill. They will add largely to this force under the new regime. The Superintendent of the company, Mr. Jewell, is pushing matters with great energy; and the yield from the Golden Chariot, when they get fairly under way, will astonish the most sanguine believers in this fine mine.

Thirty tons of machinery altogether have been dispatched to the Golden Chariot mine. The machinery for the new ten-stamp mill of the company is adapted to run a twenty-five-stamp mill, if the developments warrant it. The stock of the company is already selling for \$7 per share on the San Francisco stock board. As there are 30,000 shares this would give a present value of \$210,000. This is not a bad exhibit, considering that the mine was purchased by the company for \$95,000. The large yield certain to be reported this year will send this stock up largely.

The Helvetia, lately incorporated, will shortly be prepared to go to work on quite a large scale. They are waiting for the arrival of their mill and hoisting apparatus, which are already on the way from San Francisco. They have already on their dump three hundred tons of good rock, which will pay handsomely when their new machinery arrives, but which it would hardly pay them to haul to a quartz mill owned by other parties. The promise for this mine is very good.

The Owens mine is preparing to start again shortly. They have a splendid ledge in their air shaft and are ready to go to work on their main shaft. Col. Desires has telegraphed from San Francisco to pay all the debts of the company. They have all the money they need for that purpose, and a surplus, besides, to push on the work. This mine will give a good account of itself this year, and its stock will appreciate sensibly in consequence.

The Ready Relief is looking well, and when the Baily Brothers get through their ranching they will resume the development of their mine with new ardor.

New discoveries are being made. The Messrs. Osterhouse & Dilks have struck a fine three-foot ledge, on which their shaft is down fifty feet. Their rock runs from \$14 to \$32 to the ton. In sinking their shaft they have already taken out and had crushed about \$900 worth of rock.

A very important discovery has been made in Rattlesnake cañon. The new claim is about five miles from the Golden Chariot mine, is in the same range, and it is regarded as an extension of that mine. The shaft has been sunk for some distance on the ledge, which is eight feet wide. This promises to prove a very valuable mine. The rock is abundant, and runs from \$15 to \$25 to the ton. It was discovered and it being worked by a brother of Coroner Young, of this city.

The Stonewall is yielding splendidly, and has all the water required.

The Messrs. Frary & Wilson are about starting a grist mill in Julian. The crops in every direction promise to be abundant, and our enterprising friends have determined upon giving the miners a mountain brand of flour.

All the indications point to a large increase in the population of Julian and Banner, and to a trebled yield of gold this year over last.

BARRELS OF GLASS FOR PETROLEUM.—So much loss has occurred from evaporation and leakage in the transportation and storage of petroleum, and its products—benzine and gasoline—that it is proposed to make barrels of glass, sufficiently heavy to stand the pressure and usage. These, although much more costly at first, would never wear out, and could be cleaned and used for other fluids indefinitely. An inventor has already obtained a patent for a thick piece of glass inserted into one head of a barrel, on the part next the bung-hole, to allow the quantity within to be viewed by the buyer.

Does Utah want a Mint?

A mint for coinage requires fine bullion, and they do not return the base metals; that being the case, nearly all of our bullion must go through a refinery, in order to get it into the mint, adding to the expense of the producer, freight and separation; and now being ready to pass the mint, it comes out in coin, and what are we to do with it? Now we cannot pack it to the mountains to pay labor, it is too bulky, but we must go to the bank, and sell it at perhaps one per cent. off for currency; and how long would it be before our banks would be full of silver coin, and that traffic be stopped? If we attempt to ship it East or West, we must pay three per cent. and the per cent. on currency. Back of all these expenses, the miner must stand, and then it would be impossible to get one-half the amount of bullion produced in the Territory through the mint.

Our experience has taught us we cannot afford to lose our lead in bullion; we must get pay for all the metal we extract.

Suppose we turn our mint into a Government Assay Office, and all the bullion that comes from the different mines, whether high or low grade, from furnace or mill pass through this assay office and is assayed, the value of each bar in gold, silver or lead stamped on them with the government stamp; that fixes a value to it and we get a certificate expressing its value; then the banks can make advances on it; that enables us to go on getting out more bullion and this bullion can be shipped by the ton East or West at much less rates, where it can be separated at a much less expense than here, and can take the advantage of the market for manufacturing purposes, or have it coined as they choose; the value being stamped on it, every man knows what he is buying, and no chance for our Eastern friends coming back on us for "salting."

Utah will, in a few years, astonish the world with her bullion, and the amount that can be purchased, and it stands in hand to get the right channel for it to pass through, that the miner may be rewarded for his toil, and to increase the amount purchased as fast as possible, and it is better for us to give our whole attention to purchasing that bullion and let outsiders attend to the refining and the lighter part of the work.

In order to get this question before Congress, in the first place, will our Territorial Legislature donate a tract of land near the railroad for a Government Assay Office, and then ask Congress to make an appropriation? In the meantime, let our citizens get up petitions to Congress for the appropriation, setting forth the necessity, and I think the end will be accomplished, for it is essential that the Government have the mineral resources of the Territory developed as fast as possible, and when the fact shall have been abundantly established that we have an inexhaustible supply of the precious metals in Utah, they will see to it that a mint is forthcoming.—*Cor. Salt Lake Tribune.*

Suggestion to Prospectors.

Throughout a vast area of territory, from the British Possessions on the north to the Rio Grande on the south, and from Kansas on the east to the Pacific Ocean on the west, there are thousands of hardy men constantly engaged in prospecting for precious minerals. Usually these prospectors are, as a class, border adventurers—men accustomed to the privations incident to a life in the savage wilderness, and but little acquainted with the practical sciences, and hence, if they find a mineral deposit of any value, it is more the result of accident than anything else. Now, this hardy, dare-devil body of prospectors can be rendered the most efficient auxiliaries of mineralogical and geological investigation and become the developers of vast deposits of precious treasure. To practically utilize this widely disseminated prospecting force, it is simply necessary to establish at San Francisco, Portland (Oregon), Virginia City (Nevada), or at some available point on the Pacific coast, a prospectors' association, or an organization for the mutual benefit of all such men as we have just mentioned. If such an association could be formed, the constitution of the concern should provide that every prospector should be entitled to an unassessable portion of all valuable mineral deposits which he should discover and bring to the knowledge and possession of the association, and that each prospector should be entitled to a pro rata interest in the entire property of the concern.

Of course this is merely a crude, undigested suggestion of what might be done to render the labors of adventurous men valuable to science and an aid to the general advancement of the country. It is not necessary that every man who starts out prospecting should be a scientific expert. All that is requisite for him to do is simply to save samples of any curious fossils, minerals, gems and odd-looking rocks, and bring them for investigation by members of the association. There are thousands of men now engaged in treasure hunting who cannot tell a diamond from a quartz crystal, nor a sapphire from a garnet, but with the arrangement which we have proposed, the veriest ignoramus can be enabled to enrich himself and add to the coffers of his hardy comrades by simply saving what he finds and having it examined by experts of his own selection.—*Virginia Chronicle.*

Tin Mining in Banca.

In September, 1872, Mr. W. Bredemeyer, who had recently returned from Banca, wrote an article for this MINING AND SCIENTIFIC PRESS, which was afterwards copied in the London *Mining Journal* and other papers. A recent issue of the London *Mining Journal* contains a letter from a correspondent, referring to Mr. Bredemeyer's article as follows:

The thanks of all interested in tin mining or tin streaming are due to your correspondent, Mr. W. Bredemeyer, for his rare and valuable letter naming the localities where the binoxide of tin occurs, and especially for describing riches so long known and advantageously wrought under the best government of the East Indies, the Dutch government. I wish to correct a few inaccuracies, which I presume were made in translation—namely, that "Tin-bearing strata are found three to twenty-two inches deep." It should have been, "The tin-bearing strata are found three to twenty-two inches thick, within nine to thirty feet deep." The alluvial tin deposits immediately on a kaolin, or porcelain earth *in situ*, are richest; hence it is an accepted principle that there is no possible chance of finding alluvium tin below. My remarks on the second paragraph are that paths ten feet wide are cleared up the valley; other paths are made at right angles; when these are surveyed, a staff of natives, under European engineers, commence to bore with a three-inch auger, worked in a copper tube. The earth extracted by the auger is collected and washed for tin. If these three-inch holes contain sufficient quantities of binoxide of tin to pay for opening a tin-stream work, notes are made, and the locality is red-lettered on the survey, representing new fields for mines.

The waters of the rivers from lateral valleys are conveyed by open channels, and thus prevented from inundating new works. The debris or overburden from an advanced opening or mine is conveyed in baskets containing five to ten pounds, suspended to a stick carried across the shoulder of the laborer to the last abandoned mine, or unto lands from which the tin strata have been collected. The tin ore is not disseminated through the depth of the overburden, but generally in a layer, as described above; hence there is but little trouble in removing the first eight or ten feet of earth. The water in the mine is drawn up an incline by a Chinese endless timber pump, having a pin hole in each end of a seven-inch length or link, the consequent wear and breakages, entailing endless trouble and expense.

The coarse sand, clay and tin ores forming the tin strata, selected from the sinking, are washed in a launder twenty inches wide and forty feet long, laid at an angle of five degrees in the ground. The specific gravity of the tin keeps it at the head, and the force of water carries away the debris, so that all the small grains of tin are lost. The clean tin ores from a few mines are associated with iron pyrites, giving additional trouble, and producing an inferior metal. The contracts between the Government and Chinese coolies will be the subject in a future letter. In conclusion, I have only one other remark, namely, that the clear profit to the Government is given at \$5,000,000, while, in reality, this sum is sufficiently large to purchase, in open market, more metallic tin than the yearly supply of the islands of Banca and Billiton.

WESTERN AUSTRALIAN MINE.—The Government of Western Australia, who are naturally desirous of having a gold-field in their colony, have recently been advertising in Victoria, the terms on which they are willing to employ Victorian miners to prospect their colony for a payable gold-field. The terms offered were—a free passage to Western Australia, a maintenance allowance of 25s. per week while prospecting, a reward of £5,000 for the discovery of a payable gold-field, and a very large prospectors' claim on the field discovered. The total number of the prospecting party was to be fifteen, to be divided into three separate parties of five each, one of which was to land at Albany, King George's Sound, and prospect the country there, especially that in the vicinity of the Philips River, about 100 miles north-east of Albany, where there are favorable indications of auriferous country. The two other parties were to proceed to Fremantle, the Government proposing that one of them should go to Champion Bay and make that its base of operations; but it was possible that intention might be altered, and both of the remaining parties be employed in the country near Perth.

A TINY ENGINE.—The smallest engine in the world is now in possession of John Penn, of Greenwich, England, the eminent maker of great engines. It will stand on a three-penny piece; it really covers less space, for its base plate measures only three-eighths of an inch by three-tenths. So small are some of the parts that they require a powerful magnifying glass to see their form. The whole weight of the model is less than a three-penny piece. It works admirably, and when working, its crankshaft performs from twenty to thirty thousand revolutions in a minute.

One is now being shipped from the Gould & Curry mine to the Occidental mill on sleds, the roads not being in a condition to admit of its being transported on wheeled vehicles. This is the first time in the history of the Comstock that ore has been shipped to any mill on sleds.

Klamath County Mines.

A correspondent of the *Call*, writing from Sawyer's bar, Klamath county, says: Sawyer's bar is reached from Scott's valley over a trail which is closed by snow four months in this year. The great want of a wagon road is severely felt by every resident of this rich mining district. The Salmon river, which has yielded immense riches, flows through the town, and is still worked to advantage by a large number of miners. The quartz interest is but in its infancy, and promises to be more extensive and richer than in any other mining district in the State. First comes the Black Bear company, which has been disposed of by its original owners to a San Francisco company for \$300,000. Had they but known the immense riches left in the ledge, they would have hesitated before selling. The present company is sparing no expense to develop the mine for the purpose of erecting more extensive machinery. Their present force on the pay roll numbers over ninety men, who receive from \$50 to \$60 per month. The width of the ledge varies from 5 to 45 feet, and the ore yields an average of \$25 per ton. New machinery is being erected underground, for the purpose of opening up the entire and extending the lower level to the Yellow Jacket, which yielded \$40 to the ton. The ledge extends and is owned by the company 5,200 feet, and runs north and south. Next season it is expected that a new mill, with more extensive machinery, will be erected at the mine. The present mill is located over two miles from the mine, and entails considerable expense in the transfer of quartz to the mill. Its force is sixty-horse power, driving twenty-eight stamps. There is also a "settler" and "concentrator," as well as chlorine works for obtaining gold from the sulphurets. The company also boast of a foundry, where all the necessary iron work is manufactured.

Two miles distant, and which I believe is the extension of the same ledge, is the Klamath Gold Quartz Company, with H. A. Bigby as Superintendent (W. A. Farish being Superintendent of the Black Bear). The prospects of the Klamath are equal to those of its rich neighbor. The mill is an exceedingly fine one containing thirty-two stamps. The number of hands will be largely increased when spring opens. The Evening Star is also a continuation of the same ledge, and is owned by Messrs. Rainey, Tonkin & Co., who are now engaged in crushing good stone.

On the north side of the township, and about two miles in a direct line, the Morning Star is located at the head of Jackass gulch, which has been wonderfully rich in large gold. The ledge is owned by Messrs. Barknell, Rellner & Doran, who have, by their own perseverance and enterprise succeeded in discovering a rich quartz mine, well defined and containing a great deal of free gold of both fine and coarse quality. It is no doubt the source from whence the gulch obtained its immense richness. While I am writing, a rumor is in circulation that the "Morning Star" has struck something big, but nothing definite can be known till they clean up, which will be in a few days. There is no doubt but that this town will in a short time become the center of a rich quartz district, and nothing but the great difficulty of obtaining supplies and of getting over the mountain has prevented it from being one of the most important gold quartz mining districts in the State.

The Stickeen Mines.

A correspondent of the *British Colonist* (Victoria, B. C.) writes as follows concerning the Stickeen river mines: "I have just returned from the Dense lake mines, and thought you might feel interested enough to like a small description of them.

First, Buck's bar on the Stickeen river is about the head of canoe navigation. There you leave the river to your right and follow the left hand bank till across the first and second north forks and come to the third. Then you follow it till you come to a low divide to the north, where you cross over to the lake. The whole distance is about 80 or 85 miles from Buck's bar to Dease lake; and from the mouth of Stickeen river to Buck's bar is about the same distance as from the Skena to the forks; but the Stickeen is a better river to canoe on. Down the lake to Dease creek is about 25 miles, and down 12 miles further is Thibert creek.

No doubt you will hear all about what the miners have made, and what prospects they got. As for myself, I think I have got about as good a claim as any. I got \$4.75 in the four first pans I tried there. I rocked one day and took out nine ounces and fourteen dollars on the bed-rock. The gravel pays well, too. The diggings are from one to five feet. Deep creek is about the same size as German creek, and Thibert creek about the same size. I like the looks of the country well, and they are the easiest mines to get into that have been found in British Columbia mines yet. Everything looks favorable for a large mining camp. I am going to start up in February from Fort Wrangel. I have got all my grub on Buck's bar, and I intend to sleigh it in from there on the ice."

New Gravel Mill.

We are informed that the ten-stamp gravel mill lately constructed by D. C. Wicham, for Goldner, Siron & Augard, was put in operation on Monday of last week—on trial—preparatory to acceptance by the latter named gentlemen. The mill worked like a charm, and we are told that mill-men who have examined it, declare it to be the most complete mill of the kind ever built in this county. The iron work was made in this city, by H. S. Morey, of the Placerville iron foundry. The stamps are four hundred and fifty pounds each; each stamp has an eight inch drop, and makes eighty-six drops per minute, with full head. The mill is operated by water power, a pressure of two hundred and fifty having been attained; the water is driven through an inch nozzle against an iron hurdy-gurdy wheel which makes a hundred and twenty revolutions per minute. The capacity of the mill is forty tons per twenty-four hours, of the kind of gravel—or cement—extracted from the claim. The owners have some eight hundred tons of gravel on the dump, which has been mined out since the mill was constructed for. With but little interruption, the mill has made full time since it started. Good ore anticipated by the owners of this mine and mill, located about five miles east of this city. May they not be disappointed.

We understand that Mr. Wicham has a contract for building another gravel mill, at Smith's Flat, for a San Francisco Co. Come along, gentlemen, there are yet millions of tons of gravel in this vicinity that will pay for working. A little nerve and capital is all that is required to make gravel mining a success here.—*El Dorado Republican.*

Rye Patch Items.

This place has a fine ten stamp mill, capable of reducing fifteen tons of ore per day, connected with which is a Stetefeldt roasting furnace. These works are in charge of Superintendent Crittenden, to whose management is due the present prosperity of the Rye Patch Mill and Mining Company. The mill and furnace are running to their full capacity, besides which this company ship about ten tons of ore a day to Winnemucca for reduction, the company's mill at Rye Patch not being of sufficient capacity to work all the ore taken from the mine.

The mines are located about four miles from Rye Patch Station, in and near Battle cañon. The first of note is the Battle, owned by the Rye Patch Mill and Mining Company. This mine, which takes rank with the first-class mines of the State, gives employment to forty-five men, produces about forty tons of ore daily, and is steadily increasing in value.

The next one of importance is the Alpha mine, which has produced a vast amount of rich ore. Work on this mine has been suspended for some time, owing to company difficulties, but the company intend putting on a force of men in a few days, when the Alpha will again take its place as one of the brilliant producing mines of this State.

Charles Harley, of San Francisco, has men at work on his claims, with flattering prospects. There are several other companies at work in the district on old locations, which look well.—*Silver State.*

THE WHITE PINE TUNNEL.—We yesterday had a call from Mr. Walton, one of the old residents of Hamilton, and one of the principal land owners in that town. His object in visiting Enreka is to solicit the signatures of our citizens to a petition he has in circulation throughout Eastern Nevada, for the development of White Pine mountain. It is proposed to petition Congress for a grant or franchise of the mountain, for the purpose of a running a tunnel through it of railroad size, which will be about eight or nine miles in length. The originators of this work do not intend to ask a subsidy or loan from the Government, merely the franchise of the land; so as to prevent any interference with the title of the land after the commencement of the work. It is proposed to form a joint stock company, with sufficient capital to carry out the intended designs. Mr. Walton has secured over 2,000 names to his petition, and will start in a day or so for Washington to lay his plans before the representatives, and through them bring the matter before the proper committee.—*Sentinel.*

HYDRAULIC MINING IN MONTANA.—The *New Northwest* says: The Flint Creek Ditch and Mining Company this week received their large invoice of iron pipe, etc., for their mines on Flint creek. It consists of 300 feet of 22-inch No. 18 iron, and 1,000 feet of 15-inch No. 16 iron, with a No. 2 Little Giant, Reflector Lamp, and tools necessary for putting it in complete working order. The material costs laid down here about \$4,000. Clarke, Steele & Co. also received 1,200 ft. of 11, 15 and 18-inch pipe, Little Giant, etc., a few days ago, and will place it for operations in Squaw Gulch next spring. The appliances purchased by those two companies are the same as those used by the best miners of California, and the gentlemen, while looking to their own interests in procuring the most approved appliances for hydraulic mining will have done, if successful, a good thing for all hydraulic miners, and we believe demonstrate the richest diggings of Montana are the extensive bar deposits that have heretofore been passed by as unavailable.

COUNTIES OF CALIFORNIA.—There are over fifty-one counties in California. They range in size from 42 (San Francisco) to 23,472 (San Bernardino) square miles; and in population, by the census of 1870, from 430 to 150,000, Mono being the least and San Francisco the most populous. The average area is 3,725 square miles, which is nearly twice the size of Delaware. Their average population is about 11,000. San Bernardino is larger than West Virginia.

ZINC MINES.—Zinc ore in considerable quantities was recently discovered in Laae county, near what is known as Cow creek. A small quantity of the ore was dug out and forwarded to this city. Mr. Fisk made an assay of the metal, and found it to contain a large per cent. of zinc.—*Oregonian.*

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POPULAR LECTURES.

Mechanics' Institute Lectures.

The Great Lava Overflow of the Pacific Coast—by
Prof. Joseph LeConte—No. 3.

[Reported Especially for the Press.]

Prof. Joseph LeConte delivered the third of the series of lectures now being given before the Mechanics' Institute, on Saturday night last, before a large audience. The subject was an exemplification of his Theory of the Formation of Mountains, as illustrated by the great lava overflow of Northern California and Oregon.

The Great Lava Bed

Of the region named, the lecturer stated, commences near the middle of California, where it appears in separate streams; but passing northward it unites, increases in bulk, covers almost the entire surface of Oregon and Washington Territory, and extends far into British Columbia on the north and Idaho and Montana on the east. This immense flood of lava covers a region of country some 700 miles in length by from 300 to 400 miles in breadth, and varying from a few hundred to some 4,000 feet in thickness. The thickness where it is cut through by the Columbia river is 3,700 feet. The Des-Chutes river, running at right angles with the Columbia, runs for 140 miles through a narrow cañon or gorge, on both sides of which lava is piled up to the height of from 1,000 to 1,500 feet, and still the river has not cut its channel more than half way to the bottom of the deposit. Mr. King has traced this lava for at least 300 miles along the Snake river.

The Sources of this Great Outflow

Are to be found in the immense fissures in the Coast and Cascade mountains, the lava so running together as to make one universal mass. It occurs in layers, one above another, so distinctly separated that there can be no mistake about the fact of there having been several distinct overflows. The lecturer

Illustrated His Remarks

With plans on the blackboard, which we here reproduce, as previously introduced in connection with his paper on the same subject, published in the proceedings of the Academy of Sciences; which institution has kindly furnished us the engravings for this purpose. The lecture thus illustrated furnishes a series of most interesting and remarkable facts and discoveries.

One of the illustrations given was similar to Fig. 1, showing the different ledges of lava, as they appear at the Cascades of the Columbia river. In this figure (a) represents a coarse conglomerate, extending from the water level, 15 feet upwards, to (b), which is a veritable ancient ground-surface as it was before those ancient convulsions of nature, by which it was buried to a depth of some 3,000 feet or more. On this ancient lava are now seen silicified stumps, with roots running down into the soil beneath. Immediately above this ground-surface is seen, first, a layer of sandstone (c), two feet thick, filled with leaf-impressions. Above this, again, lies a conglomerate (d), irregularly stratified in spots, containing fragments of silicified drift-wood. Upon this uneven surface (e) rest the lava layers, one above another, as shown, to the height of nearly 3,000 feet.

Figure 2 is an ideal section, representing a section of the cliff, as seen at this place; but there is no uncertainty about the actual relation of the lava to the conglomerate, etc., as shown. In Fig. 2, b most unmistakably marks an old forest ground, where the stumps still remain in the very spot where they grew. The trees were destroyed by water, which first overflowed the country, and which gradually covered the earth to a depth of several hundred feet with a coarse deposit, upon which the lava was subsequently poured from the fissures as mentioned. The outflow of lava probably continued at intervals throughout all the later years of the Tertiary period, from fissures; as the fissures gradually closed, or were filled up, the flow has been continued in spots, by crater eruption, until very nearly the present time.

The Geological Age of the Outflow

Is readily determined by the leaf impressions and silicified wood which have been found in the water-drift underlying the lava. The earliest of this lava flow undoubtedly occurred near the end of the Miocene period, and coincident in time with the formation of the Coast range of mountains. The underlying portion, upon which these vegetable remains grew, was no doubt originally a low ridge, composed of granite and slate, like the Sierras, and probably of the same age.

Figure 3 is a diagrammatic section along the Columbia river cañon, at the Cascades. The wide part enclosed between the cliffs, a, a, is about five miles across, and was doubtless once entirely covered by the waters of the river. The erosion has occurred during the post-Tertiary, either by ice or water, or more probably both. During the present epoch, the greatly shrunken river has cut its way into the underlying conglomerate, moving gradually southward, until it has formed on the southern side quite a high, perpendicular bluff, as shown.

Prairie Mounds—The Devil's Potato Patch—Formed an interesting division of this most interesting lecture. They occur near the

southern extremity of Puget sound, in a series of glades or openings. They are narrow, ramifying glades or grassy prairies, entirely destitute of trees or shrubs, but in the midst of dense fir forests. These mounds are about three or four feet high and thirty or forty feet in diameter, regular in size and shape. There are millions of them. They are made up mostly of small pebbles and coarse gravel, and are covered with ferns and small grass.

Much speculation has been indulged in as to their origin. Some suppose them to have been ancient Indian burial grounds, or raised foundations for huts, on a wet soil; others think they were formed by fish while the ground was still submerged under a shallow sea. Close examinations, however, have led scientists to attribute their origin to erosions under peculiar circumstances. From the Dalles to the DesChutes river, a distance of some 30 miles, the country is also covered with these mounds. On the mountain verge of the valleys of California, where the original soil has not been disturbed by the plow, the same phenomena may also be frequently observed. In this State, especially in the San Joaquin valley, such localities are called "hog wallows," and in Oregon, the locality in which

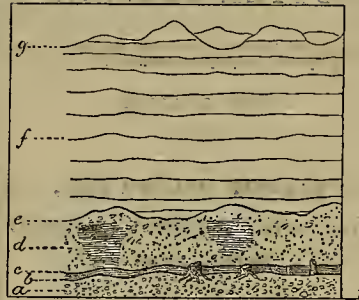


Fig. 1.

they are most conspicuous is properly known as "The Devil's Potato Patch."

This interesting and instructive lecture was listened to throughout with marked attention.

Prof. Neri's Lecture—Magnetism and Electricity—No. 2.

[Especially Reported for the Press.]

The first lecture of the course was devoted to the consideration of frictional and static electricity. The present lecture will be devoted more especially to magnetism, and its relation to electricity. A certain class of electrical phenomena is attributed to magnetic force. About six hundred years before the Christian era, it was discovered that a certain kind of rock was known to possess the property of strongly attracting iron. This rock was called magnet, from Magnesia, the country in which it was discovered. In the modern study and classification of minerals, this rock, which is a natural magnet, is found to consist largely of a peculiar oxide of iron—a mineral from which the best quality of iron is made—and which occurs in many places, particularly in Sweden. A specimen of this rock, highly polished, was exhibited, and its attracting properties demonstrated. Very little was known about magnetism by the ancients, and it is only within about two hundred years that it has been much studied.

The Natural Magnet

Possesses the property of transmitting its power to steel, which thereupon is found to possess a greater power than the original magnet. Various forms of artificial magnets were shown—the single bar, compound bar, and the horn-shoe form of both. It has been found that the power of a magnet is greatly increased by hanging a weight upon it, and gradually increasing that weight at intervals.

Polarity of the Magnet.

Magnetism, like electricity, possesses two qualities, positive and negative. Each magnet has its positive and negative pole, designated in the magnetic needle as the north and south poles; also, a neutral point midway between the two, where no influence is discernible. That a marked difference exists between these two is shown by various demonstrations. Opposite polarities attract; equal polarities repel. What this mysterious influence is, or how it is caused, has thus far eluded the closest and most scientific scrutiny. If we divide a magnet at any point, each portion of the original becomes itself a magnet. This division may be carried on indefinitely. If we could divide so minutely, we should no doubt find that each molecule of the original was a magnet, possessing positive and negative poles, and its neutral center. Hence, magnetism is not inherent, or does not reside at any particular point of the magnet.

Magnetic Lines of Force or, Curves.

The lines of magnetic force pass in graceful curves from one pole to the other of the magnet, and vice versa. This fact was demonstrated

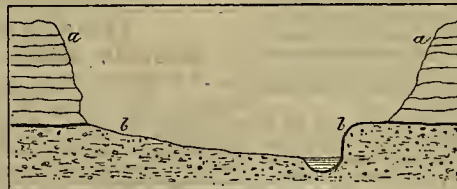


Fig. 3.

by showing the influence of the magnet upon filings. This experiment, which, from its nature, is usually confined to the observation of a few who may gather around a table, was distinctly shown to every individual of the large audience of nearly 1,000 persons, by being projected upon a screen by means of a newly devised instrument made up of reflectors and prisms.

Magnetic Induction.

In addition to the property which the magnet possesses of transferring its influence to steel by being rubbed upon it, it also possesses the remarkable peculiarity of transmitting its power by induction. A piece of common iron when placed in contact with a magnet, and even when not in actual contact, but near to such a piece of iron, also becomes magnetic, and continues so as long as it is kept under the influence of the original. This is called induction, and is similar to the same principle developed in electricity.

The earth itself is a huge magnet, and its north pole attracts the south pole of the needle; hence what we call the north pole of the needle is really its south pole. We reverse the nomenclature simply for convenience, because the south pole is always upon the north point

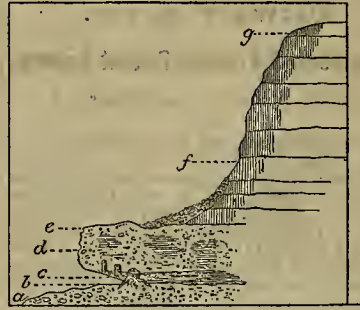


Fig. 2.

of the needle when it is freely suspended.

Magnetic Vibration and Dip.

It was for a long time supposed that the needle always pointed due north and south; but it has of late years been demonstrated that there is always a variation either east or west and greater or less at different points on the earth's surface. This irregularity of the needle is called "magnetic variation." Its cause is not yet fully understood, and its existence is not constant, or alike at all times in any one place.

The needle has also another variation called its "dip." On the equator there is no dip; the needle stands there perfectly horizontal. As we go north or south, the variation from the horizontal is gradually changed, until, if we could reach either of the earth's poles, we should find the needle there, if freely hung, occupying a perpendicular position. This peculiarity was first discovered in 1576.

It is claimed that the magnetic needle was known in China 3,000 years ago; but the claim is

considered doubtful. But the first idea of it undoubtedly came from the east, and was probably introduced into Europe by Marco Polo.

The Effect of the Magnet on Gold, Silver, Copper, etc.

The magnet, besides its influence on steel and iron, has also a greater or less effect upon most other substances, such as gold, silver, copper, nickel, cobalt, zinc, glass, paper, cloth, liquids and gases. This influence on a limited number of substances has long been known; but Faraday made the matter a special study, and demonstrated the fact that it had a very wide and almost unlimited influence, though in relation to most substances its influence was extremely weak. He devised an apparatus which was capable of detecting its influence when exerted only one-millionth part as strongly as upon iron. This instrument was exhibited and its action explained. The power of this instrument to develop the more minute influence of magnetism depended upon a peculiar and intimate

Relation between Magnetism and Electricity.

When electricity is caused to pass through two magnets whose poles are placed in close proximity to each other, the magnetic power is most wonderfully intensified at the interval between the two poles, and the instrument then becomes what is known as an electro-magnet. Pieces of gold, silver, copper, etc., placed in the interval between the poles, which is called the magnetic field, and which were not at all visibly affected by the ordinary magnetic current, were most palpably influenced when the electric current was added to intensify the former. The increased power of the electro-magnet over the simple magnet was also otherwise demonstrated in a most remarkable and amusing manner, as in the greedy way with which it would seize upon and hold a large mass of carpet tacks or small nails. The influence of a rotating disk or plate on the magnetic needle was also shown.

The Magnetic Force Universal.

The magnetic force has a most important

purpose in the grand economy of nature, and extends its influence throughout the entire universe. This is inferred from the known influence known to extend from the sun to the earth. What are called

Magnetic Storms

Or an unusually excited condition of the magneto-electric forces upon the earth, are known to have their origin (at least sometimes) in the sun. Unusual disturbances in the sun, such as the extraordinary eruptions, which modern observers have been able to detect and so fully describe, are always accompanied by magnetic storms on the earth. It has also been ascertained that sun spots have an important influence in this direction.

A Remarkable Instance

Was referred to, where an observer in Europe having noticed a certain disturbance in the sun's atmosphere, immediately telegraphed to all the magnetic observatories on the earth, with which he could be put in communication, when it was discovered that a general magnetic disturbance or storm commenced in the vicinity of all those observatories, simultaneously with the same phenomena in the sun. The learned lecturer concluded by announcing that these higher and most important phenomena connected with magnetism and electricity would form the subject of his future lectures, the next one of which would be given on Thursday evening, February 12th.

PAIN-KILLER!

FOR OVER THIRTY YEARS

Perry Davis' Vegetable

PAIN KILLER

HAS BEEN TESTED IN EVERY VARIETY OF CLIMATE, AND BY ALMOST EVERY NATION KNOWN TO AMERICANS.

It is the constant companion and estimable friend of the missionary and the traveler, on sea and land, and no one should travel on our Lakes or Rivers without it.

It has been before the public over thirty years, and probably has a better and wider reputation than any other proprietary medicine of the present day. At this period there are but few unacquainted with the merits of the Pain-Killer; but while some extol it as a liniment, they know but little of its power in easing pain when taken internally, while others use it internally with great success, but are equally ignorant of its healing virtues when applied externally. We therefore wish to say to all that it is equally successful whether used internally or externally, and it stands to-day unrivaled by all the great catalogue of family medicines. It is sufficient evidence of its virtues as a standard medicine to know that it is now used in all parts of the world and that its sale is constantly increasing. No curative agent has had such wide spread sale or given such universal satisfaction. It is a purely vegetable compound, and perfectly safe in unskillful hands.

After thirty years trial, is still receiving the most unqualified testimonials to its virtues, from persons of the highest character and responsibility. Physicians of the first respectability, recommend it as a most effectual preparation for the extinction of pain. It is not only the best remedy ever known for Rheumatism, Gout, Burns, &c., but for Dysentery or Cholera or any sort of Bowel complaint, it is a remedy unsurpassed for efficiency and rapidity of action. In the great cities of India, and other hot climates, it has become the Standard Medicine for all such complaints, as well as for Dyspepsia, Liver Complaints, and other kindred disorders. For Coughs and Colds, Catarrhs, Asthma, and Rheumatic difficulties, it has been proved by the most abundant and convincing testimony to be an invaluable medicine.

Beware of all Imitations.

The Pain-Killer is sold by all respectable druggists throughout the United States and foreign countries. Prices—25 cents, 50 cents and \$1 per bottle.

PERRY, DAVIS & SON, Proprietors,
J224 No. 136 High street, Providence, R. I.

Laws Concerning Corporations.

[Under the New Code—January 1, 1873.]

GENERAL PROVISIONS APPLICABLE TO ALL CORPORATIONS.

WAGON ROAD CORPORATIONS.
WATER AND CANAL CORPORATIONS.
HOMESTEAD CORPORATIONS.
MINING CORPORATIONS.
LAND AND BUILDING CORPORATIONS.
Also, MINING PARTNERSHIP LAW.
A pamphlet containing the above provisions concerning Corporations has been printed from the Statutes of California. It furnishes those who wish these special laws an opportunity of obtaining them for the small sum of 25 cents (post paid). Address, DEWEY & Co., Publishers, and Patent Agents, S. F.

IN SPITE OF FLANNELS, Coughs and colds will make a lodgment in the system. But they are not tenants at will. You can dispossess them with *Hale's Honey of Horshond and Tar*, in less time than it takes a shoemaker to execute a writ. Crittenton's, No. 7 6th Avenue. Sold by all Druggists.

Pike's Toothache Drops cure in 1 minute.

THE MINING AND SCIENTIFIC PRESS, of San Francisco, now in its 26th volume, is the best paper for the miner, the prospector and the machinist, of which we have any knowledge. Four dollars (gold) sent to Dewey & Co., will fetch it for one year.—Arizona Miner.

NO LIFE INSURANCE COMPANY has a better record or more permanently popular reputation than the CONNECTICUT MUTUAL LIFE INSURANCE CO. J. B. Roberts, 315 California Street, San Francisco, is general agent for this Coast. Send to him for circulars and information of this reliable, re-st-claim company.

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CONTINENTAL LIFE INSURANCE CO., No. 302 Montgomery street, corner of Pine, San Francisco.

PATENTS & INVENTIONS

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., Feb. 3, 1874.

For WEEK ENDING Jan. 20, 1874.

MEDICAL COMPOUND.—Evelino Hungerford, S. F., Cal.

IRRIGATION PIPE.—Nehemiah Clark, Sacramento, Cal.

VACUUM RELIEF VALVE FOR STEAM CYLINDERS.—Andrew J. Stevens, Sacramento, Cal.

STEAM BOILER.—Harvey W. Rice, Haywards, Cal.

CUTTING APPARATUS FOR HARVESTERS.—Philoander Kitts, Monticello, Cal.

FEEDING DEVICE FOR THRESHING MACHINES.—James T. Watkins and Jasper S. Scott, Santa Clara, Cal.

BUNG BUSH INSERTER.—Hirrich A. Engels, S. F., Cal.

MACHINE FOR FACING CORDLE STONES.—Wm. M. Hughes, assignor to L. Duterte, A. E. Ballard and E. D. Sawyer, S. F., Cal.

GLOVE.—Isaac N. Pearson, Napa, Cal.

REINFORCERS.

BEARING FOR SHAFTS.—Jerome Haas, Stockton, Cal.

PLOW.—Don Carlos Matteson and Truman P. Williamson, Stockton, Cal.

SAN FRANCISCO METAL MARKET.

WEDNESDAY, Feb. 6, 1874.

Quicksilver is strong at the present rate, with no prospect of change. The suggestion of an exchange that loading gold and silver mining companies, the chief consumers, combine to produce the metal, in opposition to the late combination of present quicksilver producers, seems rather more feasible as the price steadily mounts up. But whatever is said of combinatorial and monopoly, the fact remains that the production of Quicksilver has largely fallen off of late, while the consumption has as rapidly, and in this light, any compulsory, unconstitutional bill to regulate the price and fix a maximum is worse than useless. At all events the rights of Quicksilver miners deserve as much attention as those of the gold and silver miners. What is wanted, is not special legislation, but more capital to open and develop the many lodes of cincharr already found, and this course is now more inviting from the very fact of the high price at present commanded: so that the laws of trade alone will in time adjust the difficulty. The general metal market is very quiet.

Scotch Pig Iron, 40 lbs. @	52.00	@	—
White Pig, 40 lbs. @	52.00	@	—
Refined Bar, good assortment, 40 lbs. @	52.00	@	—
Refined Bar, good assortment, 40 lbs. @	52.00	@	—
Boiler, No. 1 to 4 @	08 1/2	@	06
Plate, No. 16 to 18 @	06 1/2	@	07
Sheet, No. 16 to 18 @	06 1/2	@	07
Sheet, No. 14 to 20 @	06 1/2	@	07
Sheet, No. 24 to 28 @	08 1/2	@	09
Horse Shoes, per keg @	7 1/2	@	8.00
Nail Rod, 1/2" @	8 1/2	@	—
Norway Iron @	8 1/2	@	—
Roller Iron @	8 1/2	@	—
Iron for Blacksmiths, Miners, etc. @	8 1/2	@	—
COFFERS.			
Brass @	40	@	—
Copper @	40	@	—
Aluminum @	40	@	—
Sheeting, Yellow @	25	@	—
Sheeting, Old Yellow @	25	@	—
Composition Nails @	25	@	—
Composition Bolts @	25	@	—
TIN PLATES.			
Plates, 14 to 18 @	14.00	@	14.50
Plates, 18 to 20 @	14.00	@	15.00
Roofing Plates @	13.00	@	13.50
Banca Tin, 14 lbs. @	40	@	42 1/2
STEELE.—English Cast, 4 @	18	@	22
Drill @	18	@	22
Flat Bar @	18	@	22
Plough Points @	18	@	22
Zinc @	9 1/2	@	10
Lead @	9 1/2	@	10
NAILS.—Assorted sizes @	5 1/2	@	8
QUICKSILVER, per lb @	1.25	@	—

LEATHER.

SAN FRANCISCO, Wednesday, Feb. 6, 1874.

Leather is very dull at present, and local leathers are still depressed. There is moderate inquiry for French Kips and Linings. Findings are moderately active.

City Tanned Leather, 40 lbs. @	25.00	@	25.25
Santa Cruz Leather, 40 lbs. @	25.00	@	25.25
Country Leather, 40 lbs. @	25.00	@	25.25
Stockton Leather, 40 lbs. @	25.00	@	25.25
Jodot, 8 Kil., per doz @	55.00	@	55.00
Jodot, 11 to 12 Kil., per doz @	60.00	@	60.00
Jodot, second choice, 11 to 12 Kil. @	55.00	@	55.00
Cornellian, 12 to 14 Kil. @	60.00	@	60.00
Cornellian Females, 12 to 14 Kil. @	60.00	@	60.00
Beauverville, 15 Kil. @	60.00	@	60.00
Simou, 15 Kil. @	60.00	@	60.00
Simou, 20 Kil. @	60.00	@	60.00
Simou, 24 Kil. @	60.00	@	60.00
Robert Calif., 8 Kil. @	55.00	@	55.00
Kraus Kips, 40 lbs. @	1.00	@	1.00
California Kip, 40 lbs. @	1.00	@	1.00
French Sheep, all colors, 40 lbs. @	1.00	@	1.00
Eastern Calif. for Books, 40 lbs. @	1.00	@	1.00
Sharp Roofs for Topping, all colors, 40 lbs. @	1.00	@	1.00
Sharp Roofs for Linings, 40 lbs. @	1.00	@	1.00
California Runners, Sheep Linings, 40 lbs. @	1.00	@	1.00
Best Jodot Calif. Boot Legs, 40 lbs. @	1.00	@	1.00
Good French Calif. Boot Legs, 40 lbs. @	1.00	@	1.00
French Calif. Boot Legs, 40 lbs. @	1.00	@	1.00
Harnes Leather, 40 lbs. @	1.00	@	1.00
Fair Bridge Leather, 40 lbs. @	1.00	@	1.00
Skirting Leather, 40 lbs. @	1.00	@	1.00
Well Leather, 40 lbs. @	1.00	@	1.00
Buff Leather, 40 lbs. @	1.00	@	1.00
Wax Side Leather, 40 lbs. @	1.00	@	1.00
Eastern Wax Leather, 40 lbs. @	1.00	@	1.00

HINTS FOR INVENTORS. We will send on receipt of stamp for postage, FREE, our 32-page Circulars containing 112 Illustrated Mechanical Movements; a digest of PATENT LAWS; information how to obtain patents, and about the rights and privileges of inventors and patentees; list of Government fees, practical hints, etc., etc. Address DEWEY & CO., Publishers and Patent Agents, San Francisco.

SHAREHOLDERS, TRUSTEES, and SECRETARIES of ALL MINING COMPANIES,

should see to it that their Notices are advertised legally in the MINING AND SCIENTIFIC PRESS, at much less cost than the usual rates of daily publications. Every person interested in the prosperity of legitimate mining enterprises should favor such practical economy. Send for circular of convenient dates for advertising, free blanks, and a copy of the New Code Corporation Assessment Law.

Mining and Other Companies.

Owing to the time necessary to mail the present large edition of the M. & S. Press we are obliged to go to press on Thursday evening—which is the very latest hour we can receive advertisements.

Buena Vista Petroleum Company.—Location

of principal place of business, San Francisco, California. Location of works, Kern County, California. Notice is hereby given that at a meeting of the Board of Directors, held on the 26th day of January, 1874, an assessment of one dollar per share, was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 430 Jackson street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 15th day of March, 1874, will be delinquent and advertised for sale at public auction, and unless payment is made before, will be sold on the 15th day of March, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By Order of the Board of Directors, L. A. GILLO, Secretary.

Office No. 430 Jackson street, San Francisco, Cal. 47

Commercial Coal Mining Company, of

San Francisco. Principal place of business, City and County of San Francisco, State of California.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 15th day of December, A. D., 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A. E. Crocker.....	130 and 138	50	\$25.00
A. E. Crocker.....	130 and 141	85	17 50
H. Forrester.....	179 to 188	75	37 50
H. Forrester.....	192 to 206	255	127 50
S. B. Hanson.....	1	100	50 00
S. B. Hanson.....	128	50	25 00
W. E. Peck.....	175 and 176	200	100 00
H. F. Sheppard.....	155 and 156	175	87 50

And in accordance with law, and an order of the Board of Directors made on the 16th day of December, 1873, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, No. 402 Montgomery street, Room No. 23, city and county of San Francisco, California, on the 23rd day of February, 1874, at the hour of 12 o'clock, m., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

S. B. HANSON, Sec'y. (By F. N. W.) Office, 402 Montgomery street, Room No. 23, San Francisco.

Diamond Silver Mining Co.—Notice.

A meeting of the stockholders of the Diamond Silver Mining Company, of Tintic District, Juab County, Utah Territory, will be held on Wednesday, the 18th day of February, 1874, at one o'clock p. m., at Sherman's Building, No. 606 Montgomery street, Room 12, for the election of Trustees for the ensuing year. The subject of levying an assessment upon the capital stock of the company will also be determined.

By direction of the Board of Trustees, WM. SHERMAN, President. O. C. MILLER, Secretary. San Francisco, Cal., January 12, 1874. js-6t

Cupel and Tiger Silver Mining Company.

Principal place of business, San Francisco, Cal. Location of works, Wallapai Mining District, Mohave County, Arizona Territory.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 25th day of October, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J. P. Ridgeway.....	80	1000	\$200.00
J. P. Ridgeway.....	87	1000	200 00
J. P. Ridgeway.....	88	1000	200 00
J. P. Ridgeway.....	89	1000	200 00
J. P. Ridgeway.....	90	1000	200 00
J. P. Ridgeway.....	91	1000	200 00
J. P. Ridgeway.....	92	1000	200 00
J. P. Ridgeway.....	93	1000	200 00
J. P. Ridgeway.....	94	1000	200 00
J. P. Ridgeway.....	95	1000	200 00
J. P. Ridgeway.....	96	1000	200 00
J. P. Ridgeway.....	97	1000	200 00
J. P. Ridgeway.....	98	1000	200 00
J. P. Ridgeway.....	99	1000	200 00
J. P. Ridgeway.....	100	1000	200 00
William Miller.....	49	500	100 00
William Miller.....	50	500	100 00
William Miller.....	51	500	100 00
William Miller.....	52	500	100 00
William Miller.....	53	500	100 00
William Miller.....	54	500	100 00
William Miller.....	55	500	100 00
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William Miller.....	97	500	100 00
William Miller.....	98	500	100 00
William Miller.....	99	500	100 00
William Miller.....	100	500	100 00

Names.	No. Certificate.	No. Shares.	Amount.
Engene Chenot.....	46	50	10 00
Honore Lacoste.....	48	100	20 00
A. Noel.....	74	25	5 00
M. Cantier.....	75	50	10 00
Joseph Vermet.....	76	50	10 00
George Reiter.....	79	50	10 00
George Reiter.....	81	100	20 00
George Reiter.....	82	100	20 00
George Reiter.....	83	75	15 00
George W. Drake.....	136	50	10 00
James R. Martin.....	137	50	10 00
J. C. Warren.....	161	50	10 00
J. C. Warren.....	162	50	10 00
J. C. Warren.....	163	50	10 00
J. C. Warren.....	164	50	10 00
W. O. Sleeper.....	165	25	5 00
John M. Murphy.....	166	100	20 00
M. Kraszynski.....	167	30	6 00
M. Kraszynski.....	168	30	6 00
M. Kraszynski.....	169	30	6 00
Charles Spencer.....	170	100	20 00
Charles Spencer.....	42	100	20 00
Charles Spencer.....	43	100	20 00
Charles Spencer.....	101	1000	200 00
Charles Spencer.....	102	1000	200 00
Charles Spencer.....	103	1000	200 00
Charles Spencer.....	104	1000	200 00
Charles Spencer.....	105	1000	200 00
Charles Spencer.....	106	1000	200 00
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Charles Spencer.....	125	1000	200 00
Charles Spencer.....	126	1000	200 00
Charles Spencer.....	127	1000	200 00
Charles Spencer.....	128	1000	200 00
Charles Spencer.....	129	1000	200 00
Charles Spencer.....	130	1000	200 00

And in accordance with law, and an order of the Board of Directors, made on the twenty-fifth day of October, A. D., 1873, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, room No. 12, Express Building, San Francisco, California, on Saturday, the twelfth day of December, A. D., 1873, at the hour of 12 o'clock, m. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. O. J. EATON, Secretary. Office removed to room No. 7, same building, San Francisco, California. cc-29

POSTPONEMENT.—The above sale is hereby postponed until Saturday, January 17th, 1874, at the same hour and place. By order of the Board of Trustees, O. J. EATON, Secretary.

POSTPONEMENT.—The above sale is hereby postponed until Monday, February 16th, 1874, at the same hour and place. By order of the Board of Trustees, O. J. EATON, Secretary.

Germania Mining Company.—Location of

principal place of business, San Francisco. Location of works, Tintic District, Juab County, Utah Territory.

Notice is hereby given that at a meeting of the Board of Directors, held February 24, 1874, an assessment of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 408 California street, Room 16, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 15th day of March, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 15th day of April, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors, J. TRIPP, Secretary. Office, 408 California street, Room 16, San Francisco, California. feb-1</

Machine Builders.

ESTABLISHED 1851.

PACIFIC IRON WORKS,

First and Fremont streets,

SAN FRANCISCO.

IRA P. RANKIN, A. P. BEATON,
GEO. W. FOGG, Superintendent.

Steam Engines and Boilers,

MARINE AND STATIONARY.

IRON AND BRASS CASTINGS

Mining Machinery of Every Description,

And all other classes of work generally done at first-class establishments, manufactured by us at the lowest prices, and of the best quality.

Particular attention paid to Jobbing Work and Repairs.
N. E.—Sole Agents for sale of HUNTOON'S CELEBRATED PATENT GOVERNOR. GODDARD & CO.
18720-3m

FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

TEAM ENGINES,

Quartz, Flour and Saw Mills,

also Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard street, San Francisco. 3-47

THE RISDON

Iron and Locomotive Works.

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....\$1,000,000.LOCATION OF WORKS:
Corner of Beale and Howard Streets,
SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mills, Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors: Joseph Moore, Jesse Holladay, O. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS E. MEAD.....Secretary
24v17-07

UNION IRON WORKS,

Sacramento.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS,

CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,
SACRAMENTO CITY.

PACIFIC

Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of
RAILROAD AND OTHER IRON
—AND—
Every Variety of Shafting,Embracing ALL SIZES OF
Steamboat Shafts, Cranks, Pistons and Connecting Rods, Car and Locomotive Axles and Frames—ALSO—
HAMMERED IRON

Of every description and size.

Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2093, San Francisco, Cal., will receive prompt attention.
The highest price paid for Scrap Iron.

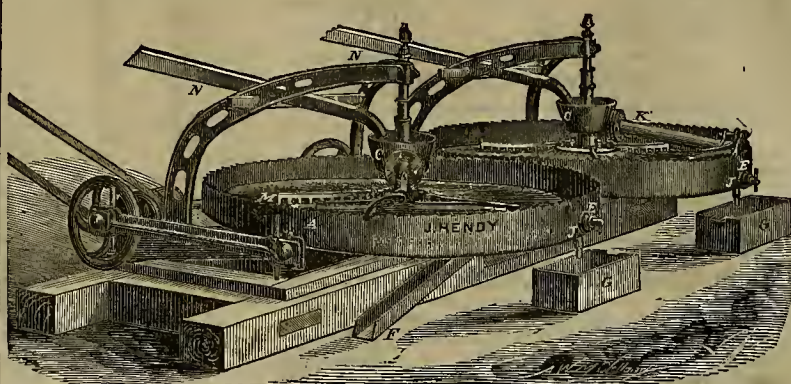
Miners' Foundry and Machine Works,

CO-OPERATIVE,

First Street, bet. Howard and Folsom, SAN FRANCISCO

Machinery and Castings of all kinds.

HENDY'S IMPROVED CONCENTRATOR.



Can be seen at the Manufactory, 32 Fremont Street, San Francisco.

JOSHUA HENDY, Esq.—Dear Sir:—As a practical miner and millman, I take pleasure in recommending the use of your Concentrators in all mills where gold or silver ores are reduced. No mills should be without them for the following reasons:

1st. They are good sizers (no perfect concentration in pulverized ores can be effected without first sizing).
2d. The best Concentrator I have ever known—(the concentrated stuff only containing 5 per cent. of sand).
3d. They are good amalgamators, light (feathery) particles of amalgam and particles of coated gold, by attrition are brightened, and from their specific gravity and the action of the pan, fall to the bottom and adhere.
4th. They require but little power and attention to run them, and with ordinary care will last for years.
I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oaks and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,
Yours respectfully,
409 California street, or Cosmopolitan Hotel.

SAN FRANCISCO, April 27, 1873.

JAS. H. CROSSMAN, M. E.

SAVING MONEY.—The report of O. C. Hewett, Superintendent of the Keystone Consolidated mine, in Amador county, is to the effect that they have saved about \$5,000 per month by the abandonment of blankets and buddies and the use of Hendy's Concentrators. The Concentrators have been in use there about five months and of course give great satisfaction, as they have performed their work so well.—SCIENTIFIC PRESS, Jan. 10.
The Superintendent, O. C. Hewett, reports that a saving of about \$5,000 per month is arrived at by the use of these Concentrators.

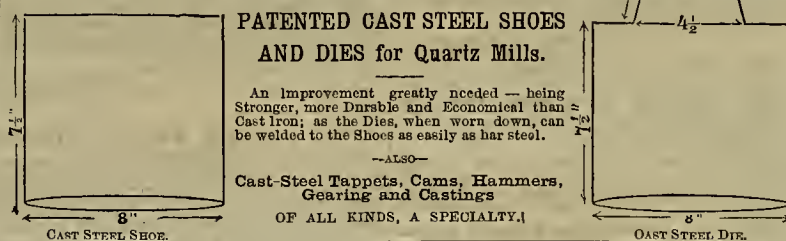
References:

Reference is made to the following mills, some of which have had HENDY'S CONCENTRATORS in use for over four years:
EMPIRE MILL. (3 Concentrators).....Grass Valley, Nevada County.
NORTH STAR M. & M. CO. (8 Concentrators).....Grass Valley, Nevada County.
VULTURE CO. (8 Concentrators).....Prescott, Arizona.
LUCY MINING CO. (3 Concentrators).....Prescott, Arizona.
NOYD'S & CO'S (3 Concentrators).....Owyhee District, Idaho.
EL TASTE CO. (3 Concentrators).....Sonora, Mexico.
ST. LAWRENCE MILL.....Georgetown, El Dorado Co.
ST. PATRICK MILL.....Newcastle, Placer Co.
JULIAN MILL.....Newcastle, Placer Co.
VIRTUE MILL.....Oregon.
KEYSTONE MILL. (22 Concentrators).....Amador Co.
CAUTION—All of HENDY'S PATENT CONCENTRATORS are marked thus: "J. HENDY, Patented April 17th, 1866, and May 19th, 1868."
For full description send for Circular. Orders or letters of enquiry, address,
JOSHUA HENDY, San Francisco.
Office and Works, 32 Fremont street.
22v27-1am-tf

CAST STEEL SHOE AND DIE COMPANY,

OFFICE—Room 28, Hayward's Building, 419 California St.,

SAN FRANCISCO.



PATENTED CAST STEEL SHOES AND DIES for Quartz Mills.

An improvement greatly needed—being stronger, more durable and economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as bar steel.

—ALSO—
Cast-Steel Tappets, Cams, Hammers, Gearing and Castings
OF ALL KINDS, A SPECIALTY.

SACRAMENTO FOUNDRY,

N. E. corner N and Front streets.....SACRAMENTO.

Steam Engines—all kinds of Mining Machinery.

SHIP, AGRICULTURAL, STOVE, RANOE AND HOUSE CASTINGS.

Iron Railings and Ornamental Work of every description

At the Lowest Rates.

137-27-1y WM. GUTENBERGER.

OCCIDENTAL FOUNDRY,

137 and 139 First street.....SAN FRANCISCO.

STEIGER & BOLAND,

IRON FOUNDERS.

IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Rolling Pan and Callahan Grate Bars, suitable for Burning Screenings.

Notice.—Particular attention paid to making Superior Shoes and Dies.
J. H. WREED. V. KINGWELL
20v26-3m

CALIFORNIA BRASS FOUNDRY,

No. 125 First street, opposite Minna, SAN FRANCISCO.

ALL KINDS OF Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Belts and Gongs of superlateness. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch.
PRICES MODERATE.
J. H. WREED. V. KINGWELL

THOMPSON BROTHERS,

EUREKA FOUNDRY,

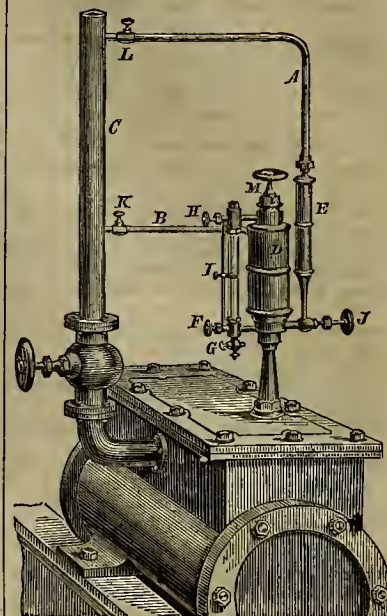
129 and 131 Beale street, between Mission and Howard, San Francisco.

LIGHT AND HEAVY CASTINGS,

of every description, manufactured, 24v16qr

Machinery.

N. Seibert's Eureka Lubricators.



THE HIGHEST PREMIUM

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stops; H, F, valves to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Made and sold by California Brass Works, 125 First street, S. F. 24v23tf

CROCKER'S PATENT TRIP HAMMER QUARTZ BATTERY.



This machine, complete, weighs 1,500 lbs. Has an iron frame, five steel arms with stamps weighing 17 lbs. each, which strike 20-0 blows per minute, in a mortar provided with screens on both sides, and crushes FINE 600 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$600.

G. D. CROCKER,
17v26-tf 315 California street, San Francisco.

THEODORE KALLENBERG,

MACHINIST,

and Maker of Models for Inventors. All kinds of Dies Stamps and Punches made. Also, all kinds of Small Gears Cut.

Repairing done on very Reasonable Terms and in the best manner. No. 32 Fremont street, S. F. 19v23-3m

STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by
10v27tf J. HENDY, No. 32 Fremont Street.

Friel's Patent Paragon Vapor Stove.

PATENT GRANTED MAY 20, 1873.

The Great Labor Saver of the Household.
ECONOMY, CONVENIENCE AND SAFETY COMBINED.

All Recommend It.

Prices from \$5 to \$25, according to size. Manufactured and sold by
WM. FRIEL,
69 and 71 Fourth street, San Francisco.N. B.—Agents wanted in every town in the State. On payment of \$5, one Stove will be sent as sample,
22v25-2amlyJUST THINK OF IT—
No Wood, no Coal, no Coal Gas, no Stove Pipe, no Chimney, no Smoke, no Ashes, no Dirt, no Wood Boxes, no Coal Scuttles, no Kindling Wood, but a Friction Match, and the Fire in Full Blast in Half a Minute!
OVEN HOT IN TWO MINUTES.
Steak broiled in seven minutes! Baked Beans in thirty minutes! The fire extinguished in a moment And the house unheated!
It has no rival in all kinds of Cooking and Flat Iron Heating, and combines Economy, Convenience, Neatness, Safety and Durability! The Ladies welcome it; a little Child can operate it, andWATER TANKS of any capacity, made entirely by machinery. Material the best in use; construction not excelled. Attention, dispatch, satisfaction. Cost less than elsewhere. MECHANICS' MILLS,
3v23-3m-sa Cor. Mission & Fremont Streets.

Diamond Drill Co.

The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

A. J. SEVERANCE & CO.
Office, No. 315 California street, Rooms 16 and 17.
24v26-tfJOS. THORNHILL,
1612 Mason Street, near Green.C. W. WHITE,
47 Clay Street.

JOS. THORNHILL,

Bricklayer and Contractor

Particular attention paid to all kinds of FIRE WORK such as BOILERS, FURNACES, OVENS, GRATES, RANGES, etc.

Metallurgy and Ores.

JOHN TAYLOR & CO.,

IMPORTERS OF AND DEALERS IN
ASSAYERS' MATERIALS
Chemical Apparatus and Chemicals,
Druggists' Glassware and Sundries,
PHOTOGRAPHIC GOODS, ETC.,
512 and 514 Washington street, SAN FRANCISCO

We would call the special attention of Assayers
Chemists, Mining Companies, Milling Companies
Prospectors, etc., to our large and well adapted stock of
ASSAYERS' MATERIALS

Chemical Apparatus,
Having been engaged in furnishing these supplies since
the first discovery of mines on the Pacific Coast,
Our Gold and Silver Tables, showing the value
per ounce Troy at different degrees of fineness, and val-
uable tables for computation of assays in Ores and
Grammes, will be sent free upon application.
7125-4f JOHN TAYLOR & CO.

Varney's Patent Amalgamator.

These Machines Stand Unrivaled.
For rapidly pulverizing and amalgamating ores, they
have no equal. No effort has been, or will be spared
to have them constructed in the most perfect manner
and of the great number now in operation, not one has
ever required repairs. The constant and increasing de-
mand for them is sufficient evidence of their merits.
They are constructed so as to apply steam directly
into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows.
The pan being filled, the motion of the miller forces
the pulp to the center, where it is drawn down through
the aperture and between the grinding surfaces. —
Thence it is thrown to the periphery into the quicksilver.
The curved plates again draw it to the center, where it
passes down, and to the circumference as before. Thus
it is constantly passing a regular flow between the grind-
ing surface and into the quicksilver, until the ore is
reduced to an impalpable powder, and the metal amal-
gamated.
Settlers made on the same principle excel all others.
They bring the pulp so constantly and perfectly in
contact with quicksilver, that the particles are rapidly and
completely absorbed.
Mill-men are invited to examine these pans and settlers
for themselves, at the office, 229 Fremont Street,
San Francisco.

Important to Miners and Mill Men.

Silver-Plated Copper Amalgamating Plates,
for Saving Gold.

Of all sizes and in any quantity, furnished to
order. Full instructions sent for operating.
Particular attention given to plating goods for
Builders, Plumbers, etc. Hotel and Restaurant
work replated.
SAN FRANCISCO GOLD AND SILVER PLATING WORKS,
655 Mission street, San Francisco.
2125-3m E. G. DENNISTON, Proprietor.

CHARLES F. KIRCHNER,
Sampler and Crusher of Ores,
NO. 11 DRUMM STREET,
San Francisco.

ORE BAGS FOR SALE
IN QUANTITIES TO SUIT.
Apply to
CROSS & CO.,
316 California street, San Francisco.

Richardson & Co., Copper Ore Wharves, SWANSEA.

RICHARDSON & Co. have been for thirty years established
in Swansea as Agents for the preparation, Sampling, Assaying,
and sale of Copper, Silver, Gold, Lead, Zinc, and all
other Ores and Metals, for which they have extensive Ware-
houses and Wharves under cover, 1,000 feet of Quay Frontage
within the Floating Dock, and the most complete Ma-
chinery and Appliances. They are also prepared to make
advances against Ores in anticipation of realization, and to
guarantee all payments when required.
2125-17

RODGERS, MEYER & CO., COMMISSION MERCHANTS,

ADVANCES MADE
On all kinds of Ores, and particular attention
PAID TO
CONSIGNMENTS OF GOODS.
4115-3m

STRONG & CO., Metallurgical Works,

No. 10 Stevenson Street, near First, SAN FRANCISCO.
We purchase high grade Gold and Silver Ores, Bul-
lion, Etc. Ores worked and tests made with care; also,
Ore Assays of Gold, Silver, Copper, Lead, Tin, Iron,
Manganese, Cinnabar, Nickel, Etc.

LEOPOLD KUH,
(Formerly of the U. S. Branch Mint, S. F.)
Assayer and Metallurgical
CHEMIST,
No. 611 Commercial Street,
(Opposite the U. S. Branch Mint,
SAN FRANCISCO OAL, 7121-3m

ANDREW CRAIG,
Pres't.
A. C. PITTMAN,
V. Pres't.

JAN. W. WHITLATCH,
Supt.
JNO. L. MURPHY,
Secy & Treas.

CALIFORNIA Quartz Crushing & Ore Sampling MILLS.

Nos. 413 & 415 Mission st., bet. First & Fremont, S. F.



Ours is the OLDEST, LARGEST and MOST EXTEN-
SIVELY KNOWN establishment of this kind on the
Coast.

Our mills are under the direct supervision of one of
the most experienced Samplers and Millmen in the
country, and we purpose carrying on the business upon
a scale commensurate with the wants of the mining
public.

We have the best facilities for Crushing, Sampling
and Privetizing all classes of Gold, Silver, Copper and
Lead Ores and other minerals.
We also crush and pulverize all kinds of Marble,
Fire-Clay, Bricks, Cement, etc., upon the shortest
notice, for which we have special mills.

Reliable information furnished to miners and ore
dealers concerning shipments, freight, prices, etc.
Prompt execution of all orders. Faithful attention to
business entrusted to us.
Abundant storage room without extra charge.

Jan 31-11 "JIM" WHITLATCH, Supt.

E. N. RIOTTE, JAS. L. BEEBE, S. O. BROWN. AUBURN MILL COMPANY, Reno, Nevada.

Purchase Silver Ores in quantities of ten tons and up-
ward, delivered on board the cars at San Francisco or
Oakland at the annexed Net Rates, WITH NO CHARGE FOR
SAMPLING OR REDUCTION. On lots of less than 10 tons,
freight to Reno will be deducted.

Special Rates for Gold Ores.
On Gold contained in Silver Ores to the amount of \$30 and
upward, 65 per cent. will be paid. When less than \$30, and
above \$10, the amount will be added to the Silver value.
Sacks promptly returned free of charge. Ores sampled
by Battery or Sampling Mill as shippers may elect, and re-
turns made promptly by cheque on San Francisco.

Rates:

Value	Per	Value	Per	Value	Per	Value	Per	Value	Per
\$60	25	\$90	38	\$125	47	\$160	57	\$250	66
66	27	93	39	128	48	163	58	263	67
70	28	95	40	133	50	168	59	275	69
73	30	98	41	137	51	170	61	288	70
76	31	100	42	142	52	175	62	300	71
80	33	107	43	146	53	178	63	350	72
84	35	112	44	150	54	180	64	375	74
88	37	119	45	158	56	185	65	400	75

And on intermediate values in proportion.
C. A. LUCKHARDT, Agent.
21 First St., San Francisco.
S. O. BROWN, Manager,
Reno, Nevada. 3123-6m

Nevada Metallurgical Works, 21 First street.....San Francisco.

Ores worked by any process,
Ores sampled.
Assaying in all its branches.
Analysis of Ores, Minerals, Waters, etc.
Plans furnished for the most suitable pro-
cess for working Ores.
Special attention paid to the Mining and
Metallurgy of Quicksilver.

E. N. RIOTTE,
C. A. LUCKHARDT,
Mining Engineers and Metallurgists.

PLATINUM

Vessels, Apparatus, Sheet, Wire, Etc., Etc
For all Laboratory and Manufacturing Purposes
H. M. RAYNOR,
25 Bond street, New York.
Platinum Scrap and Native Platinum purchased.

The Phelps' Manufacturing Co., (Late S. F. Screw Bolt Works.)

MANUFACTURERS OF ALL KINDS OF
Machine Bolts, Bridge Bolts, and Ship or
Band Bolts.
13, 15 and 17 Drumm Street, San Francisco. 4124-17

TO PARTIES ABOUT TO BUILD.

AUGUSTUS LAYER
Has established his office at 215 Sansome street, near
California (over the bank), and is prepared to furnish
plans, specifications and superintendence for the con-
struction or renovation of dwelling houses and every
description of building.
Artificer's work measured and valued.
AUGUSTUS LAYER, Architect.
8 and 9 Cochrane Building, S. F.
Jan 24-1m

WATER PIPE. FOR SALE CHEAP.

WE HAVE ON HAND
5,000 FEET OF 4-INCH PIPE,
5,000 FEET OF 5-INCH PIPE,
Made of N. O. 16 Sheet Iron, which we will sell at a very
low price.
FRANCIS SMITH & CO.,
130 Beale street.
Jan 24-1f

Dunn & Kewin, Pattern and Model Makers,
Globe Iron Works, Nos. 143 and 145 Fremont street,
between Mission and Howard, S. F. 11238-6m

The California Powder Works

No. 314 CALIFORNIA STREET.
SAN FRANCISCO.
Manufacturers and have constant on hand
SPORTING,
MINING,
And BLASTING
POWDER.

OF SUPERIOR QUALITY, FRESH FROM THE
MILLS. It being constantly received and transported
into the interior, in delivered to the consumer within a
few days of the time of its manufacture, and is in every
way superior to any other Powder in Market.
We have been awarded successively

Three Gold Medals
By the MECHANICS' INSTITUTE and the STATE AG-
RICULTURAL SOCIETY for the superiority of our
products over all others.
We also call attention to our

HERCULES POWDER.

Which combines all the forces of other strong explosive
now in use, and the lifting force of the BEST BLASTING
POWDER, thus making it vastly superior to any other
compound now in use.
A circular containing a full description of this Pow-
der can be obtained on application to our Office.

16120-3m JOHN F. LOHSE, Secretary.

BLACK DIAMOND FILE WORKS.



G. & H. BARNETT,
Manufacturers of Files of every Description,
Nos. 39, 41 and 43 Richmond street,
Philadelphia, Pa.

Sold by all the principal hardware stores on the
Pacific Coast. 18125-17

San Francisco Boiler Works,

123 and 125 Beale Street.....SAN FRANCISCO
F. I. CURRY,
(Late Foreman of the Vulcan Iron Works,) Proprietor.
High and Low Pressure Boilers of all
Descriptions.

SOLE MANUFACTURERS OF THE CELEBRATED
SPIRAL BOILER.

SHEET IRON WORK of every description done
at the Shortest Notice.
All kinds of JOBBING and REPAIRING promptly
attended to. 17126-3m

Steam Boiler Manufactory

—OF—
JAMES H. SHANLEY, Successor to D. McDonald,
Oregon street, below Front, San Francisco.
All Sorts of Steam Boilers Made to Order
and Repaired.
Also, all kinds of Sheet Iron Work done promptly,
and at prices to suit the times. 11217

McAFEE, SPIERS & CO., BOILER MAKERS

AND GENERAL MACHINISTS,
Howard st., between Fremont and Beale, San Francisco.

SHEET IRON PIPE.

THE
Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,
Are prepared to make SHEET IRON AND ASPHALTUM
PIPE, of any size and for any pressure, and contract to
lay the same where wanted, guaranteeing a perfect
working pipe with the least amount of material.
Standard sizes of railroad Car Wheels, with special
patterns for Mining Cars. These small wheels are made
of the best Car Wheel Iron, properly chilled, and can be
fitted up with the improved axle and box—introduced by
this company, and guaranteed to outlast any other
wheels made in this State.
All kinds of Machinery made and repaired.
21222-3m JOSEPH MOORE, Superintendent.

GALVANIZED IRON.

For sale for cash, at 50 per cent. less than market
prices—Nos. 20 to 28. Also Galvanized Leaders and
Chimney Tops and Hydraulic Pipe manufactured.
MARTIN PRAG,
125 Olay street, below Davis.

CALIFORNIA THEATER.

BUSH STREET, ABOVE KEARNY.
JOHN McCULLOUGH.....Proprietor and Manager.
MR. BARTON HILL.....Acting Manager.
OPEN EVERY EVENING.
With the best Dramatic Company in the United States.
Box office open from 9 A. M. to 10 P. M. Seats
may be secured six days in advance.

DION BOUCAULT.

Prices of Admission:
Dress Circle and Orchestra.....\$1 00
Dress Circle and Orchestra, Reserved.....1 50
Balcony.....50
Balcony, Reserved.....75
Family Circle.....25
Boxes, according to location.....\$10 & 50
Doors open of half past seven; Commence at eight
o'clock. Jan 24-1f

FRANCIS SMITH & CO.,

MANUFACTURERS OF
HYDRAULIC PIPE

AND
Artesian Well Pipe.

Having the Latest Improved Machinery, we can make
it an object to

Mining & Water Companies

OR
WATER WORKS,

TO CONTRACT WITH US FOR
SHEET IRON PIPE.

ALL SIZES MADE AND ALL WORK GUARANTEED—

OFFICE AT 112 BATTERY ST.,
SAN FRANCISCO. Jan 3-11

HEALD'S
BRYANT & STRATTON
BUSINESS COLLEGE
24 POST ST. SAN FRANCISCO
OPEN TO ALL
SEND FOR CIRCULARS

The object of this school is to impart a thorough edu-
cation in business affairs. It is open to persons of both
sexes and of all ages. There is an English Department
for those not sufficiently advanced for the Business
Course. Sessions continue day and evening throughout
the year. Students can enter at any time. All wishing
to be successful should secure a practical education at
this College. Send for "Herald's College Journal," and
learn full particulars. Sent free to all by addressing
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THE OFFICE OF THE ECLIPSE, WINTERS AND
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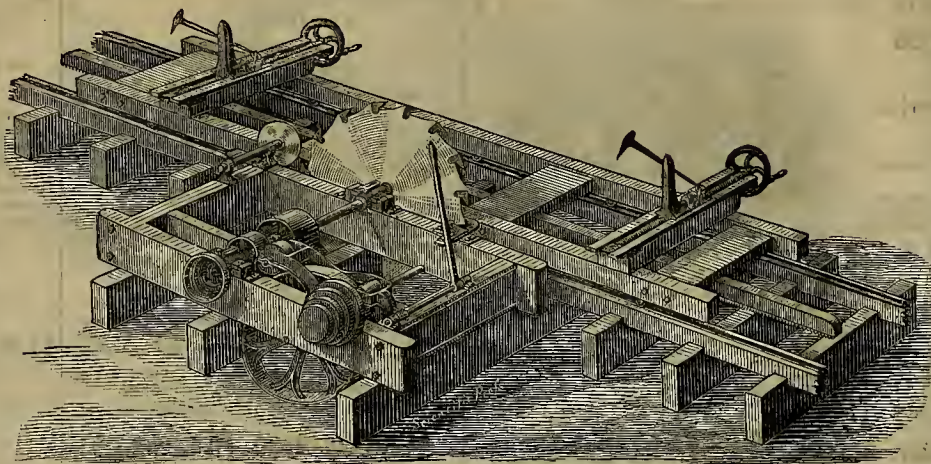
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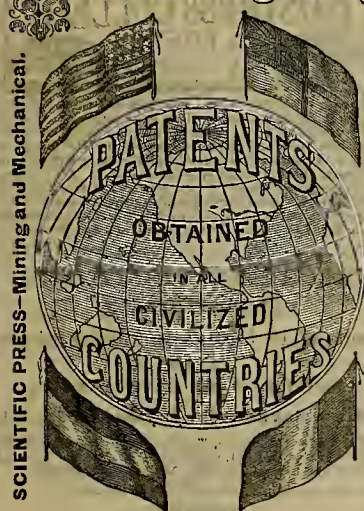
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SAN FRANCISCO, SATURDAY, FEBRUARY 14, 1874.

VOLUME XXVIII
Number 7.

Morris' Settler and Amalgamator.

The accompanying illustration represents an improved settler, recently patented through the Scientific Press Patent Agency, by Fredrick Morris of this city. It merits the attention of the mining community not only for its unusual cheapness, but for its efficiency in working and novel method of discharge. The machine has been in practical operation for some little time in this State and in Idaho. A fact that will attract the attention of all mill men is that the settler gains quicksilver in working tailings, as has been repeatedly proved in practice. The sides and bottom are made of wood, as are also the mullers, leaving only the running gear of metal. This, in itself, is an important feature, as it is easily and cheaply transported, as well as easily and cheaply made and set up. The castings, gear, etc., weigh altogether only 520 lbs.; the largest piece weighing 135 lbs. The whole thing will weigh no more than the bottom alone of an ordinary settler. As will be seen in the detailed description of the settler, the bottom is made of wedge-shaped blocks, fastened in a peculiar manner, so that there is not the slightest danger of the bottom bulging or getting out of place. The action of wood against wood brightens the quicksilver without "flouring" it, as any miner knows. The bottom blocks, used by Mr. Morris in the settler running at his place, were made of common redwood, and the revolving action of the mullers slightly roughens it, giving the quicksilver a chance to become brightened without "flouring." Soft wood is preferable to hard for this reason.

By referring to this cut the operation of the settler can be seen:

A represents a tub or vessel, which can be made of wood or iron, in the center of which rises the muller-supporting standard, *b*. The bottom of this vessel is covered with a layer of wooden blocks, *c, c*, placed with the grain standing vertically. Radiating wooden strips, *d, d*, separate the sections of blocks, *c, c*, at intervals extending from the center to the outer edge of the bottom. These strips *d, d*, consist of boards placed edgewise between the triangular sections of blocks and so that their upper edges will be somewhat lower than the surface of the blocks, *c, c*. Around the outer edge of the bottom a channel or deep groove is made between this wooden bottom and the side of the vessel, for the purpose hereinafter explained. The mullers, *G*, are also constructed of wooden blocks secured to the muller-arms with the grain of the wood standing vertically, so that all of the wear upon the muller and bottom will be upon the end of the grain of wood. By employing wood in this manner—for the bottom of the tub and for the muller—much better results can be obtained in the process of settling. The channel formed by the depressed strips, *d, d*, serves to convey any particles of quicksilver, which may become separated, to the annular channel around the edge of the bottom of the vessel.

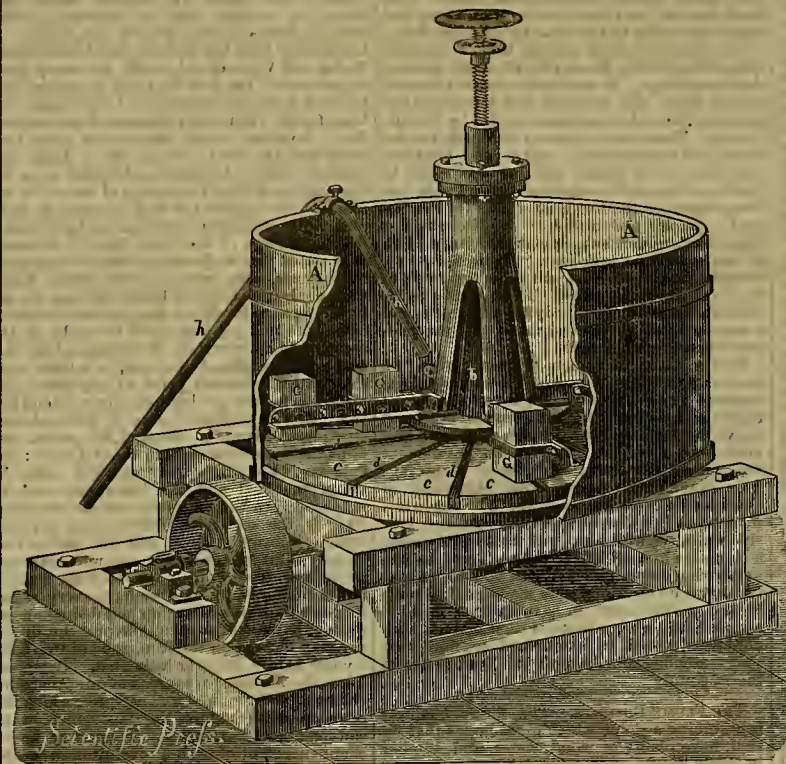
In order to draw off the water from the vessel a siphon, *h*, is employed which is secured upon the edge of side of the vessel so that its inside leg will come almost to the center of the pan. By means of this siphon the operator is enabled to draw off the tailings or slime from the center of the vessel, where, by reason of a less amount of agitation than at the sides, an eddy is formed, which is more favorable for allowing the heavier particles to settle than at any other point in the vessel; while at and near the sides the greater speed of the muller keeps the pulp in constant motion, so that a portion of the amalgam will always be drawn off with the tailings when the discharge is at the side.

This settler draws from nearer the surface than our engraving would indicate. It can be made of metal or common rubber hose, as is most convenient. The settler is easily cleaned up in half an hour, as the blocks can be removed without trouble. Making its sides of wood is a new and economical feature, as it saves cost of iron and transportation. The castings can be sent to any mine, and the frame work, mullers, sides and bottom, can be made by any carpenter. The blocks are set on edge like those in pavements, or in sluices,

and are easily changed when worn down. The wear and tear amounts to very little, as wood is cheap in the interior, and a neighboring tree will furnish all the blocks necessary. It will not cost more than \$4 or \$5 to make a new set of mullers, and new blocks for the bottom. Very little power is necessary to run the settler as the arms and mullers are light and the settler draws off the slime continuously. The wooden mullers and blocks can be used in iron bottoms, so that pans already running can be altered easily. The idea of using wooden bottoms is not new, but Mr. Morris' method of doing so is new. Although very simple it answers the purpose excellently, and the wedge-shaped bottom blocks do not bulge or crack. His idea of drawing the slime is a good one, as any mill man will readily see.

Locomotive Bell Ringers.

Engine number eight, belonging to the S. P. R. R., is one of Booth's make, and was built expressly for yard work, it having to make up trains, do the switching, and all the general work of moving cars in the yard and about the depot. Since its first advent on the road, it has done some good work, and as a natural consequence it began to show visible signs of wear and tear, that refused to allow themselves to be overlooked; consequently she was hauled off the road, and put on the stocks in the machine shop for general repairs. Her inside fire-box was found to be in a very defective state;



MORRIS' SETTLER AND AMALGAMATOR.

Mr. Morris furnishes whole pans if desired, but prefers to sell only the castings and let the miners put up the woodwork themselves, as it is easier made on the ground. Parties owning mines or localities where freight is high and roads bad, as in some of our mountainous districts or in Mexico, will be glad to know there is a settler which will not cost a fortune to transport. Mr. Morris informs us that he will furnish these pans complete for \$250. He will furnish castings and right to use for \$175. He has been very successful in separating magnetic iron amalgam with this pan, in localities where the magnetic iron created difficulty in pans. One of these settlers is running daily at Mr. Morris' office, 616 Merchant street, where those interested can see it.

CROWN'S ENGINE, which we described last week, has been placed on a dummy locomotive on the Alameda horse car line in San José. The locomotive was put up at McKenzie's foundry, by Mr. Mitchell. It is said to possess great speed and power, though it is quite small. It will be run outside the city limits, as the authorities will not allow it to run in the city.

MINERS are leaving Pioche daily for the Stickeen country. They will rendezvous at Victoria, B. C., until the weather will permit of their going to the mines. From all accounts the Stickeen River country is a pretty severe one to work in.

this was taken out bodily, and a new one put in its place by the foreman boilermaker, Mr. J. Kelshaw, who also put in a new set of flues. The link motion, slide valves, axle boxes, and all the general machinery of a locomotive, were carefully examined, and thoroughly repaired, so that when a few days ago the engine took up her old position in the yard, it was with a feeling of safety, satisfaction, and pleasure that the engineer saw her settle down to the work, just as good again as when she first left Mr. Booth's shop.

But there was one new feature added during the sojourn in the machine shop, that could not but arrest the attention of any passer by who might be near, while the engine was in motion. This is what is popularly styled the bell ringer, or the "lazy fireman's assistant." As the engine is continually at work at various points about the city, and in consequence repeatedly crossing and recrossing the streets, it was deemed essential to adopt some method by which the bell should be continually sounded as a warning to those near, and as the employees in charge of the engine could not be always pulling at the bell rope, an extra hammer has been affixed to the frame of the bell, which, by means of rods and levers, is alternately raised and allowed to fall again, striking the bell as it does so. Motion is communicated by the eccentric, thus giving one blow on the bell for every revolution of the driving wheel. But if the hammer were allowed to strike the bell and remain there until

lifted for the next stroke, of course it would kill the sound. To counteract this difficulty, a cleverly arranged spring, thoroughly tempered, is placed in such a position, that the force of the downward blow allows it to give enough for the hammer to strike the bell, yet on the very instant of striking it lifts the hammer from the bell, thus enabling the apparatus to strike a good ringing blow, so essential on the locomotive. Although looked at from a mechanical point of view there are faults and blunders in its construction, yet the idea is good, and we should thank the S. P. R. R., for having adopted it, and the genius of its inventor for having used his brain to such good purpose. Its chief faults are that the hammer is too small, and the fall too little. Altogether it gives the idea of being in a cramped position, and too close to the bell. If the fulcrum had been thrown further out, and a longer lever and heavier hammer attached, the results would have been more satisfactory; as it is, the sound produced is not loud enough. But as this is a maiden attempt of this style of bell ringer, at least in this city, it would be ungenerous to be too critical, but we will accept it in the spirit with which it is offered, as expressing a desire on the part of the railroad authorities to do all in their power, to avert the danger of any casualty occurring on their all too exposed road in and about the city.

Another style of bell ringer for locomotives has been in use some little time past on the C. P. R. R. on the local road from Oakland wharf to Brooklyn and Alameda. On that road there are three trains running continually from half-past five in the morning until half-past twelve at night. These trains run through the streets for most of the distance. The bell ringer on those locomotives is so arranged as to work by steam, but is not connected with the running gear of the engine. A very small independent cylinder is attached to the rear end of the boiler near the cab-window, and its piston is connected to a short crank on the trunnion of the bell by means of an iron rod. By this means the bell is made to ring continuously and at regular intervals, without reference to the speed of the engine. It can also ring when the engine is not in motion, an advantage not possessed by the other bell ringer spoken of above. By so doing the bell can be rung before the engine starts up without having to handle the usual bell rope. We have often heard people express surprise as to how the engineer or fireman was able to keep the bell ringing with such unvarying regularity of stroke for so long a time, when they did not know that machinery was doing the work. It is found very convenient and advantageous, and some device of the sort should be used on all local roads and on yard engines where there is any danger of accident. This also is, we believe, a California invention.

How Mark Twain Got "Beat."

Our friend, Almarin B. Paul, tells us a pretty good thing on "Mark Twain" as a quartz sharp, which we do not recollect ever hearing Mark say much about, in his mining experiences. Perhaps he was afraid of incorporating too many facts in his book, and this came to near home to suit him. Just after Mark returned from the Sandwich Islands to this city, he was hard up for something to do if not for coin; and to make a raise, concluded to do what many others in a like situation were trying to do—sell a mine belonging to a friend. Among others, he consulted Paul on the subject, who like all the others gave him plenty of advice if nothing else. Mark's plan was to make a large interest in the mine clear. His arrangements went on very nicely; his descriptive and persuasive powers were irresistible, and the mine was sold. When this happy consummation was reached, Mark, of course, expected to have his interest, which was not forthcoming as anticipated. It ended by his not getting the interest at all. One day Paul met him and asked how it was he "got beats o' bad." "Wall," says Mark, "the fact is, I talked so well and made the feller believe the mine was so valuable, that he couldn't help but take it all."

THE SATURN SMELTER at Sandy, Utah, has cleaned up 11 tons of base bullion in 26 hours' run.

Bullion Product of Nevada.

The *Territorial Enterprise* says: The estimates by Wells, Fargo & Co. of the bullion product of Nevada for 1873, as published by us on the 1st of January, is \$35,264,507. This gives \$881 to the inhabitant, estimating our population at 40,000. This is an increase over 1872, estimate made by the same firm, of \$13,177,462, the total product for that year being put down at \$22,077,045. The question naturally arises: Will the mines of Nevada increase their bullion product of 1874 over that of 1873? If this question is answered in the affirmative, then on the Comstock lode depends not only the increase, but, it would seem, nearly the whole production. From present appearances, the mines in the eastern portion of the State, with the exception of those in Eureka, will prove to be almost barren of product this year. The great Raymond and Ely mine of Piocha is flat. A report of the condition of the mine has been published. Its condition is little better, if any, than was stated by the San Francisco *Chronicle*. Its total liabilities are set down at \$125,000, and its assets at 184 tons of ore, there being no cash on hand. Its production for 1873 has been \$2,500,000, and its expenditures the same amount. This has brought its stock in the Board down as low as \$26 per share, and where it will stop time alone can tell. Then there is Belmont, about which so many stories were told only a few months ago. Its stock has dropped to \$5.50, and the reports concerning the mine are very discouraging. We are sorry for these facts and statements. They show instability in mining, outside of the Comstock.

Every one remembers the marvelous richness of White Pine, the pure horn silver taken from the Ebshardt and Consolidated Chloride Flat mines, and how soon the ore was exhausted. Now the mines of Piocha, developed after the exhaustion of the White Pine mines, are flat in the market, and give no promise of large bullion production this year. But the mines of the Comstock never looked so well as now. They will produce more bullion this year than in any previous one since their discovery. The Belcher and Crown Point, the two great dividend paying mines, never showed such large bodies of ore as at present. They will continue to pay large and regular dividends throughout the year. The Consolidated Virginia will also become a dividend paying mine shortly. Then there is hope that the Ophir—once one of the richest of them all—will resume its old place in the list of dividend payers. The Consolidated California is heir to a portion of the rich body of ore now being worked by the Consolidated Virginia. And all along the line, between the latter named mine and the Crown Point, ore bodies are liable to be struck at any time. And the deeper they are found the greater they become. Commencing with the month of February, 1863, and ending with December of that year, eleven months, the Gould and Curry mine took out the sum of \$3,900,000. This was considered an extraordinary yield that it was harried throughout the world. Last year Belcher distributed nearly double that amount in dividends, and its ore body looks better now than it did a year ago. The permanence of the ore bodies possessed by the Crown Point and Belcher will do much towards stimulating prospecting southward of those mines, and even to the northward of Ophir. What the results will be time alone can determine. But no one conversant with the condition of our mines to-day doubts that the bullion products of the Comstock will be largely increased in 1874 over 1873. That it will produce more than the entire State did last year is not only possible but probable.

Quartz Mines of Sierra County.

The Sierra Buttes mine, now regarded as the most valuable and extensive gold mine of Sierra county, and, perhaps, in the State, is situated on a steep mountain side, 1,500 feet above the valley of the south fork of the North Yuba, and about 5,000 feet above the level of the sea, three-fourths of a mile from Sierra City and twelve miles from Downville. The mine is situated upon a lode which is split up into three branches with intervening lodes of hard blue slate between of the same character as the lodes. The principal branch is called the Ariel ledge, and one of the other two is known as the Roae. The course of the lode is northwest and southeast, and the dip forty-five degrees to the northeast. The rock is extracted through tunnels, of which there are seven. The lowest is on a level with the mill, the horizontal distance from which to the uppermost workings is 1,400 feet. The altitude of the mine above the Yuba gives splendid facilities for working and drainage for years to come, and there is a probability of the mine being worked and drained through tunnels to the depth of 3,500 feet in the lode. The Sierra Buttes Union Company having recently purchased the claims of the Buttes Union Company, rumor says for \$10,000, there has been a dispute for some time between these companies in regard to the boundary line between the claims, and this purchase and sale has settled the matter at issue to the satisfaction of the parties concerned.

This mine has been worked without interruption for twenty-two years, up to the present time. From 1855 to 1857, by Messrs. Wood & Illingsworth. It was at first worked with arrastra, and the quartz rock carefully assorted, averaging from forty to fifty dollars per ton. The amount of gold taken out, up to 1857, is estimated at \$250,000. In 1857, Alexander Baines and Reis Brothers purchased the prop-

erty; two miles were constructed, one of sixteen and the other of twelve stamps, both being worked with the same water, one below the other. The water was conveyed by a flume to the mill from the neighboring ravines. During the summer season, the supply of water not being sufficient to run all the stamps, the Reis in connection with the Independence Company, had a survey made for the purpose of ascertaining the feasibility of procuring water from the lakes on the north side of the Buttes. Finding that water could be had from this source, a flume and ditch, seven miles long, and two and a half feet wide, was constructed, conveying the surplus waters of the Sardina lakes to the mine. Half of this water was taken to the Independence, and a portion back again to the Sierra Buttes mine. This mine was worked by the Reis Brothers with varying success for thirteen years. What the gross or net proceeds have been during this time we are unable to say. It is known, however, that they have acquired a large fortune.

In 1870 the present owners, an English Company, purchased the property for \$750,000. They have been to an immense expense in putting up substantial buildings and the most improved machinery. A forty stamp mill was built in 1871. In 1872 the two old mills were taken down and one's twenty-four stamp mill and another of twenty stamps were built on the same ground. The old flume, built by Reis, conveying the water from the lakes to the mine was taken down and a substantial flume, three feet wide, constructed in its place; branch flumes, were built conveying the water from Packard and Salmon lakes to the main flume. Dams were constructed across the outlets of these lakes to retain the water in the spring which is let out into the Company's flumes as fast as needed, and several new and substantial buildings have been erected in the vicinity of the mine, among which we might mention three large boarding houses, one two hundred feet long and three stories high, capable of accommodating two hundred men. A good road was built from the timber regions at the head of ladies' Cañon to the mine. This road has an easy grade, is two miles long and twelve feet wide in the clear in solid ground.

The Sierra Buttes quartz ledge is the first quartz location in Sierra Co., of which there is any knowledge. It was discovered in the summer of 1850. Old residents well remember the great excitement at the time, caused by the discovery. There was a general stampede for the Butte to secure claims, and several locations were made. A public meeting was called to meet at Craycroft's saloon in Downville, for the purpose of framing quartz laws for the district. At this meeting J. Webb Nicholson, a one-armed miner, subsequently County Clerk of this county for four years, was elected quartz recorder, and the sequel will show it proved to be a very profitable office. The quartz excitement was intense; everybody talked quartz, and a man who did not own a quartz claim considered himself unfortunate.

Scores of excited men traveled over the mountains hunting for quartz. Some, taking lanterns to assist them in their explorations at night; and whosoever a quartz boulder appeared above the surface of the ground, a location was made and recorded. The quartz excitement was about subsiding, when rich croppings were found on the point of the ridge north of Downville, now known as the Wheeler ledge. As soon as this discovery was known, the hill-side was alive with men, each anxious to secure a claim for himself and friends. Trees in the neighborhood were patched with notices. About two hundred locations were made, and if some of the parties were to have a survey made to ascertain the whereabouts of their claims, they doubtless would be astonished to find that they extended far beyond the boundaries of Sierra county.

THE FLUME BUSINESS.—The flume business is assuming a shape which gives hope that we shall have plenty of wood, water and lumber in Grasa Valley, at an early day, and at reasonable prices. Gentlemen connected with the South Yuba Canal Co. will take stock in the proposed flume or flumes, and that fact will guarantee that water for floating lumber down from the mountains can be had all the year, save when snow and frosts interfere. We understand that over in the Truckee region the Prosser Creek flume, which is about 7 miles long, cost about \$27,000, and the flume 5 miles long cost about \$25,000. Mr. Seth Martin, of Truckee, who has had much experience in building flumes, and who is well acquainted with the topography of the country over which the flume of Nevada city and Grasa Valley will run, thinks that from \$1,200 to \$1,500 a mile will be the cost of such flumes. The flumes for floating timber require less grade than do the ditches used for conveying water to the mines, and they will do effective work with as many curves as may be necessary in their construction.—*G. V. Union.*

SHIPBUILDING ON THE CLYDE.—The shipbuilding trade of the Clyde for the year just ended shows no falling off in that branch of industry. The actual number of vessels built was smaller than in some preceding years, but the aggregate tonnage was much larger. Last year the aggregate tonnage launched was 37,506 tons above 1872, 65,300 tons above 1871, and 71,700 tons above 1870. The foreign services, for which the larger vessels have been built, are the following: East India trade, 30; China, 15; South America, 18; New York, 20; Canadian, 1; Spanish, 5; Mediterranean, 9; French, 8; Baltic, 4; Australian, 10.

Calistoga Mines.

A correspondent of the Napa *Register* says: On Saturday morning quite an excitement was created here by the report of another discovery of a gold and silver ledge. This discovery was made by Messrs. J. W. Norton and R. S. Hanson, and is about 1½ miles distant and in full view of town in a northeasterly direction, and is called the Calistoga Ledge. This ledge crosses the new proposed Knoxville road, is well defined, and can be traced for a distance of one mile. The lucky owners feel "bully," and are already laying plans for a good time, fast horses, plug hats, etc. Some of the rock was sent below on Tuesday for assaying. Alar Badlam was up again on Saturday, and informs us that preparations are being made to erect a mill at the Mt. St. Helena mine, to be built as soon as spring opens.

Budd Philpot brought down 15 flasks of quicksilver from the Sonoma mines on Saturday last. I understand that there are a number of flasks at Pina Flat taken from the Missouri, awaiting transportation. The fever is running so high at Pina Flat that Gresh Thompson informs us that the ladies of that thriving little burg spend their leisure hours in prospecting the hills for cinnabar, and often come in with aprons full of rocks. Rav. Mr. Daubenspeck arrived from Pina Flat on Tuesday, and says he has struck it "big"—has got enough to make him rich, and then he will have nothing to do but "blow the gospel trumpet." Quite a skirmish took place at Pina Flat on Sunday evening between two of our former citizens. Considerable blood and hair was "thrown around loose," but both parties still live.

IRON MANUFACTURE IN THE COLONIES.—A communication which we have received from Sydney should make masters and men in the iron trade pause before allowing the wages question to interfere with the result of their united labor. We are told, upon what appears to be reliable authority, that within the last few months discoveries have been made in New South Wales which will shortly enable that colony to supply iron of superior quality cheaper than any other part of the world. At the present time the iron works of New South Wales and Victoria only work up scrap iron, on account of the fact that the necessary materials for the manufacture of iron have not been found within easy distance of one another. Now, however, such discoveries have been made that the chief necessity for a large production of iron at a small cost is that of a few ironmasters with a knowledge of the value and mode of development of such property as easily obtainable. Capital is abundant in the colonies; it is knowledge of the trade that is required. It is stated that so favorably situated as regards minerals are some parts of North South Wales, that coal, ironstone, or limestone can be put in the furnace for 5s per ton, and our informant calculates that pig-iron could be made in this colony and delivered in Wolverhampton at a cost not exceeding £4 per ton, or a little more than half the present price of pig-iron. The materials for the production of iron extend over very many thousands of acres in these colonies. One piece of land, of about 2,000 acres, contains these materials within about 4 miles; that is to say, in one line, there are 2½ miles between the coal and the limestone, and 1½ miles between the limestone and the ironstone. This is the case near Wallarawang, 3½ miles from a railway station, and 105 miles from Sydney. Our Australian correspondent is known we believe, to several of the leading firms in South Staffordshire, and we have every reason to think that his statements and deductions are quite reliable. If so, the influence the discovery may have upon the iron trade of this country can hardly be over-estimated. Those who know the immense resources of our Australian colonies, and the field for enterprise which they open up, will recognize the importance of the statements we have made. They may be the commencement of such a revolution in the iron trade as may entirely change the circumstances of this district, with its worked out collieries and its numerous trade disputes. As we said at the commencement, masters and men should learn a lesson from the report, let them "make hay while the sun shines."—*Wolverhampton Chronicle.*

YUBA COUNTY COPPER MINES.—One ton and a half of pure copper was shipped from Wheatland on Saturday, the 31st ult., to J. Hendy, San Francisco, taken from the mine of the San Francisco Copper Smelting Company, located at Spencerville, about ten miles from Wheatland, where the company have large works erected for smelting ore. The shipping of copper from Wheatland this summer will be quite an item, as already quite a quantity of ore awaits smelting. They have gone to great expense in the erection of their works, and they are proving a success beyond a doubt. A great many old claims that were abandoned will be worked and made to pay, as the pure copper will be shipped in the future, instead of the ore as heretofore.—*Marysville Appeal.*

KLAMATH RIVER DEPOSITS.—At the Legislature, Irwin has offered a long, concurrent resolution, reciting that under the Klamath river it was supposed there were rich placers, and that if the river could be tunneled, rich mineral deposits would be likely to be discovered, to the great advantage of the State; and that Congress be solicited to pass a bill granting to Edward Bean and his associates the right of way for such tunnel, and title to so much of the bed of the Klamath river as may be drained. Referred to the Committee on Mines and Mining.

The Nevada Ice Company's Works.

We extract from the local columns of the *Truckee Republican* the following account of the method employed in gathering and storing ice at the works of the Nevada Ice Company, between Prosser creek and Boca. It will be found interesting, and the magnitude of the business merits attention:

The ice buildings are three in number, each building being 200 feet long, 35 feet wide and 20 feet deep. These buildings run parallel with each other, and are separated only by a partition. The ice is drawn up from the pond into the end of the building on two endless chain elevators. These elevators are 220 feet in length, and pass over a grooved tramway about two feet wide. Attached to the endless chain every ten or twelve feet, and on the upper side, is a wooden block. In revolving, the chain or elevator reaches down beneath the surface of the ice pond. The ice is cut into blocks about 20 inches square, and floated to the spot where the elevator, with the wooden blocks fastened to it, emerges from the water. The blocks catch the square "caks" of ice and hurry it up the tramway to the top of the building, from whence it descends on an incline made of scantling to such a point in the storage room as may be desired. The chain elevator moves about as fast as a man can walk, and from ten to twelve cakes of ice are moving upward at one time. The ice company were storing yesterday was about sixteen inches thick, and the cakes passing up would average about 300 pounds each. With both elevators in full operation, we were informed that no less than fifteen tons can be sent up per minute from the pond to the building.

From 3 o'clock Monday afternoon until last evening (about twenty-three working hours) the company elevated from their pond and stowed away 4,000 tons. A portion of this time only one elevator was used. To accomplish this task sixty-five men were employed on Monday and Tuesday, and less than fifty on Wednesday. About one-third of this force was required to saw the ice into blocks of required size and float them along to the elevator. The remainder of the force were busy inside the building receiving the ice and storing it away in regular layers. For working the elevators a steam engine of thirty horse power is used. The company's ice pond covers about four acres. Water is obtained by a dam thrown across the river immediately above the pond. At the lower end of the pond is a sluice gate ten feet wide. In case the ice should be covered with snow, all the company have to do is to turn on a flood of water from the river, and the snow is swept away from the sluice-gate. If the company should have their pond filled with poor ice, unfit for storage, they saw or break it up into large cakes, and turning on the desired head of water from the river, it is floated out through the sluice-gate in a similar manner. The company have in their buildings about 7,000 tons of ice. The storage of the three buildings is 10,000 tons. If the ice season warrants it, they will put up 8,000 tons more. Last week they loaded and shipped forty cars, carrying 400 tons, in one day. This shipment was for the Railroad Company, and was sent principally to Wadsworth, Humboldt City and Carlin. The Railroad Company has ice houses at those points for the purpose of supplying passenger trains on the alkali deserts of Nevada in the summer time with cooling beverages. The Nevada Ice Company was incorporated in 1870.

MONTANA QUARTZ MINES.—A recent issue of the *Dear Lodge Independent* contains the following item: We received a specimen of very rich ore, taken from the Trappar lode in Beaverhead county. The sample was sent by Chas. De Lorimer, and Wm. Purvine writes as follows: "The sample sent will assay at the rate of \$3,000 per ton. The ore as it comes from the mine assays—first class—from \$300 up in the thousands, and will average \$600 per ton; second class, from \$100 to \$250 per ton; and third class, from \$40 to \$100 per ton. There is now about 30,000 worth of ore on the several dumps, with an abundance in sight in the various lodes, all of which are looking well. The mines are easily worked, the principal tools required being the pick and shovel. The district is easy of access, and only about \$2,000 will be required to complete a good wagon road from Brown's Bridge, on the Big Hole, to the Trappar lode, the building of which has been proposed. Sixteen men are now engaged in the mines, and all believe that the district will very soon be making regular shipments of bullion that will surprise all that have not seen the mines." Certainly our quartz interests are looking up, as almost daily we hear of important discoveries being made—among them, many lodes containing ore that pays well for shipment.

IN LUCK.—The Nevada *Transcript* of the 1st inst. says: J. H. Helm, superintendent of the Gold Tunnel mine, is in luck. He has long been engaged in prospecting the mine, hoping to strike a lead that would pay him for his outlay and time. But for weeks and months things looked despairing, so much so, that on more than one occasion, Mr. Helm felt disposed to give the thing up as hopeless. He, however, like a drowning man that catches at a straw, persevered, and now has the gratification of knowing that his labors, toils and expenditures were not in vain. He has struck a ledge three feet wide, that is said to be extremely rich in gold deposits, that will pay on an average \$100 to the ton.

MECHANICAL PROGRESS.

The Wiard Gun.

Several important competitive tests of heavy ordnance have recently been made by the government ordnance officers at Boston. For the purpose of the experimental test there were provided two guns of 23 tons each, and of 13 inch caliber. One of them was the common smooth-bore, and the other was rifled in accordance with Mr. Wiard's invention, but in other respects there was no difference whatever. One hundred and forty pounds of powder—the largest quantity of ammunition ever used in a gun—was fired from each, and the projectiles were respectively of 460 pounds weight. The targets consisted of wrought-iron plates of 15 inches in thickness; and they were erected side by side, 150 feet distant. The projectile was conical, while the one fired from the common smooth-bore piece was necessarily round. The one first named went clean through the 15 iron plates, and out of sight into a sand bank in the rear. The demolition of the almost invulnerable target was complete, and so great was the force with which it was struck that a fragment of 300 or 400 pounds was thrown clear across the island, a distance of not less than a quarter of a mile. The projectile from the smooth-bore gun penetrated the target only about $6\frac{1}{4}$ inches, and as the advantages were precisely equal the superiority of the rifled arm was at once established by the experiment, and admitted by the government authorities of observation. Compared with other competitive tests, this style of gun is the most destructive ever yet produced. A 35-ton gun of 12-inch caliber once fired in England through an iron plate of 12 inches in thickness, showing the comparative penetrating power of that arm to be about 144 against 225 of the gun at Nat Island.

This improvement, as the government understands it, does not involve the manufacture of new guns to secure it. Take the present armament of our forts, just as they are, and they can be rifled at one-tenth the cost that new guns can be manufactured, and, at the same time, their efficiency as smooth-bore ordnance is not in the least impaired; and, including the cost of rifling, the arms will be cheaper by one-tenth than the best English guns, and for destructive powers their efficiency can hardly be equalled.

Under this improvement it is claimed that the rifled guns belonging to the United States government may be made to have greatly increased efficiency, endurance, penetration of iron plates, higher initial velocity to the shot, much longer range and improved precision; while the guns of the smooth-bore will remain essentially as good, or be better, smooth-bore guns than they now are, and, if rifled, they may be, after the improvement is applied, used effectively as smooth-bore guns if desired. By this means all the spherical projectiles now on hand may be utilized, and all carriages, implements, platforms, ordnance stores and service of the gun may be made available. The improvement consists in rifling each gun with two grooves, having for a 15-inch gun a twist of about one full turn in 50 feet, and so stationing the grooves at the side of the bore that neither groove will intersect or cross the bottom or top of the bore, thus leaving it smooth at the bottom and top where the shot would strike in "ballooning," should the gun be used as a smooth-bore for spherical projectiles after being rifled.—*Iron Age*.

NEW AGRICULTURAL MACHINE.—The *English Mechanic* says: Messrs. McDonnell and Lanchan, of Dublin, have invented a machine which performs the operations of rolling, sowing and harrowing simultaneously. The roller is of wrought iron, riveted on cast iron wheels, forming a cylinder six feet in length by three feet in diameter. Immediately above the roller is a sowing apparatus, by which the seed is rapidly delivered, a star wheel of four points keeping the conductors in constant motion. As the seed is sown, a harrow of four rows of oblique teeth, set in a central axis, turns up the earth over the seed. The harrow is kept in motion by an endless chain or belt which passes round the extreme end of the large cylinder, and fits the groove of a small wheel at the corresponding end of the harrow. Every time the large roller turns over, the circular harrow turns nearly five times, causing the teeth to tear up the soil about twenty times at each of the revolutions. Meantime the seed conductor and distributor rises and falls twelve times during each of these revolutions, and there is a contrivance by which the quantity required to be sown can be regulated. A lever is also connected with the supports of the harrow, and rests upon a fulcrum placed at a suitable part of the frame of the machine. By means of this lever, the harrow portion of the machine can be raised off the ground and the roller only used; and the distributor or sower may be worked simultaneously, by means of the chain-belt, which can be closed, and the flow of seed stopped. The machine can be easily made to suit either the purposes of sowing corn or grass for pasturage.

DETROIT is to have a self-propelling steam fire engine. Its preliminary trial in Manchester, N. H., resulting satisfactorily, as it climbed the various grades it had occasion to ascend very easily, and turned corners with little if any loss of power.

An Ancient Lathe.

In continuation of articles recently published in this journal, on anticipated and parallel inventions, we take the following description of an ancient lathe from the correspondence of *Engineering*:

The most uncivilized people are not always the most unhandy, and certainly it is a curious fact that nearly all of the most striking mechanical ideas of the present day have ancestors of a greater or less degree of perfection. I beg to attract your attention to a very curious class of exhibits in the Vienna International Exhibition—I mean the pavilion containing the articles exhibited by the Austrian Ministry of Commerce and Agriculture. Besides many interesting objects, we there find turned objects of wood, such as wooden glasses, bottles, basins, etc., manufactured by the Huculens, the remnants of an old Asiatic nation which had settled at the time of the general migration of nations in the remotest part of Galicia, in the dense forests of the Carpathians. These people manufacture the articles named above, and the instrument they are using for turning them is worth noticing, seeing that it has been employed unaltered since time immemorial. If a Hucule wants to manufacture a turned basin, bottle, etc., he arms himself with a chisel, a hatchet, and a rope, and enters the dense forest which surrounds all human habitations in his part of the country. After having cut the tree out of which he wants to manufacture the desired articles, he looks round for two trees of about one foot or two feet in diameter, and sufficiently close together for his purpose. But it is an essential point in selecting these trees that a young maple or beech should also grow near at hand. Having found this necessary combination for the work to be done, the Hucule makes two holes at a proper height in the two trees, and inserts in these opposite holes maple cones, serving as dead centers. One of these cones is fixed, and the other removable. The wood-bank to be turned is then prepared with the hatchet, so as to be fixed between the centers, and is fitted at one end with a small cylindrical part, to take up the rope for giving a rotary movement to the piece of work. The rope is then taken two or three times round the small cylindrical part, and is attached to the top of the young maple. The lower end of the rope is fastened to a piece of wood, which, at its other end, is attached to one of the roots of the tree, and thus serves as a foot-board. After this the man fastens a cross-bar to the trees, and begins to turn with his chisel whatever he wants to produce.

It is clear that this lathe has a reciprocating motion; but, nevertheless, the objects manufactured with this primitive machine are nicely turned, and do not lead to the supposition of so rough a tool. In conclusion, the writer says: No doubt this mode of constructing lathes is simple, and of no great expense, and the idea may in some occasions prove to be useful, though I do not fear that this newly-discovered form of lathe will beat Mr. Whitworth's out of the field.

THE two machines which best exhibit what the ingenuity of man can do are the watch and the railroad engine. That a machine so small that you may cover it with your fingers in the palm of your hand should be so exquisitely constructed that it reduces the element of time almost to absolute accuracy, in spite of contractions and expansions of cold and heat—so firmly put together that it feels no disturbance of jars in the train, jolts in carriages, nor the endless motions of one's person, riding, running, rowing, jumping—so strong and firm, and yet to be made of parts as fine as a hair and far more supple—must excite admiration in every one who reflects upon the great difficulties to be overcome, and how nearly they are entirely vanquished. There are some who regard the railroad engine as still more wonderful. The perfection to which it is now brought makes it a marvel which no familiarity seems in the least to diminish. The tremendous power which it generates, the capacity of draught, the speed it attains, its perfect docility, the ease with which it does its complicated work, have no parallel among human inventions.—*Nat. Car Builder*.

NAPHTHA AS FUEL FOR LOCOMOTIVES.—The Russian Steamship and Railway Company announce that they have found naphtha, for steam generation in locomotives very advantageous. The material employed by the company is the crude oil from the Caucasian and Volga regions, and compared by weight the amount consumed was about one-half that of coal. The arrangement for burning naphtha is stated to be of such a nature that no difficulty will be experienced in substituting one for coal consumption in place of it, should it be found desirable to do so.

THE Italian army will probably soon be armed with a repeating rifle, as eighty-four of the Vetterli rifles are about to be supplied to each line regiment as an experiment. This weapon is already adopted by the Swiss Government for its troops. It carries the spare cartridges in a long chamber underneath the barrel, and can fire twelve shots in succession without being removed from the shoulder.

It is stated that a mill has been recently started in England in which flour is made by crushing the grain by small trip hammers instead of grinding it.

SCIENTIFIC PROGRESS.

How do Insects Hear?

In a recent paper read by Professor Moyer, before the National Academy of Science, he gave an account illustrated by experiments, of what he supposes to be the organ of hearing in insects. From an abstract of this paper published in the *New York Tribune*, we extract the following:

"Placing a male mosquito under the microscope, and sounding various notes of tuning-forks in the range of a sound given by the female mosquito, the various fibers of the antennae of the male mosquito vibrated sympathetically to these various sounds. The longest fibers vibrated sympathetically to the grave notes, and the short fibers vibrated sympathetically to the higher notes. The fact that the nocturnal insects have highly organized antennae, while the diurnal ones have not; also the fact that the anatomy of these parts of insects shows a highly developed nervous organization, leads to the highly probable inference that Prof. Moyer has here given facts which form the first basis of reasoning in reference to the nature of the auditory apparatus of insects.

"These experiments were also extended in a direction which added new facts to the physiology to the senses. If a sonorous impulse strikes a fiber so that the direction of the impulse is in the direction of the fiber, then the fiber remains stationary. But if the direction of the sound is at right angles to the fiber, the fiber vibrates with its maximum intensity. Thus, when a sound strikes the fibrils of an insect, those on one antenna are vibrated more powerfully than the fibrils on the other, and the insect naturally turns in the direction of that antenna which is most strongly shaken. The fibrils on the other antenna are now shaken with more and more intensity, until, having turned his body so that both antennae vibrate with equal intensity, he has placed the axis of his body in the direction of the sound. Experiments under the microscope show that the mosquito can thus detect to within five degrees the position of the sonorous center. To render accuracy doubly sure, Prof. Moyer having found two fibrils of the antennae of a mosquito which vibrated powerfully to two different notes, measured these fibrils very accurately under the microscope. He then constructed some fibrils out of pine wood, which, though two or three feet long and of the thickness of small picture cord had exactly the same proportion of length to thickness as the fibrils of the antennae of the mosquito. He found that these slender pine rods or fibrils had to each other the same ratio of vibration as the fibrils of the mosquito."

ANILINE COLORS.—Professor Kopp, who has recently made a careful study of the aniline colors at the Vienna Exposition, says that the manufacture of these pigments from coal tar products is making most remarkable progress. Fuchsin, constituted by a salt of rosanilin, is obtained exclusively by the reaction of arsenic acid on commercial aniline. In order to afford an idea of the enormous consumption of this violent poison in the manufacture of fuchsin, it is stated that in Germany alone the same is estimated at 3,300,000 pounds a year. It is only lately that the residues have been treated to regain the arsenic in commercial form. M. Kopp mentions, as a novelty, a beautiful rose-colored coloring matter, called saffronin; which, upon silk, is a very brilliant dye.—*Scientific American*.

EFFECT OF COLD ON IRON AND STEEL.—For many years it has been almost an axiom among civil engineers that great cold tended to produce a brittle condition of iron and steel, and that this hypothesis explained the alleged increase in the breakage of tire-axles, and rails in railroad traffic. According to the recent experiments of Joule and others, however, it would seem that iron and steel, instead of being weakened by freezing weather, are actually capable of resisting greater shocks than at a summer temperature. Dr. Joule refers the greater frequency of railway accidents in winter to the increased hardness of the ground, caused by freezing, by which the iron is subjected to a greater strain or shock than in summer.

NEW USE OF MANGANESE.—The very high price of the metal nickel has led some suggestions that metallic manganese might be employed in its place in the manufacture of German silver. Dr. Percy states that more than twenty years since he manufactured an alloy with manganese which so perfectly resembled German silver that it was sold as such to electroplaters without their detecting any difference.

COLLOIDION FILM.—To produce a collodion film of extraordinary tenacity, which may be desired for certain purposes, Bottger recommends that the collodion cotton be dissolved in a mixture of ether and alcohol in equal volumes, and that a small quantity of balsam of copaiba be added.

CHEMICAL TELEGRAPH.—An improvement has been recently patented in which the paper is wet by the chemical solution by siphon just before reaching electrodes, which are both upon the surface of the paper, the current passing across instead of through it.

The Age of the Earth.

A new mode of finding the age of the earth, attempts to determine approximately the time at which the fiery liquid earth-ball for the first time covered itself with a crust. This is done by means of the difference at the longest and shortest diameter of the earth. According to the calculations of Newton and Huygens this would be 1-578, if the rotation of the earth had always been completed in twenty-four hours, while in fact it amounts to 1-298, which is equivalent to a rotation time of seventeen hours and sixteen minutes, which must once have been the earth's time of rotation. It is, however, probable, for reasons which need not be gone into here, that at the time the earth was covering itself with a firm crust, the time of rotation was also a mean between the original and the present time. That a retardation of the rotation time has taken and is still taking place is now as good as proved, although formerly it was strongly doubted. Of all heavenly bodies it is the moon which astronomers know best, and have most exactly calculated from her movements. Now, the coefficients of the secular acceleration of the moon's course, as found on the one hand from the oldest observations of eclipses, on the other from the theory, are at variance, and there are differences which ought not to exist in the calculations of so well observed a body. Agreement can only be obtained when it is supposed that during the two thousand years which have passed since the Greeks first calculated the eclipses, the rotation of the earth has been retarded 0.01197 seconds. Their exists no difficulty about the causes of this retardation, which is perfectly well explained by the tides. From the cipher thus found, it is easily calculated how much time will be required to cause a retardation of nearly four hours, and the result is that since the firm crust of the earth formed itself, more than two thousand millions of years must have elapsed!—*Exchange*.

DECORATING WOOD BY PRINTING.—Mr. Thos. Whitburn, at a recent meeting of the English Society of Arts, described a process, recently patented by him, adapted to express, on flat surfaces of wood, effects of light figures on a dark ground, or dark figures on a light ground, or of figures light and dark in parts on a ground intermediate in shade. The designs or patterns are engraved in the ordinary way on box-wood, and, from the blocks, the wood is imprinted on a common hand printing press with printer's ink. The process is capable of being used with two or more colors, and is designed for the ornamentation of door panels, furniture, etc.

DETERMINATION OF POTASSA.—The double chloride of platinum and potassium can only be weighed, as such, upon the filter, a uniform desiccation being taken for granted. Such weighings on a counterpoised filter are, if possible, better avoided. The smaller the amount of the double salt of platinum the greater the chance of error. Dr. Mohr proposes, therefore, to heat the salt to fusion with thrice its weight of oxalate of soda in a platinum crucible. After lixiviating the residue with water the chlorine in this solution is determined by means of a decimal solution of silver.

SULPHATE OF MAGNESIA IN DYEING.—Woolen goods, intended to be fulled afterward, when dyed with aniline colors, as dahlia and methylviolet, are found to stand the fulling process better, and generally to resist the action of alkalies, soap, etc., much better, if some sulphate of magnesia has been added to the dye-bath. The reason assigned for this action is the formation of a precipitate of a magnesia compound in contact with alkalies, which precipitate is inert so far as the dye stuff is concerned.

STARTLING.—We are getting ahead entirely too fast. From an item in circulation, we learn that the application of electricity for the reduction of metals from their ores has been patented in England. By regulating the electric current in a proper manner it is claimed that cast iron, wrought iron or steel can be produced directly from the furnace without any intermediate operations. This puddling by means of an electric current will occupy from ten to fifteen minutes only, instead of several hours, as in the ordinary puddling by hand labor or machinery.

AGRICULTURE EXTRAORDINARY.—*Les Mondes* asserts that it is proposed, instead of ploughing or digging the ground, to bore holes, fill them with dynamite, and explode them!

To which we would add that when the potatoes are ready for digging the process need only be repeated.—*Gastlight Journal*.

THE dredge on the *Challenger* has brought up nodules of peroxide of manganese. Mr. Buchanan found that these presented the concentric layers and intimate structure of coral, and is of the opinion that they have been formed by the slow substitution of peroxide of manganese for calcic carbonate in the original coral.

CARBOLIC ACID AND CREASOTE.—Carbolic acid dissolves in ammonia, specific gravity 0.900, forming a clear colorless solution. Commercial carbolic acid gives a blue solution after a time. Creasote, if pure, is insoluble in ammonia. Hence ammonia is the best reagent to detect them in mixture.—*American Chemist*.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's offices, San Francisco:

EDDY MINING CO.—Feb. 5. Location: State of California. Directors—Thomas Bell, J. W. Gashwiler, John Wedderspoon, Joel F. Lightner and S. Heydenfeldt. Capital stock, \$2,000,000.

CHANCE SILVER M. CO.—Feb. 5. Location: White Pine County, Nevada. Directors—Geo. Treat, J. W. Phillips, Richard O'Neil, Henry Schwartz and Edward F. Stone. Capital stock, \$3,750,000.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business.
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Alpha S. M. Co.	Ely District	6	25	Feb 2	Mar 13	April 6	C. F. Balcom	426	Montgomery st
Baltimore Cons M Co	Nevada	5	1	Jan 31	Mar 3	Apr 12	W. T. Watson	302	Montgomery st
Belcher & Co.	Cal	9	20	Jan 24	Mar 3	Mar 24	D. F. Merdian	418	California st
Caledonia S. M. Co.	Gold Hill	3	2	Jan 30	Mar 5	Mar 6	R. Wegener	414	California st
Confidence M. Co.	Ely District	4	1	Jan 17	Feb 27	Mar 20	R. H. Brown	442	Montgomery st
Conductor S. M. Co.	Ely District	4	1	Jan 17	Feb 27	Mar 20	G. T. Owens	240	Montgomery st
Crown Point S. M. Co.	G. & S. M. Co. Washoe	1	50	Dec 23	Jan 30	Feb 21	J. M. Buffington	320	California st
Daney G. & S. M. Co.	Washoe	8	75	Jan 6	Feb 10	Mar 3	G. R. Spinney	320	California st
Empire M. S. M. Co.	Gold Hill	14	100	Dec 18	Jan 26	Feb 16	G. R. Spinney	320	California st
Gold Hill S. M. Co.	Gold Hill	5	30	Dec 24	Jan 2	Feb 16	T. J. Owens	419	California st
Gould & Curry S. M. Co.	Washoe	21	100	Jan 23	Feb 23	Mar 20	A. K. Durbrow	438	California st
Hale & Norcross M. Co.	Washoe	42	50	Jan 20	Feb 21	Mar 17	J. F. Lightner	419	California st
Imperial S. M. Co.	Washoe	18	100	Dec 26	Jan 23	Feb 19	W. E. Dean	419	California st
Imperial S. M. Co.	Ely District	8	50	Dec 13	Jan 2	Feb 21	T. L. Hall	408	California st
Julia M. Co.	Washoe	17	100	Feb 10	Mar 16	April 4	A. Noel	419	California st
Kentucky G. S. & M. Co.	Ely District	7	25	Jan 3	Feb 14	Mar 7	R. Goldsmith	513	California st
Leo M. Co.	Gold Hill	2	100	Dec 13	Jan 2	Feb 20	E. Ton	Express Building	
German & G. & S. M. Co.	Idaho	1	20	Dec 13	Jan 21	Feb 17	J. J. Owens	401	California st
Mint G. & S. M. Co.	Washoe	10	Feb 5	Mar 13	April 12	D. A. Jennings	401	California st	
Pine & Panaca S. M. Co.	Ely District	5	50	Jan 15	Feb 24	Mar 16	L. Kaplan	Merchants' Ex	
Roche S. M. Co.	Ely District	6	100	Jan 19	Mar 5	Mar 23	G. E. Palmer	419	California st
Portland S. M. Co.	Ely District	3	25	Jan 10	Feb 16	Mar 13	B. J. Gray	419	California st
Silver Peak M. Co.	Ely District	4	75	Jan 23	Mar 7	Mar 28	G. T. Grimes	240	Montgomery st
Spring M. T. Tunnel Co.	Gold Hill	3	15	Jan 24	Mar 2	Mar 20	J. M. Buffington	Merchants' Ex	
Vermont S. M. Co.	Oregon	4	100	Jan 20	Mar 5	April 6	R. H. Brown	302	Montgomery st
War Fazole M. Co.	Idaho	4	100	Jan 17	Feb 23	Mar 14	L. Kaplan	Merchants' Ex	
Ward Beecher Con M Co	White Pine	1	150	Dec 13	Jan 19	Mar 11	D. A. Jennings	401	California st
Woodville G. & S. M. Co.	Nev	5	125	Jan 5	Feb 11	Mar 3	A. Noel	419	California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Adams G. & S. M. Co.	Nevada	50	Dec 29	Feb 5	Feb 25	G. W. R. King	1424	California st	
American Flax M. & M. Co.	Ely Dist	4	100	Dec 16	Jan 21	G. R. Spinney	320	California st	
Atlantic & Pacific Cons M Co	Cal	7	50	Jan 24	Feb 26	A. Noel	419	California st	
Auburn G. M. Co.	California	6	100	Nov 7	Feb 24	R. Wegener	414	California st	
Baena Vista Petroleum Co.	Cal	22	100	Jan 25	Mar 17	G. T. Owens	240	California st	
Charter Oak M. Co.	Ely District	22	50	Jan 9	Feb 16	G. W. R. King	434	California st	
Cherokee Flat Blue Gravel M. Co.	Cal	5	Jan 10	Feb 16	Mar 6	H. Piebirt	603	Washington st	
Commercial Coal M. Co.	California	4	50	Dec 16	Jan 26	R. E. Hanson	402	Montgomery st	
Commercial Coal M. Co.	California	3	50	Dec 16	Jan 26	R. E. Hanson	402	Montgomery st	
Chief Exs Extension M. Co.	Ely Dist	10	Dec 30	Mar 10	Mar 10	R. Wegener	414	California st	
Cupet and Thier M Co.	Arizona	50	Oct 25	Nov 26	Feb 16	C. J. Eaton	Express Building		
Fry Creek T. L. Flaming Co.	Utah	1	50	Feb 3	Apr 14	Walter Barnhill	455	California st	
German M. Co.	Cal	1	50	Feb 3	Apr 14	Walter Barnhill	455	California st	
Gesewa Cons M Co	Nevada	1	25	Feb 10	Apr 17	I. T. Milliken	302	Montgomery st	
Glascova G. M. Co.	California	1	25	Jan 14	Feb 18	M. R. T. O'Sullivan	419	California st	
Gold Run M. Co.	California	5	100	Jan 15	Mar 5	C. C. Palmer	oor Market & Spear st		
Haves G. & S. M. Co.	Nevada	3	30	Feb 9	Mar 12	G. R. Spinney	320	California st	
Highland Cons M Co	Nevada	1	25	Feb 2	Mar 13	H. R. Brown	402	Montgomery st	
Keyston No. 1 & G. & S. M. Co.	Ariz	2	25	Jan 10	Feb 16	M. R. T. O'Sullivan	501	Montgomery st	
Keyston No. 1 & G. & S. M. Co.	Nev	2	25	Jan 10	Feb 16	M. R. T. O'Sullivan	501	Montgomery st	
McLean G. & S. M. Co.	Gold Hill	1	25	Dec 22	Jan 26	Feb 16	W. H. Watson	302	Montgomery st
Mina Rica S. M. Co.	California	10	20	Dec 23	Jan 23	Feb 16	G. R. Spinney	310	California st
North Star T. & O. Co.	Cal	10	Jan 13	Feb 18	Mar 11	F. O'Reilly	511	Washington st	
Pacific Coast M. Co.	Nev	2	7	Jan 9	Mar 23	Apr 13	C. C. Palmer	442	California st
Pocahontas G. M. Co.	El Dorado Co. Cal	50	Dec 17	Jan 23	Feb 16	D. A. Jennings	401	California st	
Pacific Borax Co.	Nevada	7	75	Jan 26	Mar 2	Mar 29	S. Patee	210	Battery st
Red Jacket M. Co.	Idaho	2	100	Feb 17	Jan 26	Feb 21	W. Willie	419	California st
Seattle Coal & T. Co.	W. T.	1	00	Dec 11	Jan 22	Feb 19	H. L. Hutchinson	517	Market st
Santa Cruz Coal M Co	California	5	Jan 5	Feb 7	Feb 25	L. Kaplan	Merchants' Ex		
Sierra S. M. Co.	Nevada	49	6	Jan 29	Mar 2	Mar 23	F. R. Elmkar	53	Wash Market
S. John G. M. Co.	California	4	5	Dec 23	Mar 5	Feb 25	H. Holmes	419	California st
S. Victoria S. M. Co.	Nevada	10	Dec 31	Jan 31	Feb 23	W. H. Martin	431	California st	
Table Mt. Alpha M. Co.	California	2	30	Jan 7	Feb 3	M. T. F. Cronm	438	California st	
Tecumseh G. S. & Copper N. Co.	Cal	50	Jan 2	Feb 9	Mar 4	F. J. Horrmann	418	Keamy st	
Tremont Coal M. Co.	White Pine	4	50	Jan 30	Feb 12	Joseph Parks	419	California st	
State of Maine M. & M. Co.	Cal	5	5	Jan 16	Feb 16	J. M. Buffington	Merchants' Ex		
Tuolumne Hydraulic M. Co.	California	2	10	Jan 6	Feb 10	Mar 2	I. T. Milliken	302	Montgomery st
Victoria and Imperial T. & M Co	Utah	2	15	Jan 31	Mar 7	April 2	T. H. Watson	302	Montgomery st
Washington M. Co.	Cal	1	100	Jan 9	Feb 17	Mar 10	W. B. Wingard	315	California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Alpha Cons. M. Co.		Called by Trustees.	419 California st.	Special.	Jan 31
Alpha Gravel M. Co.	Cal	David Wilder.	Merchants' Ex.	Annual.	Feb 24
Confidence M. Co.	Cal	Called by Trustees.	217 Sansome st.	Special.	Mar 9
Diamond S. M. Co.	Utah	W. Sherman, Pres.	606 Montg. st.	Annual.	Feb 28
Indus. G. & S. M. Co.	Nev	David Wilder.	414 California st.	Annual.	Mar 4
Iron M. Co.		Called by Trustees.	266 Clay st.	Annual.	Mar 11
Jefferson M. Co.	Yuba Co., Cal.	H. J. Booth.	214 Pine st.	Annual.	Feb 18
Justice M. Co.	Nev	R. Wegener.	414 California st.	Annual.	Feb 16
Mahagony G. & S. M. Co.	Idaho	Called by Trustees.	Merchants' Ex.	Annual.	Feb 21
Omequa Table Mountain M Co.	Cal	D. Wilder.	Merchants' Ex.	Annual.	Feb 25
Page & Panaca M Co	Ely District	L. Kaplan	Merchants' Ex.	Annual.	Feb 20

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable
Black Bear Quartz M. Co.	Washoe.	W. L. Oliver.	316 California st.	50	Jan. 17
Belcher M. Co.	Washoe.	W. L. Oliver.	419 California st.	25	Feb 14
Caledonia G. L. Co.	California	D. M. Boker.	420 Montgomery st.	50	Feb 14
Con. Amador M. Co.	Cal.	F. B. Latham.	402 Montgomery st.	50	Dec 5
Crown Point M. Co.	Washoe	E. E. Elliott.	414 California st.	3 00	Feb 10
Derry M. Co.	Cal.	F. Cunningham.	301 Montgomery st.	50	Nov 21
Diana M. Co.	Utah	N. C. Fasset.	220 Clay st.	1 00	Nov 21
Eureka M. Co.	Grass Valley, Cal.	R. Wegener.	414 California st.	1 00	Dec 1
Keystone Quartz M Co.	Cal	L. Vesaria	414 California st.	60	Feb 10
Mount Belmont M Co.	Nevada.	H. B. Minor.	414 California st.	60	Dec 5
Providence O. & S. M. Co.	Cal	J. M. Buffington.	Merchants' Ex.	100	Nov. 11

Weekly Stock Review.

THURSDAY, Feb. 12, 1874.

Stocks have been comparatively depressed during the week under review. Nearly all of the Comstocks have showed a decline, and in some instances a serious one. As a rule, the range has not been very great, however. Commencing Thursday last, the market showed a downward tendency, increasing each day, until Wednesday, when the lowest prices since the great rise were met. As usual, there have been no "developments" of importance to account for the change, and people are at a loss for a reason why stocks should drop, apparently without cause.

We do not believe that the change is due to any determined policy of the bears to force down the market; the present State of things is much more simply and easily accounted for by the impression which appears to prevail generally, that stocks, or at least a great many, have been put up too high. When the sovereign people make up their mind to anything, sooner or later the effect is felt. Popular opinion is more influential in the stock market than any tactics of brokers, for the sales are made up mostly of small lots, taken by persons of limited means.

A meeting of stockholders in the Confidence mine will be held on March 9th, to take into consideration and decide upon the question of increasing the capital stock of said Company from \$800,000 to \$2,500,000, to be divided into 25,000 shares of the par value of \$100 per share.

The proposition to increase the capital stock of the Iowa company from \$1,200,000, in 12,000 shares, to \$3,000,000 in 30,000 shares, will be held in this city March 11th.

The following named companies have recently declared dividends; Crown Point, \$3 per share, (No. 40), payable Feb. 12; Belcher, \$5 per share, (No. 23); Keystone Quartz, 50 cts. per share, (No. 10). The Belcher dividend amounts to \$520,000; the total product for

The Mining share market on Monday showed irregular prices. The feature was the decline in Overman, which opened weak at \$100, and fell to \$90, closing at \$92, a decline of \$10 to \$15 from the prices ruling on Saturday. There was an advance of \$1 in the following stocks: Alpha, Crown Point, Consolidated Virginia, Chollar-Potosi, Gould & Curry, Hale & Norcross and Savage. Segregated Belcher declined \$4, Yellow Jacket \$3, Ophir, \$2, Caledonia, California, Belcher, Best & Belcher and Justice each, \$1.

The feature of the market Tuesday was the break in Belcher. The price Monday was apparently strong at \$100 to \$101. The dividend of \$5 per share was paid and the price receded from \$89 to \$85, closing at \$86.50. Crown Point was also \$5 lower, closing at \$90, and will be apt to run still lower after the dividend. The amount of business transacted was about the same as yesterday. Overman continue to decline, selling at \$87.50, or \$5 lower than the lowest price yesterday. Segregated Belcher also fell off \$12, Yellow Jacket \$3, Sierra Nevada \$2.50 Consolidated Virginia, Hale & Norcross and Kentuck each \$2, Alpha, Chollar-Potosi, Gould & Curry, Julia and Ophir each \$1. Savage rose to \$114 to \$116, a gain of \$3.

On Wednesday, still lower prices were reached by the Comstocks. Other Nevada mines, with those of Idaho and California, looked up a little. Raymond and Ely has stood the break well, considering that it is a "ruined mine;" but persistent effort will doubtless force it down still further. Belmont has recovered a little, showing that the first intelligence in regard to the absence of the supposed ore-body, was overdone.

MONO MINES.—A friend of ours, writing from Benton, Mono county, states that times are very dull up there at present, and that C. H. Daron's mill, which runs by water power, has shut down on account of frost. Mack & Powning's mill, running by steam power, keeps

GLOBE CONSOLIDATED M. CO.—Located on the Arizona, Utah and Globe lodes. Capital stock, \$3,800,000, in 38,000 shares. **Trustees**—M. D. Townsend, E. L. Tracy, W. DeWitt, Thomas Cole and G. W. Fisher.

INTERNATIONAL WOOD PAVING CO.—Capital stock, \$100,000. **Object:** To carry on the business of manufacturing and laying wooden pavements, also selling rights to lay the same under letters patent issued by E. W. Perrin. **Directors**—Charles E. Allen, George T. Bromley, H. T. Wheeler, E. W. Perrin and W. H. Forbee. Capital stock, \$1,000,000, in 10,000 shares of \$100 each.

ELECTION—BOWERY CONS. M. CO.—**Trustees**—J. W. Spear, W. E. Hall, Henry Mcears, D. M. Love, W. Easton.

HEAVY BLAST.—On the 10th inst., the first blast in the Enterprise claim at Sucker Flat was fired. Two hundred and thirty-one kegs of Western powder were exploded, which was a success beyond all expectations. They have recently completed a bed-rock tunnel 2,530 feet long, which took three and a half years, both day and night, to complete. Their flame is 1,000 feet long and four feet wide, the whole of which is lined with rocks.

MINTS AND ASSAY OFFICES.—A Washington special says that the Committee on Coinage, Weights and Measures, have agreed to hear Messrs. Wells, of Missonri, and Logan, of Illinois, and the Directors of Mints, on the propositions to establish mints or assay offices at Chicago and St. Louis. It is probable that the committee will decide to report against the mints, but in favor of the assay office at each of these cities.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

M. & N. W. Co.—*Miner*, Feb. 7: The company's mill has again been making a short run, with satisfactory results. We learn that Dr. Fish, the Superintendent, has gone to Carson, and the bullion will be coined and sent to the home office in Milwaukee.

THE Silver Glance shaft is going down at the rate of $5\frac{1}{2}$ ft. per week—the last measurement giving a depth of 27 ft. below the 100-ft. level. The rock in the bottom of the shaft carries rich sulphurete in quartz.

AMADOR COUNTY.
CANAL.—*Independent*, Feb. 7: Work on the Amador canal has progressed favorably, con-

Considering the inclement weather which has interfered materially with the progress of the work; still the canal will be completed very nearly as soon as we at first calculated upon.

BUTTE COUNTY. *Record*, Feb. 7: We have reports that big diggings have been struck in

The bluffs below the Lava Beds, and just beyond what is known as the Kent pond or Lake Como. The pay dirt is at the depth of some 14 ft. only, and lies under a deposit of lava. The whole bluff, it is said, has already been located, from the river to the Oroville railroad, a distance of 4 or 5 miles. There is said to be no mistake about the richness of the deposit, and it is believed to be as extensive as the bluff itself.

CALAVERAS COUNTY.
SAN BRUNO.—*Chronicle*, Feb. 7: The lower tunnel has been run 30 ft. since the pay chnte

was tapped, the rock showing rich throughout. The ledge will average over 2 ft. thick the entire distance. As yet, there is nothing to indicate that the tunnel is approaching the termination of the chimney. There are about 30 tons of quartz in the dump.

GENUINE FLINT.—We learn that 60 tons of flint, taken from the celebrated Wallace and Ferguson mine, in the Sheep Ranch district, yielded \$11,000. Subsequent crushings have paid from \$70 to \$80 per ton.

EL DORADO COUNTY. 7. 7.
 ROSE.—*Republican*, Feb. 5: About 60 tons of
 rock that will go \$60 to the ton has been taken
 from the "Rose" ledge since the first crushing

from the base ledge since the first crueeling, and workmen have now commenced going down upon the ledge, about 70 ft. from the mouth of the tunnel.

Testing It.—There is now being crushed at

The old "Shepard Mill" some 45 or 50 tons of rock taken from the Ida Mitchell. They have discontinued work in the shaft for the present, and are now running across the ledge. The coming out looks well.

S. D. Hill has his pipe playing on the henk of Badger Hill, just east of town; and Jo. English has a stream tearing into "Pigeon Hole," just above Judge Davidson's.

MINING.—The miners at Scales Diggings are hard at work piping, having plenty of water.

KERN COUNTY.

MINING.—*Miner*, Feb. 7: The first

work on the Havilah tunnel was commenced last Tuesday. The mouth of the tunnel is about 100 yards from town. It is anticipated to strike the Sovereign lead when in 1,700 ft.

at a distance of 1,000 ft. beneath the croppings, and to penetrate the main mineral belt at 3,000 ft. The Sovereign lead is a continuation of the renowned Big Blue ledge, which has been located for several miles. The tunnel will strike several leads which will pay large dividends.

The Grizzly mining company will put up a forty-stamp mill this spring. This mineral belt has paying quartz enough in sight to keep an army of miners employed for a hundred years.

MINERS are at work on the bottom of the Joe Walker mine, and will commence to take out rock soon.

MARIPOSA COUNTY.

LUMP OF GOLD.—*Gazette*, Feb. 6: Indian Gulch comes to the front with the highest thug, in the shape of a chunk of gold, which has been heard from this winter. The story is that a German last week picked up a nugget weighing eighteen pounds, avoirdupois. The man who reports the extravagant "find," lives in Hornitos.

MONTEREY COUNTY.

THE TRES PIÑOS COAL MINES.—Hollister Enterprise, Feb. 7: A committee of San José gentlemen, appointed by the Katherina Coal company, to visit and examine its coal mines on the Tres Piños, about 15 miles from Hollister, comprising John B. Price, Julian Pomeroy, A. C. Farno, B. J. Rhodes and John A. Ethell, stopped in town last night, on their return from the inspection of the property. Their report is highly favorable.

NAPA COUNTY.

PINE FLAT ITEMS.—*Cor. Register*, Feb. 7: We are having a new excitement nearly every day, new prospectors arriving in large numbers. The mountains are being thoroughly searched and many new mines discovered.

On Friday last, a very rich lode was found about half a mile northeast of the Sonoma mine. 4,500 ft. were located at once, and the claims consolidated into one company, which is called the "Anna Belcher Consolidated Quicksilver Company."

Work was commenced on the "Great Central" mine, which is on the same lode as the Sonoma mine, 1,500 ft. east of it, almost in the center of Pine Flat. The "Central" shows very fine ore in the outcrop of the ledge, and promises to be a rich mine.

Yesterday I paid a visit to the famous "Bloodhound Mine," situated 2½ miles northeast from Pine Flat. There is a most wonderful display of rich ore in the ledge on the surface. There is a natural arch large enough for a man to walk through that appears to be nearly half cinnabar.

VALUABLE ORE.—Our correspondent "Bret" brought us down the other day a specimen of cinnabar from the Missouri mine of a very high grade; we judge of at least 45 to 50 per cent. A few tons of such ore would be a small fortune; if the Missouri can yield much ore of this quality, its value is immense.

NEVADA COUNTY.

EMPIRE.—*Union*, Feb. 7: In the eighth level, running toward the south, in the Rush and Layton ground, a ledge was struck yesterday, which is fully 2 ft. thick and showing well in free gold and sulphurets. This ledge has about 600 ft. of backs above the 8th level. The same ledge will be found in the north drift, as the miners say.

DARTMOUTH.—The Dartmouth mine will hang up its batteries to-night, for a short time. The reason for so doing is that in blasting out gravel in the "sulphur bar" last week, they broke into the old Alta drain tunnel, letting water in large quantities, and interfering so much with the working of the mine, that Capt. Miller concluded to put on three eight-hour shifts and finish the main tunnel to connect with the Alta drain tunnel, some distance ahead of the present workings. This will give complete drainage to the whole mine. There is no lack of good pay gravel.

Transcript, Feb. 6: James Hill & Co., at Lowell Hill, have struck good pay gravel in their mine. This company opened up about one year ago, working day and night, except Sundays. They were compelled to wash away immense amounts of earth and gravel before they struck pay dirt. Since then they have had one clean up which paid them handsomely. As they progress their gravel grows richer and the prospects brighter.

THE SWAMP ANOEL CO., at Lowell Hill, have nearly completed their immense tunnel. When completed, this will be one of the best tunnels ever constructed in this mining section. The rock channel in this mine is 30 ft. in depth, and had to be blasted out a long distance, at an immense cost. Water is plenty on Lowell Hill, and everybody is now at work.

PLACER COUNTY.

BELLEVUE MINE.—*Herald*, Feb. 7: Work has been commenced by the Bellevue Co. on the Buckeye mine in earnest. The water has been pumped out of the shafts, and it is found that on the 242 ft. level, 30 ft. east of the shaft, in face of drift, the ledge is 20 inches thick, and pays \$40 per ton. Of this rock they have 100 ft. solid backs to the 140 ft. level. It is the intention of the Superintendent to drive to connect with shaft No. 2, 160 ft. distant. It has been proved from actual workings that this chute of rich ore is 260 ft. long, extending west from shaft. It is the intention of the company to put the very best machinery for hoisting and pumping on this mine, which the Superintendent is to go below to-day to procure, and as soon as this machinery is up, they will commence sinking deeper. This property, though as yet in embryo, bids fair to be a first-class mine, and not second to any mine in the State.

The property of the company consists of 5 parallel ledges, known and proved to carry remunerative ore.

THE CRATER.—This Ismons mine, we learn, is turning out its usual quota of rich ore, and bids fair to equal if not surpass the expectations of shareholders. The mill after a short run was to be cleaned up yesterday, and it was known from the amalgam in sight, that a handsome dividend will be proposed by the Trustees. This company is out of debt, with shining prospects for the future.

COAL MINE.—The side track is now about completed to the coal mine at Lincoln; repairs of the shaft from the cave, which occurred some time ago, are all made good, and everything is in readiness to commence work with a large force.

PLUMAS COUNTY.

MIMMO NOTES.—*National*, Jan. 31: The Indian Valley mine and mill are in full blast, and the quartz is paying well. The Baker mine is also turning out some rich rock, and the mill is running steadily. A new strike of rich rock has been made in the Genesee mine, and it is said to be looking and paying better than ever before.

BIO WAGES.—We are informed that the New York Co., at Sawpit, have been taking out some splendid pay dirt, with prospects of plenty more ahead. They make an average of ten dollars per day to the hand.

SONOMA COUNTY.

COAL.—*Democrat*, Feb. 7: James S. Todd, of Vallejo Township, has discovered a coal vein on his farm, which lies on the Sonoma mountain. A wash in the bed of Copeland creek through the soil to the depth of 8 feet, exposed the coal stratum, from 1 to 1½ inches thick, imbedded in shale. Ira Davis, whose farm adjoins that of Mr. Todd, is also prospecting for coal. He has run a cut of 50 feet into the east face of the mountain. In the cut there is a ledge of shale through which run streaks of coal. From this point Mr. Davis will run a tunnel on the ledge.

TRINITY COUNTY.

EASY WORK.—*Journal*, Feb. 7: The ground is so thoroughly soaked this season, that our miners have no difficulty whatever in caving the banks. The only complaint we have heard thus far is that most of them can get down more dirt than their flumes can carry. Water being plenty the claims run to the utmost capacity. Another year and we expect to see five and six ft. flumes in our mines instead of two and three feet ones.

BIO CAVE.—Bartel Jacobs, of Red Hill, informs us that, on last Saturday night, the band of this mining claim caved off to such an extent as to nearly fill the claim. The "Little Giant," standing about 150 ft. from the back, was struck by the cave and carried about 75 ft. down the hill. Five or six lengths of pipe were smashed, but as there was extra pipe on the ground and the Giant was not injured beyond repair, work was delayed but a few days.

JUNCTION CITY.—From J. M. Pickett we learn that mining prospects in that vicinity were never better than now. Water plentiful and everybody working with success. The Keno Hill claim had a big cave, or slide, which it will take all spring to sluice off.

MINERSVILLE.—Supervisor Bates tells us that this favored portion of Trinity is flourishing. Everybody has water and all are doing it. Big clean-ups will be in order shortly.

TUOLUMNE COUNTY.

RICH ORE.—*Democrat*, Feb. 7: On Monday Thomas Whitto brought to town 169 ounces of retorted gold, the product of 40 tons of ore crushed at the Spring Gulch mine the previous five days. This winter a new chute was opened in the northern part of the mine and this is the first crushing from it. The ore was taken from the center of the chute, which if correctly represented cannot help proving of great value. The mine since opened by the present owners has not failed to pay well at such times as water was to be had for crushing purposes.

PATTERSON MINE.—*Independent*, Feb. 7: The main shaft is now down a distance of 130 ft., intersecting tunnel No. 1, at a depth of 63 ft. 60 ft. below that another level is being driven ahead night and day, and is now in 40 ft., with about 10 feet to go to strike a large chute of very rich ore which is known to be there. The main shaft is still going down, and another level will be started. Recently powerful hoisting works have been erected. Further north, is tunnel No. 2, which is in 400 ft.; and here another shaft is sunk, and is now down a depth of 50 ft. below the tunnel. From thence a level is being run toward the main shaft, and is now in 100 ft., having at 20 ft. from the entrance passed through the apex of a chute of exceedingly rich ore, being a continuation of a vein in tunnel No. 1, the rock being thickly interspersed with free gold. But it was passed over until another large and rich vein further ahead was reached. This level is still being pushed onward, the last 25 ft. being in first class rock, which shows free gold abundantly.

This shaft and level is immediately beneath the old Patterson works, which in former years paid so handsomely. Mr. Hughes, the superintendent, has mainly devoted the last three or four months to the work of properly developing the mine, to ascertain, as near as possible, the size and value of its numerous chutes and veins, the erection of substantial and permanent hoisting works, and works for concentrating sulphurets, which abound in the rock and prove to be exceedingly rich; the mill is hammering away day and night, always rendering a good account of itself.

Nevada.

WASHOE DISTRICT.

CROWN POINT.—*Gold Hill News*, Feb. 7: Daily yield, 450 tons of ore, from the 1,000, 1,200, and 1,300-foot levels. The ore breasts on the 1,400-foot level improve in appearance as they are worked eastwardly. The north winze, which was started at the east wall from the 1,400-foot crosscut, has been sunk to a vertical depth of about 18 feet. The entire bottom of the winze is in very rich ore, which constantly improves in quality as the work of sinking the winze progresses. The direction of this drift is about ten degrees south of east, so that practically it may be regarded as a crosscut. The ore encountered in the main drift at the 1,500-foot level assays well.

OPIMA.—The winze from the south drift, on the 1,300-foot level, is making favorable progress, the bottom still in ore of increased richness. The west crosscut from the south drift, which is 80 feet north of the south crosscut on the same level, is also in 64 feet, the quality of the ore gradually increasing in value as the work progresses. The up-raise from the 1,465-foot level, to connect with the south winze from the 1,300-foot level, is also in good ore. The winze on this level shows considerable improvement, and it is expected will undoubtedly strike the west ore body in ten or twelve days' time, when some rich developments may be looked for.

SIERRA NEVADA.—Sinking the new shaft is making rapid progress, the rock in the bottom blasting finely. The shaft is now down 140 feet.

MINT.—Sinking the shaft, which is now down 150 feet, has been suspended for the purpose of erecting more powerful hoisting machinery. The ground for the new building is being rapidly graded, and the engine and other hoisting machinery has been purchased in San Francisco and will arrive by rail in a few days more.

OCCIDENTAL.—The main west drift is carried forward without serious interruption. The progress is somewhat impeded by the influx of water from the face. The closeness of the air considerably retards work. During the last 24 hours the water in the old shaft has receded four feet. When the wall of the ore vein is penetrated, a great rush of water is anticipated.

CHOLLAR-POTOSI.—There has been no ore extracted during the past week, on account of the dumps being full, and it being almost impossible for teams to haul the ore to the mills. The body of ore developed in the south drift at the fifth station, while it still holds out strong promise for the future, has not proven as extensive and valuable as was at first supposed.

SEORATON ROCK ISLAND.—The drift north from the main tunnel, at the east wall of the ledge, is being energetically driven ahead.

JUSTICE.—The incline connection with the shaft is now completed, and open to 400-foot level. Sinking below that point is commenced, to carry the incline down to the 500-foot level.

BELOHER.—Daily yield, 550 tons of ore, from the 1,000, 1,200 and 1,300-foot levels. The main incline is down 87 feet below the 1,400-foot level. The north drift from the 1,400-foot station is in 70 feet, in hard rock. The south winze on the 1,300-foot level is down 100 feet. All of the ore breasts and stopee throughout the mine are looking and yielding splendidly. The total yield of the mine for January was over \$1,000,000. The lower levels look better and better as further developed, and the prospects of the Belcher mine at the present time are about as flattering as reasonable stockholders need ask.

SUTRO.—The work of sinking the winze is being prosecuted vigorously. The ledge continues to widen out as the sinking progresses. Streaks of lively looking quartz are encountered all along, with favorable indications of striking a valuable ore body at no distant day.

GOLD & CUREY.—There is no definite change to report in any of the prospecting drifts of this mine. No high grade ore has yet been encountered on the 1,700-ft. level.

LEO.—The main tunnel is being pushed forward into the hill, following the ore vein at a good rate of daily progress. The vein continues to average about 3½ feet in width, and improves in appearance as further developed.

OVERMAN.—The main west drift at the 1,200-ft. level is making satisfactory progress, the face continuing in hard rock, but it blasts well. The winze being sunk from the 1,000 to the 1,200-ft. level is down 200 ft., following the dip of the ore vein, and the bottom is still in rich ore. The new compressed air engine and accompanying drilling machinery and fixtures will be put in as soon as possible, materially expediting the running of the west drift at the 1,200-ft. level.

CONSOLIDATED VIRGINIA.—The mine is looking very well on the different levels. The south drift on the 1,300 ft. level is progressing favorably. From the stopes above the 1,200-ft. level sufficient ore is extracted to supply the mill on the line of the railroad. The mills at a distance from the railroad are idle, as ore cannot be transported over the road in their present condition.

ROCK ISLAND.—Drifting south from the main tunnel still continues with good progress. The crosscut from the north end of the drift north from main tunnel is in the ledge and a winze has been started therein. The prospects for finding a body of pay ore at this point are very favorable. Ground was yesterday broken for the erection of hoisting works, preparatory to sinking a shaft.

CROWN POINT EXTENSION.—It is expected that the new hoisting works to operate this mine

will be completed within the next two weeks, ready for sinking again in the shaft.

EUENPA.—The main west drift has now passed through 80 ft. of ledgematter and no sign of the west wall as yet. The assays during the week have varied from \$8 to \$50 to the ton.

ALPHA.—The north drift on the 1,500 ft. level is still making steady progress, following the line of the ledge.

ANNES.—Now engaged erecting machinery over the old shaft. It is the intention to prospect the vein from the bottom of this shaft, and at the same time continue the exploration in the main tunnel.

HALE & NORCROSS.—Sinking the main incline is progressing at the usual steady rate, the rock at the present depth being very hard. The prospecting drifts on the 1,900 ft. level are being driven ahead with vigor.

NEW YORK CONSOLIDATED.—Over half of the bottom of the shaft is now in fine looking quartz, some of which gives low assays in silver. It is in stringers or feeders, but might concentrate into a solid body of quartz. Good progress is made in sinking.

SOUTH COMSTOCK.—New shaft down 25 ft. Good progress is made in sinking, and during the last three or four days considerable quartz has been met with.

GLOBE CONSOLIDATED.—Under the above name the Arizons, Utah and Globe companies have consolidated to work their lodes together to better advantage, working through the Arizona and Utah shaft. The raise from the 1,400-ft. level to connect with the old Globe workings is up 170 ft. The main west drift at the 1,400 is still in hard blasting ground.

DAXTON.—The new pump to draw water from the third station is completed, and a new boiler added to the steam capacity of the works. Owing to the continual bad state of the roads a comparatively small amount of ore is daily extracted, and no additional mills are required to crush it.

CALIFORNIA.—The north drift from the 1,300-ft. level of the Consolidated Virginia shaft, to prospect this mine, is now in 143 ft., and good progress is being made, although the drift is necessarily rather hot, from lack of copious ventilation. It will be continued through to a connection with the 1,300-ft. level of the Ophir, when plenty of ventilation will be secured.

JULIA.—Both southwest drifts at the 900 and 1,000-ft. levels are being driven ahead, following the ledge. Cross cuts are being made at the 1,000-ft. level, a short distance apart, which show the ore body to be extensive. The assays for the week have varied from \$30 to \$70 to the ton.

SILVER HILL.—The Hope mill is still steadily running on ore from the second level, north drift. The fine body of ore developed by the south drift at this level, improves in both quality and extent as further worked.

TYLER.—Work has been resumed in the face of the main west drift, which is now in the ledge, the quartz looking very favorable with some spots of ore of fine quality. The main east drift at the 200-ft. level is being rapidly cleaned out and repaired.

SAVAGE.—There is little or no change to note for the week. Driving the main southwest drift, at the 1,900-ft. station, is making slow progress.

BULLION.—The main north drift on the 1,700-ft. level, is still pushed vigorously ahead, the rock in the face working finely.

YELLOW JACKET.—The main incline is down 90 ft. below the 1,500-ft. level. The work of prospecting the 1,400 and 1,500-ft. levels is being prosecuted vigorously as usual.

DARRANELL.—We hear it rumored that this company will shortly resume work upon their mine, with a view to developing the good body of ore which the Overman developments assure it to contain.

KNICKERBOCKER.—The new hoisting works will start up to-morrow, when work will be resumed in the mine.

SENATON.—The bottom of the shaft continues in favorable looking porphyry, with streaks of low grade ore.

JACOB LITTLE.—The fine ore development in the lower tunnel has shown improvement during the week, the whole face of the tunnel continuing in ore.

NEVADA.—The main south drift still continues in the ore body, which is looking finely. The same may be said of the raise above the tunnel.

LADY WASHINGTON.—Sinking the main shaft deeper is making first-rate progress, the ground working well and no water interfering.

INDEPENDENT AND OMOEA.—Sinking the new shaft and repairing and clearing out the old tunnel is making excellent progress.

DANEY.—The new shaft is now down 340 ft. and progressing well, no water yet interfering.

FAIRMOUNT.—The northwest drift from the main west tunnel is in 57 ft., and still shows good ore in its face.

SUCOR.—The new shaft, east of the hill, is now down 340 feet. The little shaft progresses faster and is now down 37 feet.

WOODVILLE.—The Ramsdell mill is kept running steadily on ore from this mine, and there is plenty on the dump.

CALERONTA.—The main tunnel is progressing rapidly, being worked from both ends—from the shaft and from the outlet.

KOSSUTH.—The face of the main west drift, 200-foot level, continues in fine ore which shows more extensively as the drift progresses.

IMPERIAL.—The main drift on the 1,300-foot level is making steady progress, with strong indications of soon reaching the west wall of ledge.

EMPIRE.—The main east drift on the 1,900-foot level is being steadily driven ahead.

Agassiz's Death.

Dr. Morrill Wyman, of Cambridge, has concluded his work on the autopsy of Professor Agassiz, and makes the following report:

This autopsy made in the interests of science, is in accordance with the wishes of the great naturalist, expressed several years ago.

Cambridge, December 13, 1873.—Autopsy by Drs. R. H. Fitz and J. J. Putnam; present, Drs. J. B. S. Jackson, J. Wyman, C. Ellis, M. Wyman, S. G. Webster.

Frame large. Fat tissue abundant. Cranium, brachycephalic, falling off abruptly from the middle of the sagittal suture. Greatest antero-posterior diameter, 197 mill. met.; greatest lateral diameter, 163 mill. met.; these measurements made before the removal of the skin. Depth of frontal bone, measured externally at the median line, $5\frac{1}{2}$ inches = 135 m. m.; length of sagittal suture, 5 inches = 128 m. m. The walls of the skull were thick and heavy; the dura mater exceedingly adherent to the bone and remarkably thick. The pia mater moderately transparent. Along the arachnoid veins were white lines indicating chronic thickening; the veins themselves rather more injected than usual. The cerebral sulci were deep and wide. On each side of the median line, near the anterior ascending convolution on the left, and the posterior ascending convolution on the right, was a depression which might have held a prune stone, or a little more. The brain tissue around was diminished without evidence of disease. The arteries at the base of the brain showed evidences of extensive chronic disease of their lining membrane, with narrowing of the caliber of the carotids. The basilar artery was apparently a continuation of the left vertebral alone, the right vertebral being represented by an exceedingly small vessel which united the basilar with the inferior cerebellar, the latter being merely the prolongation of the exceedingly small right vertebral. The left vertebral was larger than usual, larger even than the basilar. In these unusually arranged arteries were very important changes.

Commencing at an inch below the anterior edge of the Pons Varolii and extending downward, the walls of the left vertebral artery were stiff, in part calcified, and its lining loose. At half an inch from the point just mentioned, immediately over the left olivary body, was a reddish-yellow opaque, friable plug (thrombus) completely obstructing the vessel; still lower was another more recent, but probably ante-mortem, plug. The first was one quarter of an inch long, and the second four inches long. A third plug, an inch long, was above the first and touching it. Opposite the middle of this point there was arteriosclerotic degeneration of the basilar artery. The walls of the carotids were also in part calcified. The posterior part of the right cerebellar lobe (the side on which the vertebral artery was exceedingly small) was softer than usual, the corresponding foliations swollen and indistinctly defined, indicating disease of this part, probably consequences of the changes in the arteries.

The weight of the entire brain was 54.4 avoirdupois ounces, or 1,495 grammes; allowing a diminution in the weight of the brain from the age of 35 to 40 years, at the rate of one ounce avoirdupois for each ten years elapsed, the greatest weight of the brain may be estimated at 56.5 avoirdupois ounces.

Weight of right anterior lobe (separated with the fissure of Rolando for a guide), 234 grammes; weight of left anterior lobe, 233 grammes. Heart large, muscular fiber firm and of good color. The attached portion of the aortic valve rigid; the mitral opening large. In the left ventricle at the lower third a firm organized clot of the size of a peach stone attached to the wall at the anterior portion near the septum; around this clot a more recent one had formed, its center softened and granular. From this, probably, some small portions had been carried by the blood to the arteries in the base of the brain, doing their part in obstructing them and causing the fatal changes above described. The lining membrane of the heart, where the clot was attached, was much thickened, and the muscular layer at the same part very thin, near the apex not visible to the naked eye.

The lungs were adherent to the ribs on both sides of the chest, the evidence of old inflammation. The other organs were healthy.—*Corr. N. Y. Tribune.*

McGARAHAN AGAIN.—Wm. McGarahan is considering the proposition of introducing a bill to instruct the Secretary of the Interior to restore to the records pertaining to the grant covering the New Idria quicksilver mine, giving it to the right owners. The patent was signed by President Lincoln, and afterward defaced with the certificate that it had not been legally issued. McGarahan is here ready to take any action that may be necessary. His case is now pending in the Supreme Court of California.

STILL ANOTHER TUNNEL.—It is proposed to excavate a tunnel 4,000 feet long, through King's Mountain, Kentucky, for railroad purposes.

A California Lily.

In our engraving we present another of our beautiful native wild flowers, for which California is so famous. The technical name of the plant is *Lilium Bloomerianum* var. *ocellatum*, Kellogg. It was illustrated and described in the proceedings of the California Academy of Sciences for the year 1873, by Dr. A. Kellogg.

There are two varieties of *L. Bloomerianum* found growing together in the interior; one with bold, distinct and well defined dark dots and spots, with longer sepals more attenuated above; the other with ocellate or nipple-like blotches, being broader and of more continuously oblong form. The same distinction into masculine and feminine forms is observed among these maritime lilies. The Island lily has slightly scabrous stems, and more discolored-scabrous under surface to the leaves, and are always scabrous along the mid-rib beneath; whereas the Sierra Mountain lilies are mostly glabrous—sometimes pubescent on both mid-rib and nerves, but never scabrous; they also sport more leaves in the whorls, etc.; these also are broader, hence the greater num-



CALIFORNIA LILY.

ber of nerves; the numerous flowers are usually (if not always) alternately distributed on longer and more divaricate peduncles. The slightly purplish scales of those of the mountains become very remarkably purple on the islands. The enormous gregarious hulk, with its numerous stems, is a peculiar feature not observed in the thousands of specimens hitherto examined.

Found by Mr. W. G. W. Harford, of U. S. Coast Survey, on Santa Rosa Island, growing on the west side of deep sheltered ravines, trending nearly north and south, hence, only where they get the morning sun; but are shaded from the ardent meridian, or post-meridian heat, which burns the leaves and kills them on opposite exposures of the same locality. They are found growing in loose gravelly detritus of sweet, freshly made soils, on the high and dry well-drained or leaching benches, or steeper declivities; where thus sheltered they thrive the best, mid fogs and fierce cold winds.

The seeds of this lily can be procured of Miller & Sievers, florists, 27 Post Street, S. F., by those desiring them.

An English domestic gas-making apparatus consists of an iron retort fixed over an ordinary kitchen range, so that gas is distilled during the usual processes of cooking. The coke may be used to support the fire. The gas passes through a condenser to a petroleum chamber, thence through four perforated floors covered alternately with layers of lime and sawdust, and finally to a reservoir of the usual construction.

Mining Syndicates.

A syndicate may be loosely described as a "limited company for bringing out joint-stock schemes." There are very many promising mining properties not in a position to be brought before the public, owing to a multiplicity of causes. Here a syndicate steps in, purchases up all the varied interests, it may be, lays out some money on the property itself, and then places the undertaking as a going concern, before the public. It is obvious this is a perfectly legitimate, and with due caution, a comparatively safe operation, as much so as a man who purchases wood and nails, and makes a box. We quote the following from a contemporary:

"One of the most remarkable commercial features of the day is the formation of 'Syndicates,' the name of which gives little information to the uninitiated as to the nature of the operations conducted. Our friend Johnson only gives the word in the verb form, but a somewhat older dictionary-maker, Bailey, has 'syndick,' 'a person deputed to act for any corporation or community,' and this appears to be the origin of the word now so familiar in

Sargent's Amended Mineral Land Bill.

Sargent's Mineral Land Bill has been greatly modified, on the suggestion of the proper office at Washington. The breeze which it excited in the Legislature, we think, had more to do in bringing about the change than the official suggestion, for it is not the habit of Senators to how meekly to departmental advice. It must be painfully apparent to Mr. Sargent, by this time, that he can introduce no measure which will not be subjected to the closest scrutiny by his constituents. As a consequence, there is no alternative for him but to out loose from them altogether or submit to their wishes. The modification of the bill in question can be regarded in no other light but that of a confession of original error. The bill, whether so intended or not, in its first form, would have enabled the railroad to acquire the title of vast bodies of land in California and Nevada, which might turn out rich in all kinds of minerals.

The bill, as it now reads, applies practically only to lands in California and to possible placer mines and gravel deposits there. If it should become a law, it will be possible to acquire claims like these to the extent of 160 acres at a time. That is to say, if no placer mines or gravel deposits are apparent at the time of entry, absolute title to this amount of land can be secured. We do not think that this is a good bill or a wise measure. It is an entire reversal of that system of mining rights which has heretofore prevailed, and which we inherit from a country which has had more experience in mining than ours. If there be good farming land in what is known as the mineral belt, which cannot now be taken up because of the general reservation for mining purposes, a contingent pre-emption might be permitted—a pre-emption subject to the right of discovery and entry on this part of miners, upon paying for the actual damage done.

The government of Spain never relinquished its right to mineral deposits wherever found. It did not work the mines itself, or take out the ore; but it charged a royalty upon the proceeds. There can be no doubt that the minerals likewise belong to our Government, but it never has asserted its right or charged a royalty. It has left the pursuit perfectly free and open to all who might choose to engage in it, contenting itself with the benefits resulting from the general prosperity. This Mr. Sargent now proposes to reverse. The effect of this bill will be to allow the interposition of private ownership between the Government and its right to the minerals. The change is altogether too violent and radical. It would be the reverse of the practice, not in Spain, but in England, and other civilized countries. We do not believe that any thoughtful Statesman would ever propose legislation so entirely at variance with precedent and custom, unless the evils of this old system had become so glaring as to amount to a demonstration of its wrongfulness. Nothing of this kind has occurred in the case under consideration. We have little more argument on the side of this proposed change, than that Mr. Sargent wishes it. It must be admitted that this is neither very cogent, nor very convincing reasoning. Certainly, it will be considered very weak besides that other fact of a possible reaction in favor of California mines and mining.

Of that reaction, those who are experienced in matters of this kind, profess already to see the signs. Perhaps the rush Nevada-wards was too sudden, and partook more of the character of adventure than of a sound, scientific, and good business operation. Our own mining capacities had not been fully tested.

Ignorance of the principles of scientific mining presided over most of the ventures which had been made. The return wave, if it ever sets in, in ever such small volume, will bring back much experience, a varied and important knowledge of mining, in many branches, and skill in prospecting and developing. If ever anything like this should take place, how would it operate to have all the mineral belt taken up in 160-acre lots? We believe schemes like these have heretofore been common in California. There are noses for speculation so sharp as to sniff a monopoly years ahead. We think, therefore, that it is much better that mineral matters should be allowed to remain as they are. There is no evil that has been developed by the existing system which can not be remedied by far less radical legislation than Mr. Sargent proposes.—*Bulletin.*

UTILIZATION OF SLAG.—A marked feature in many of the Swedish smelting districts is that the outer furnace walls are built of slag. This utilization of the waste cinder is practiced throughout the country by running the slag into brick-shaped moulds directly from the furnace hearth; and they are then used in the external walls of the calcining arrangements and the cooler portions of the other masonry.

In his work on orchids, Mr. Darwin says: "There must be moths with proboscis capable of extension to a length of between ten and twelve inches, because there are certain of these plants with nectaries at least eleven inches deep."

financial circles. The term is now applied to a body formed for the purpose of occupying a middle position between persons who are the owners of property or interest and the general public. An active agent discovers a good property that may be greatly improved if more capital can be employed in it; he makes a conditional contract for its purchase by a certain time and a certain price, and then sets to work to 'syndicate' a company, fixing the capital required for the purchase at perhaps two, or even three times as much as he has undertaken to give, the difference being the reward of his enterprise. Collieries, mines, and shipping are among the objects as yet specially favored by the syndicating process. It is obvious, that by such an operation valuable property may be brought into the market."

We understand that several gentlemen of eminence and experience in mining are about to form themselves into a syndicate. It is not our place here to go into details, but we are warranted in saying that the names of the parties appear to be influential, and of a character to insure success; representing, as they do, varied mining interests—coal, iron, lead, copper, and slate. The year opens with much brighter prospects for home mining enterprise than many of its predecessors; the difficulties in the labor market appear to be clearing away, and we trust we have seen the last of the disastrous strikes, unfortunately but too frequent of late; and with money at a low and steady rate, there is every reason to suppose that the year 1874 will prove a prosperous one for home mining.—*London Mining Journal.*

USEFUL INFORMATION.

Transparent Paper.

A German invention, recently patented, and which may be useful to draughtsmen and others, has for its object the rendering more or less transparent of paper used for writing or drawing, either with ink, pencil or crayon, and also gives the paper such a surface that such writing or drawing may be completely removed by washing without in any way injuring the paper. The object of making the paper translucent is, that when used in schools, the scholar can trace the copy and thus become proficient in the formation of letters and outlines without the instruction usually necessary; and it may be used in any place where tracings may be required, as by laying the paper over the object to be copied it can be plainly seen. Writing paper is employed by preference, its preparation consisting in first saturating it with benzine, and then immediately coating the paper with a suitable rapidly drying varnish, before the benzine can evaporate. The application of varnish is by preference made by plunging the paper in a vat of it, but it may be applied with either a brush or sponge. The varnish is prepared of the following ingredients: Boiled bleached linseed oil, 20 pounds; lead shavings, 1 pound; oxide of zinc, 5 pounds; Venetian turpentine, $\frac{1}{2}$ pound; mix and boil eight hours. After cooling, strain and add white gum copal, 5 pounds, and gum sandarac, $\frac{1}{4}$ pound. Thus prepared, the paper will be found to possess all the requisites for use, as stated above.—*Exchange and Review.*

THE REFINING OF COTTON SEED OIL.—Dr. Dotch communicates to the *Scientific American* the following method and proportions for refining cotton seed oil: 100 gallons of the crude oil are placed in a tank, and 3 gallons of caustic potash lye, of 45° Baume, are gradually added and well stirred for several hours; or the same quantity of oil is treated with about 6 gallons of soda lye of 25° or 30° Baume, and heated for an hour or more to about 200 or 240° Fahr. under perpetual stirring, and left to settle. The clear yellow oil is then separated from the brown soap stock, and this dark soap sediment is placed into bags, where the remainder of the oil will drain off; and the sediment has a marketable value of 3 or 4 cents a pound for soap makers. The potash lye has to be made in iron pots, but the oil and lye may be mixed in wooden tanks.

A DURABLE PASTE.—Four parts by weight of glue are allowed to soften in 15 parts of cold water for some hours, and then moderately heated till the solution becomes quite clear. Sixty-five parts of boiling water are now added with stirring. In another vessel 30 parts of starch paste are stirred up with 20 parts of cold water, so that a thin milky fluid is obtained without lumps. Into this the boiling glue solution is poured, with constant stirring, and the whole is kept at the boiling temperature. After cooling to drops of carbolic acid are added to the paste. This paste is of extraordinary adhesive power, and may be used for leather, paper, or cardboard with great success. It must be preserved in closed bottles to prevent evaporation of the water, and will, in this way, keep good for years.—*Druggist's Circular.*

ELECTRIC SEA LIGHTS.—Frank Leslie has in his establishment an electric apparatus for electrotyping and photographing. On a dark, slightly foggy night last summer he put the apparatus on the roof of his building, and the light given was strong enough to show shipping in the harbor two miles away, and to enable citizens a third of a mile away to read newspapers as easily as by daylight. Electric lights should be carried at the mastsheads of all steamers, and would cost scarcely \$25 per night. The apparatus requires for its working an engine of seven-horse power, but it could be readily attached to the engine of the vessel. A French electrician has recently invented an apparatus that is said to give a light nearly four times as intense as that furnished by Mr. Leslie's machine.

TESTING BREAD FOR ALUM.—Harsley says: Take a wineglassful of water, place it in a porcelain dish, add a teaspoonful of tincture of Campeachy wood (prepared by digesting two drachms of freshly cut wood in five ounces of alcohol) and the same quantity of a concentrated solution of carbonate of ammonia in water. Dip into the pink-colored solution a piece of bread to be tested for alum, withdraw it after five minutes, and lay it on a plate to dry. If in one or two hours the bread becomes of a blue color, it contains alum; if it contains no alum, the red color will entirely disappear.

UTILISING PETROLEUM.—In Canada a burner is in use by which residuum of crude petroleum is used instead of wood or coal in brick kilns. By a simple contrivance, says the *Oil Journal*, the nozzle of the burner is made to throw the flame directly downward at the first firing, and after burning the head, as it is termed, this nozzle is replaced by a straight one, the change being effected in a few moments. The flame is thereby thrown into the arch any required distance, burning the whole kiln from one end, and doing it in much less time than by the old method.

MICE.—An exchange says these pretty little pests may be driven away by scattering camphor gum in their haunts.

VEGETABLE GLUE.—Gum arabic solutions are frequently employed instead of glue and mucilage, but are objectionable on two accounts. First, they render the unsized paper transparent, and if a piece of common printing paper is attached to any dark or printed surface the color shines through, and besides it does not attach it firmly to other paper. Neither can paper be attached to wood or pasteboard. Paper pasted on metallic surfaces with gum arabic usually separates from it in a short time. As a cement for glass, porcelain and earthenware it is utterly useless. We are informed on good authority that all these disadvantages are overcome by simply adding an aqueous solution of sulphate of aluminum, two grammes of the crystallized sulphate of aluminum being sufficient for 250 grammes of concentrated gum solution prepared from two parts gum to five of water. The salt named dissolves in ten times its quantity of water, and is added directly to the gum solution. A solution of alum does not answer as well as the simple sulphate of alumina, which can be prepared from alum by precipitating the alumina with ammonia, washing thoroughly on a filter and dissolving in sulphuric acid. The vegetable glue thus prepared will not, of course, ferment, sour or mould, which will be appreciated by those using it.—*Ex.*

EXPERIMENTS by Galletly show how dangerous it is to allow greasy refuse to lie, even in small quantities, in warm places. He found that such waste, dipped in boiled linseed oil, and wrung out, required, at a temperature of 170°, only 105 minutes at the most to take fire, and that the bulk need not be very great, as a match-boxful, at 167°, took fire in one hour. With raw linseed oil it required four or five hours; with rape oil, at 170°, over six hours; with castor oil, at 185°, over a day; with olive oil, 1½ hours; and with sperm oil it would not take fire at all. The heavy coal and petroleum oils were found so retard oxidation by excluding the air. Silk waste did not take fire, but gunpowder placed in it was fired in an hour; and in cotton, under similar circumstances, only after 1½ hours.

CEMENT FOR IRON.—A correspondent of the *English Mechanic* says that he has used the following recipe with the greatest success for the cementing of iron railing-tops, iron gratings to stoves, etc., and with such effect as to resist the blows of the sledgehammer: take equal parts of sulphur and white lead with about a sixth of borax; incorporate them so as to form one homogeneous mass. When going to apply it, wet it with strong sulphuric acid and place a thin layer of it between the two pieces of iron, which should then be pressed together. In five days it will be perfectly dry, all traces of the cement having vanished, and the iron will have the appearance of having been welded together.

PREPARATION OF FLOOR WAX.—Two ounces of pearlsh, 10 ounces of wax, and about half a pint of water are heated to boiling in a dish, which is frequently agitated, until a thick fluid mass is formed, from which, upon removal from the fire, no watery liquid separates out. Boiling water is now cautiously added to the mass, until no watery drops are distinguishable. The dish is again set on the fire, but its contents are not allowed to boil, otherwise myricin would separate out, 8 or 9 pints of water being added, little by little, with constant stirring. Coloring matter may be added if desired.—*Nessler.*

CHAMOTTE FLOUR.—This is pulverized chamotte stone, found in the kaolin or porcelain earth near Halle, Germany, and its equivalent in many other localities. Chemical analysis proves that it is a silicate of alumina, colored with some oxide of iron. It contains 85 per cent. silica, 11 to 12 alumina, and 2 to 3 of iron. It is of course therefore very fire-proof, and may probably be replaced by many other ingredients possessing similar virtues, such as pulverized asbestos, soapstone, etc.—*Manufacturer and Builder.*

PRESERVATION OF MUSHROOMS.—Dr. Remsch, in *Les Mondes*, proposes to cover the fungus with a film of collodion and place it in an airy position. He states that the contraction of the mushroom is equal in every way, and that the chemical and anatomical constitution remains the same. An exact form, preservative against insects and germs, and the keeping of the substance for future experiment, are the advantages obtained.

RENDERING MOULDS CONDUCTORS.—In order to render moulds of plaster or gutta-percha, used in electrotyping, conductors, the use of a solution of 1 gramme silver nitrate, 2 grammes water, 2½ grammes ammonia (sp gr 0.96), and 3 grammes absolute alcohol is recommended; before the coat is quite dry, it is exposed to a current of sulphuretted hydrogen.

SPILLER recommends a mixture of pulverized iron borings, kaolin, and syrupy silicate of soda as a lute for fixing on the heads of stills which are required to stand a high temperature. We should judge the same might be found useful in other situations, such as the joints of cast-iron furnaces, for instance.

It is reported that hemp, when the blossoms are just opened, is an infallible preservative of textile fabrics against the attacks of moths. The stalk, with leaves and flowers, is cut when blooming (about July), and dried in the shade. It is said to preserve its properties for several years.

A pure white vinegar can be made, it is said, from the juice of watermelons.

GOOD HEALTH.

Experiments on Gastric Digestion.

Experiments on dogs with gastric fistula, consisting in introducing given quantities of albumen enveloped in muslin into the stomach, confirm Schiff's previous statements that the energy of gastric digestion is in a high degree dependent on the physiological state of the animal as to hunger, or exhaustion of the stomach by just completed digestion. In regard to the latter, he found that the stomach was able to digest only a very small quantity of albumen, as compared with a stomach in a normal state of digestion. The difference could only be in the condition of the pepsin. Schiff has made a number of experiments to determine the digestive power of the stomachs in different conditions. He finds that the digestive power does not depend on the mere quantity of pepsin, but to a great extent on the relative quantity of water and acid in the artificial infusion. The ordinary quantity of water employed to make an infusion of the mucous membrane of the stomach is inadequate to bring out its full digestive power.

Various experiments are recorded, having for their object to determine the maximum degree of dilution. The research is not yet complete, but a remarkable result has been arrived at, viz., that the stomach of a dog in good condition requires 200 centilitres of water to bring out its full digestive powers. Such an infusion has been found to be capable of digesting 60,000 grammes of albumen.

Schiff's former researches with infusions of stomach led him to state that an infusion of one stomach might, under very favorable conditions, digest from 150 to 180 grammes of albumen—an amount which was considered by several physiologists as too high. The present results, therefore, are the more likely to draw attention.—*Druggist's Circular.*

ARSENIC IN HYDROPHOBIA.—In a late number of the *Correspondenz-Blatt* Dr. Guisan gives a number of cases showing the value of arsenic as a prophylactic in hydrophobia, and even as a remedy also after symptoms are marked. He relates that a rabid dog, between the 7th and 9th of June, hit thirteen persons in various towns of the canton of Fribourg. All were recommended to be treated with one-twentieth of a grain of arsenic morning and evening, as a prophylactic measure. Eight submitted to this prophylactic measure, and none were affected. Four declined, or were not allowed to take the arsenic. Of those four, two remained unaffected, and two died. One began the arsenic treatment, but speedily left it off; she was attacked, but at a much later period, and died. Dr. Guisan recommends not only the internal employment of the arsenic, but that the wound should be dressed with it.

SLEEP NECESSARY.—"A man who would be a good worker," says Henry Ward Beecher, "must be a good sleeper. The quality of mental activity depends upon the quality of sleep. Men need on an average eight hours of sleep a day. A lymphatic man is sluggish, moves and sleeps slowly. But a nervous man acts quickly in everything. He does more in an hour than a sluggish man in two hours, and so in his sleep. Every man must sleep according to his temperament—but eight hours is the average. Whoever by work, pleasure, or sorrow, or by any other cause, is regularly diminishing his sleep, is destroying his life. A man may hold out for a time, but the crash will come, and he will die. There is a great deal of intemperance besides that of tobacco, opium or brandy. Men are dissipated who overtax their system all day, and undersleep every night."

CAMPFOREIN.—During the recent cholera epidemic in Vienna, a new remedy called *campforein* was used with great success in the hospitals. It is prepared simply by passing chlorine gas into pure turpentine oil until saturated; it gives a thick, heavy oily fluid of brown color, with a strong smell of chlorine. It must be freed from muriatic acid, which may be done by washing with water. The remedy is applied by placing a portion in a flat vessel and holding it to the patient to inhale. This indicates that oil of turpentine is the best absorbent of chlorine gas, and therefore can be employed with advantage in operations and other cases where chlorine is evaporated in large quantities.

A GOOD PLAN.—R. Hampson proposes that physicians in prescribing unusual doses, that is, in excess of the maximum adult dose of the Pharmacopoeia, or exceeding those commonly administered, should affix to their prescriptions some sign by which the person dispensing the medicine will understand the formula to be intentional, and be relieved from much anxiety. In many instances much delay and perplexity would thus be obviated. Under the existing system a feeling of oppressive personal responsibility obtains in the mind of every careful druggist, when called upon to prepare ordinarily dangerous prescriptions.

As the result of more than thirty experiments on the feeding of animals on meat taken from tuberculous creatures, M. Collet concludes that such flesh does not develop tubercles in healthy animals. Where other experimenters have obtained opposite results, he believes that they have experimented on animals already diseased, or have allowed portions of tuberculous matter to gain admission to the lungs of the animals in the air they breathed.

Replantation of Teeth.

Dr. J. O. Smith writes to the *Dental Cosmos* that a recent article in that periodical leads him to state that in his practice replantation of teeth has nearly ceased to be an experiment: Within the last three years I have successfully performed the operation on five teeth (two for one patient). In each case the tooth was badly decayed, and the root ulcerated. After extracting and treating the tooth socket, I treated the root, and filled not only the cavity but the nerve-canal in the root, and replaced the tooth, and without an exception each operation has been a perfect success.

The first patient whose tooth I treated in this way was a young man with whom I was very intimate; he had an ulcer, which gave him much trouble, on the superior incisor. It had been filled several times with different materials without satisfactory results, and he was obliged to have it extracted, and as an experiment I offered to undertake the operation of replacing it, after removing the ulcer and properly filling the tooth. The operation consumed about seventy minutes. There was much sensitiveness about the tooth at first, which soon subsided, and about a year afterward he had the other superior incisor treated in the same manner.

It is now over two years since the last operation, and to use his own words, "They are the best teeth I have." Since then I have performed the operation on three different patients, and every case has proved a perfect success.

WHO SAYS WE ARE DEGENERATING?—A few years ago, at the Eglinton tournament in England, it appeared that the famous knights of three and four centuries ago must have been smaller even than the Englishmen of to-day, for it was impossible to put on their armor. And now come vital statistics to prove that we are more hardy and longer-lived than our fathers. The statistics kept at Geneva since 1560 show that the average term of life has been steadily lengthening. At that time the average was only 22 years; it is now 40. In the fourteenth century the average mortality in Paris was 1 in 16; the rate has been reduced in our day to 1 in 32. In England, less than two centuries ago, the mortality was 1 in 33; now 1 in 42. The laws of life are better understood; the comforts of life more widely distributed, and habits of living improved; even consumption, the fatal malady of our New England climate, is yielding slowly to a wiser method of treatment, and the annual percentage of deaths is smaller than fifty years ago. If, by sound system of diet or exercise, the constitutions of New England girls could take on a higher vitality and vigor, the outlook for the future would be hopeful.—*Ex.*

INSECTS IN MEDICINE.—Insects had a prominent place in the *materia medica* of former days, and were administered with as much confidence in their efficacy as is now given to the medicinal plants of the garden or the tinctures of the apothecary. They were generally given in the form of pills. Five gnats were equal to three grains of calomel. A lady-bird was a sovereign remedy for colic and measles, and a cockchafer for hydrophobia, and the plague. Ants were considered to be invaluable against leprosy, and of great efficacy in strengthening the memory and giving wonderful vigor to the frame. An Italian professor declared that the finger imbued with the juice of a little insect having the pretty name of *rhinobatus antidontalgicus*, will retain the power of curing the toothache for a year!—*Four. of Chemistry.*

SUCCEDANEUM FOR SKIN-GRAFTING.—Under the heading of "Skin-Grafting Superseded," the *Medical Press and Circular*, referring to Dr. Fiddes's statement that no skin need be taken, but merely a few epidermic scales, editorially suggests a professional trial of a popular method of healing old ulcers by means of the "skin of a new-laid egg." The egg must be fresh laid; and the membrane, which is easily detached from the inner surface of the shell, is to be smoothly spread over the ulcer. Our contemporary has lately heard of a case in which this method "was completely successful after years of ordinary treatment had failed." It is not stated whether the cicatricial tissue manifests any tendency to grow feathers in such cases.—*Cincinnati Lancet and Observer.*

BONE FELON.—Of all painful things, can there be any so excruciatingly painful as a bone felon? We know of none that flesh is heir to. As this malady is quite frequent, and the subject of much earnest consideration, we give the last recipe for its cure, which is given by that high authority, the *London Lancet*: As soon as the disease is felt, put directly over the spot a fly-blistar, about the size of your thumb nail, and let it remain for six hours, at the expiration of which time, directly under the surface of the blister, may be seen the felon, which can instantly be taken out with the point of a needle or a lancet.

ONE CURE OF DYSPEPSIA.—If you do not want to become dyspeptic, you must avoid the habit of gormandizing outside of regular meals. Give the stomach an occasional rest, and it will stand out the longer under the repeated pressure of huge meals and indigestible confections. All the stomach needs is occasional rest. Hearty meals and incessant lunches furnish ample cause to account for most cases of dyspepsia.—*Manufacturer and Builder.*

BROMIDE of calcium, in doses of from 15 to 30 grains, is recommended by Dr. Hammond as an excellent hypnotic. It must be kept in the dry state, as the solution decomposes quickly.

MINING SCIENTIFIC PRESS

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That Quicksilver Bill.

We are glad to see that the Press of the State takes the same view of the bill to regulate the price of quicksilver, as that taken by us in our last issue. A good many of our exchanges consider the whole thing a burlesque, while it is at the same time universally condemned. The proposition is an absurd one, and totally impracticable. The only way out of it is for some of our big mining men to take their money out of stocks and invest some of it in cinnabar. The mountains of the Coast Range abound in cinnabar ores, and a large number of claims are partially opened, and only want the aid of capital to develop them. If these mines are opened and worked, the product will increase, and the price naturally fall.

Another way, as the *Bulletin* suggests, as to abolish the tariff on quicksilver, which at present prices amounts to not less than fifteen cents on every pound consumed by the miners on this coast. We notice that most of our exchanges pitch into the "monopoly," which, by the way, has not been in existence since last April. The New Idria and New Almaden product fell off last year considerably. The Redington increased its product, but all of them combined, with the numerous newly-discovered mines did not produce within two thousand flasks as much as was produced in 1873. All the small mines came into the market with their quicksilver, and as they could undersell the monopoly price, it was useless to keep up the combination. Moreover, the natural laws of supply and demand raised the price above even the heavy figures formerly charged by the monopoly. The troubles in Spain have retarded progress at the Almaden mine, the principal producing mine out of California.

With the decrease of production the consumption has increased in our mining States and Territories alone, fully 50 per cent. Any one can easily see that it would not need any monopoly under these circumstances to raise the price of quicksilver. It raised itself and the only way to lower it is to open and work more mines. We do not think it at all probable that the Bill introduced in the Assembly

regulating the price of quicksilver in California at 35 cents per pound will ever become a law. In the first place it would be absurd and would be a bad precedent for fixing the prices of other products. Again, it would operate in such a manner as to shut down the mines now running, prevent others from being opened and would shut down half the mills and mines in the country. We need cheap quicksilver, but must take a better method to procure it than the Bill proposes.

Economical Mine Management and Its Results.

We desire to call the attention of miners to an example which merits their attention, showing the good results from the economical and practical management of mining property. It shows at the same time that large companies with many officers cannot do as well with mines as a few owners can who devote their personal attention to their business.

The Gold Hill mine, owned by David Coughanour and Thomas Moultrie, is on Granite creek, three miles from Placerville, Idaho. They have a 25-stamp mill, 5 of Hungerford's concentrators, 4 Wheeler pans and 2 settlers. The mill runs night and day, Sundays and all, and during the past three years the total stoppage of the mill has not exceeded 10 days. The miners do not work on Sundays, but have plenty of ore out for the mill to crush. The mill is situated in a ravine and a tunnel has been run in on the ledge both ways, so that the quartz never sees daylight until after it has been crushed. The tunnel running each way from the ravine is right in on the ledge and is 3,000 feet long. The ore has been stoped out to the surface, as the ledge is well defined the whole length. The deepest place where the surface is 300 feet. The quartz vein is very soft and the walls hard, so that they seldom have to do any blasting, which of course is a great saving. They crush from 35 to 40 tons of ore per day, and the total cost of mining, milling and all is only \$4 per ton.

This gold mining property was formerly owned by several other parties, all of whom made a failure of working, and abandoned it. The mill itself originally cost, at the time of high freights, \$120,000. At that time Mr. David Coughanour, an old miner, but a ship carpenter by trade, was wharf sawing in the neighborhood. He and Mr. Moultrie, when the mine was abandoned by the former owners, succeeded in buying the whole property, mostly "on time," for \$25,000. At the time he got the mine he was down to bed-rock; but by untiring perseverance he has developed a splendid mine, and made it pay handsomely at the same time.

They have at work now on the property about fifty men, whom they pay sixty dollars in currency per month, and board, during the winter; and, in the spring, when there is water for the placer mines, they pay seventy-five dollars in currency per month and board. Wood is bought and stacked up for four dollars per cord in greenbacks; and they have plenty of water for steam purposes, etc. In the coming spring, the owners intend to sink on their ledge where it crosses the gulch, and where they will have breasts both ways. The boiler they now have has sufficient capacity for the new engine, hoisting works, etc. The ledge has been worked continuously the length of the tunnel—three thousand feet—and they have not come to the end of the pay rock. They have now on hand nearly five thousand tons of sulphurets concentrated, which they intend to work up at some future time. They have never worked any sulphurets, and they have accordingly accumulated at the mill.

Mr. David Coughanour, the principal owner, is the manager of the property. He works as hard as any of the laborers, and could not be distinguished from them in dress and appearance at the mine. He is much liked by all who know him, and is a plain, practical man. Mr. William Coughanour, his nephew, formerly a school teacher, looks out for the finances and superintends the mill. He is handy with tools, has rigged up a lathe, etc., and turns off the old tappets, makes repairs, and is a handy man for such a place. Mr. Moultrie, formerly, we believe, a drayman, is an invalid and resides in this city, visiting the mine occasionally.

Any one who visits this mine, will say that it is the best managed one he ever saw. Everything goes like clockwork and in a systematic manner. It is worked on economical business principles, as a mine should be worked. They buy their provisions, supplies, etc., in this city in the summer when freight is low, and pay cash for everything they get. Their success shows what industry and perseverance, combined with good common sense, will do. They have merely brought into the business of mining the same methods pursued in ordinary business, which few people do. True, their mine is favorably located, but others failed in the same place. We don't believe there is another mill in the country that has not stopped more than ten days in three years. They clean up five stamps at a time and keep the rest running. There are plenty of other mines in this State, and others on the Pacific slope, that would pay to work as well as the "Gold Hill," if they were managed as well. We wish we could record more instances of the same kind.

New Loan to the Sutro Tunnel.

The Sutro tunnel was in, at last reports, 5,555 feet, and the work was progressing as well as usual. We notice the publication of a prospectus of the company in London, in which Messrs. McCalmont Bros. & Co. are authorized by the Sutro Tunnel Co. to receive subscriptions for £600,000 sterling, or \$3,000,000 in gold, 8 per cent. first mortgage convertible bonds of that company. The bankers who have charge of this business, are the same who so successfully managed the London loans of the Reading R. R. Co. The bonds will be of \$1,000 or £200, each bearing interest from the 1st of April, 1874, at 8 per cent. per annum, payable half-yearly on the 1st of April and 1st of October in each year. The principal will be redeemable at par in 29 years by an accumulative sinking fund of 1 per cent. per annum, applicable by yearly drawings, to be made in London under the superintendence of the Trustees, the first drawing to be made in London, October 1st, 1874, the company having the power to increase the sinking fund if it shall see fit.

The principal and interest of the bonds are to be payable at the holder's option, in London, at the office of Messrs. McCalmont & Co., in sterling; or in New York, at the office of Messrs. J. & W. Seligman & Co., or in San Francisco, at the Anglo-Californian Bank (Limited), in gold; free in all cases of all Federal, State, or Municipal taxes in the United States. As a valuable privilege, holders of bonds will be entitled at any time before the expiration of six calendar months after the opening for traffic of the main tunnel from its mouth to the Comstock lode, with a double track railroad, shall have taken place, and shall have been officially and publicly announced by the company, to convert the bonds now offered into shares of the company of an equivalent nominal amount at par—that is to say, 100 shares of \$10 each, fully paid up for each bond of \$1,000 or £200 sterling—upon depositing the bonds with the coupons not due at either of the places appointed for payment, with a notice addressed to the company of the desire to effect the exchange. The bonds will be issued, bearing interest from 1st April, 1874, at the price of 82 per cent., payable by instalments as follows: 5 per cent. on application; 15 per cent. on allotment; 15 per cent. on 2d March, 1874; 15 per cent. on 1st June, 1874; 32 per cent. on 15th September, 1874. Parties desiring to anticipate payments, may do so on allotment, or on either of the above dates, under discount at the rate of 5 per cent. per annum.

The distinctive features of this undertaking are well known on this coast. The company is entitled, by Act of Congress, to a royalty upon the produce of all the mines benefited by the tunnel. It will also possess the traffic from a whole mining district, in which there are already more than a hundred miles of underground workings, so that it will not be dependent on the success of any particular mines. In order to provide ample funds for the completion of the tunnel and railway, and a margin in addition for the construction of mills, reduction, and other works of a magnitude commensurate with the future of the enterprise, a first mortgage has been made of the tunnel, railway, water rights, franchises and lands to Mr. Robt. McCalmont, of Philpot-lane, and Mr. Isaac Seligman, of Angel-court, Throgmorton street, London, as trustees, to cover a total nominal sum of £1,600,000 or \$8,000,000 bonds.

It is believed that the proceeds of the present issue will be sufficient to open the tunnel and railway to the Comstock lode, although it is anticipated that at a later date, in order to obtain the full benefit of mineral lodes as developed, further issues may be made to erect reduction works, and make other extensions and improvements of the company's property. But in any case no further issue of bonds will be made by the company before 1876, and then only at a higher price than the present issue, except by consent of the trustees of the mortgage. The net minimum revenue accruing to the company under the laws of Congress from royalties, transportation, etc., and based on the present production of the mines, is estimated at £370,000 per annum, being more than twice the sum required to provide for the interest and sinking fund upon the entire mortgage of £1,600,000, should that amount ever be issued. This revenue is entirely irrespective of much larger profits expected from mining developments, and concentration and reduction works.

The chief office of the company is in this city. The Board of Directors is composed of the following gentlemen, four of whom are nominees of the trustees of the mortgage:—Mr. Joseph Aron, Mr. Charles W. Brush, Mr. John B. Felton, Mr. S. Heydenfeldt, Mr. Edward N. Hooper, and Mr. Thomas C. Wedderspoon, of Messrs. Cross and Co.; and Mr. Ignatz Steinhart, of the Anglo-Californian Bank (Limited). The legal advisers of the company in London are Messrs. Freshfields, 5 Bank Buildings, Lothbury, E. C. The authorized share capital of the company is \$20,000,000, of which \$16,000,000 have been issued, and the proceeds expended in the acquisition of the franchises and lands, in bringing together the necessary machinery and plant, and towards the construction of the tunnel and railway, and in the provision of a sum which has been lodged with Messrs. McCalmont Brothers & Co., sufficient to provide for the interest and sinking fund of the present issue for three years from the 1st of April, 1874, before which period it is expected that the works themselves will be productive.

Sargent's Mineral Land Bill.

Considerable discussion has been provoked by Sargent's Mineral Land Bill, and a good many people have mixed up that introduced by him with one introduced by Mr. Ward, of Illinois. Senator Sargent on the 11th inst., presented in the Senate the resolution of the California Legislature, instructing Senators and Representatives in Congress to oppose the bill introduced by Mr. Ward. After reading the resolution he said:

"The reason I desire to call the attention of the Senate to this resolution is to say that by some blunder of the press or telegraph the bill which was introduced by Mr. Ward, and to which I am opposed, believing it to be injudicious, believing that it would be subversive of the mining interest of the mining States and Territories, was credited to me. It was telegraphed to the people of the Pacific Coast that I introduced this bill, and for which I was freely criticised and denounced as being the author of the bill in which my long knowledge of mining matters would seem to implicate me. In order to set this matter right, I would say that I have not introduced any such bill, and I am not in favor of it. I am not in favor of compelling miners to apply for patents for their claims, except at their own discretion, under the existing laws. I would say that the criticism which has been made on me in consequence of the erroneous position I have been placed in, is unjust to me. The surreptitious and anonymous communications sent to me I do not see fit to characterize as they deserve. I move that the resolution be printed and referred to the Committee on Mines." The motion was agreed to.

Both Page and Luttrell appeared before the House Committee on mines and mining on the same day, while they were considering the Sargent and Page Mineral Land Bill. The Mineral Land Bill providing for the protection of settlers and miners in the mineral district of California, and for a uniform price of \$1.25 per acre, was taken up and finally discussed. Luttrell said he approved of the bill. It was a necessary measure in order to secure a good population in the mining districts where farming and mining go hand in hand. He thought the provision to exclude railroad companies from deriving any additional benefits was not strong enough, and therefore he asked that the following amendment be added at the close of the first section to read as follows:

And provided that nothing herein contained shall be so construed as in any case to enlarge or modify any grant heretofore made to any railroad company or corporation, or to allow any such railroad companies to take, in satisfaction of any such grants, any placer mining land.

Page said:—I accept the amendment proposed by my colleague, although the Committee are aware that the whole object of his amendment is secured by the first provision already in the bill; but I am willing, however, to grant him this, so his constituents may be certain that he is not acting in the interest of the railroad company.

General Negley, who has some constituents in Pennsylvania, who own mines in California, and who have written to him on the subject, said he fully accepted the bill with one proviso, which he offered and it was accepted. It is as follows:

"Provided, That none of the provisions of this bill shall be construed to apply to, or affect in any manner, any land to which there is an adverse claim, or any land title which is now in controversy or being litigated in a State or Federal Court, or any of the Departments of the Government."

The Committee then agreed to report the bill with the amendments proposed, which was done as soon as Congress opened, and the bill was ordered re-committed and printed. It is thought that the bill will now pass when the Committee report.

AN OVERWORKED BOILER.—A good lesson is taught in the verdict of the coroner's jury in the case of D. M. Folsom, who was killed last week, by the explosion of a boiler at the corner of Stevenson and 7th streets. The verdict was as follows: That the deceased came to his death from injuries received from the collapse of a boiler furnace, and that said collapse was by over-pressure of steam. That through ignorance and a want of proper inspection laws, the boiler had been frequently worked to four times the pressure which should be allowed as a factor of safety, thereby injuring and decreasing its original strength, so that it was liable to collapse with less than the pressure at which it was tested when manufactured. Signed: W. W. Hanscom, Albert Whipple, George W. Dickie, F. J. Curry, W. Hawkins, M. Greenberg, James Aitken, J. W. Farren.

MINT STATISTICS.—The annual assay of reserved coins from the Mints at Philadelphia, San Francisco and Carson, began on the 11th at the Mint in Philadelphia. The pieces for assay amount in all to \$50,000 in value, and it will require a session of at least three days. The total coinage of the three Mints during the present fiscal year was as follows: Philadelphia—pieces, 30,142,930; value, \$20,786,228. San Francisco—pieces, 1,851,300; value, \$17,061,500. Carson—pieces, 529,440; value, \$841,455. Total for all Mints—pieces, \$32,523,670; value, \$38,689,186.

A Future Rival to California.

The auriferous gravel deposits of California, though practically inexhaustible, and covering an immense tract of country, require so much capital to work, that poor men can do little with them. The old surface placers which panned out such immense sums to individual miners are long since worked out, and it is only occasionally that we hear now of claims of this character. All old miners, however, have a fondness for shallow placers, very naturally too, so whenever any new mines of this kind are struck, there forthwith commences an exodus from other localities to the favored one. The Stickeen River mines are most looked to just at present and big stories are told of the country where the mines are situated, but its remoteness, hard climate, short season and other disadvantages deter many from going who otherwise would do so. Notwithstanding these drawbacks, however, quite a number of men are preparing to visit the country in the spring. Gravel miners possess, also, a charm to the capitalist, who of late has found out that he has a surer return in that class of mining property than in any other. For this reason a number of hydraulic mines have of late been disposed of to our English cousins.

The hydraulic mines of California have obtained a world-wide reputation, and nowhere else are they of such extent and richness. During the past year, however, we have heard whispers of magnificent tracts of auriferous gravel, situated in the United States of Colombia. The mineral resources of this country are entirely undeveloped and although it has always been known that extensive mines existed there, the presence of auriferous gravel was not suspected. The country contains silver, gold, platinum, copper, lead, iron, mercury and antimony, and some precious stones. With the exception of the salt mines at Zipaquira, little mining of any account has been done. Until within the past year or two, little has been done with the gravel, the existence of which was not, in fact, known until lately. Now, three or four companies are prospecting and working, and others are about to engage in the business.

We had a conversation this week with Mr. Thomas H. Follingsby, who returned from the country referred to recently, and also with Mr. Morales, the Colombian Consul in this city, and learned some facts from them which may be interesting to our readers. Mr. Follingsby, who is an old California '49er, has been down there some three years and has prospected the country pretty thoroughly. He says that the belt of auriferous gravel covers the country from Maricao on the Atlantic side to Barbacoas on the Pacific. This mining country is perhaps 1,200 miles long. The hills are pretty steep generally, and there is an abundance of water. The formation is precisely like the Californian gravel country, with the same red hills, sharp gravel and quartz, etc. In some places these hills of gravel run continuously for a hundred miles, and the belt is some sixteen miles wide. As far as he could ascertain, the gravel is from 100 to 200 feet deep. He himself discovered wet diggings in the State of Santander, to which place he is about to return with a complete hydraulic mining outfit of pipe, nozzles, etc. In this locality he says he was able to get about half a cent to the pan from surface dirt over a large extent of country. The diggings were full of boniders, just as they are in California. There is not much iron in the country. There is no very tough cement, but all the gravel he came across was free, and easy to wash.

Mr. Follingsby has also been in French Guiana, where the mines are rich, but the climate very bad, indeed, and very unhealthy. He says that although on the seaboard in Colombia it is sometimes unhealthy, when you get into the back country, at an elevation, the climate is salubrious, and as healthy as it is here. The mines can be worked all the year round, as there is great abundance of water in most localities.

A few companies are now working in the gravel mines referred to. One company was formed in this city and a man sent down to test the mines last year. The mines were on private property, and the owner came here and made a contract with certain parties in this city. Three hydraulic chiefs were taken down and a few experienced hydraulic miners went with the party. After they got running, they are reported to have averaged two pounds of gold per day with one nozzle and a head of water with 200 feet fall. At all events the manager returned here and went back again last month with 10 hydraulic chiefs, 8 for his company and 2 for other parties. They also took a lot of pipe, bolts, rivets and machinery with them. They already had three chiefs with them though they used only one in testing the ground. This company is working in the State of Cauca, in Barbacoas county on the Pacific side.

The consul also informs us that he has sent down three hydraulic chiefs and accompany-

ing machinery and pipe, for a company formed in New York, who sent here for their apparatus. The mine worked by this company are in the State of Tolima, on the west side of the Magdalena river, on the Atlantic side. This company was called the Cordillera Mining Co. of New York, and they are now at work, having started in last summer.

Another New York company started work in the State of Tolima in 1872, and are now doing very well. They, however, are working some old quartz mines.

Another company organized by two Californians, Col. Baker and Mr. Wilson, who fitted out in New York, are now at work on a bar on the river Saldana in Coydima in the State of Tolima. They have a bar some three miles long and are working it by pits, using pumps in their claim. They are reported to have struck regular '49 diggings, and in some places washed out \$63 to the pan.

News of these companies have said much about their prospects or what they were doing, having kept rather quiet on this subject. This company that went from here took several old California hydraulic miners with them, and all of them ought to test this country pretty well. That other mines have been worked there in a slight degree is well known, in the days when the country was called New Granada. Quartz has been worked in both Canan and Antioquia. Along the river Saldana in the State of Tolima, there are several rich gold mines already discovered, such as the Cayaine, the Chapparral and the Amoya mines. The richest emerald



VICTORIA SPRING BED.

mines in the world are found in the State of Bayesen on the western side, at a place called Muzo. Some of these are being worked by a French company under a contract made with the Government. On the river La Plata or Papayan, in the State of Antioquia, are several rich mines, where the natives pan out gold in a battea, whenever they feel sufficiently energetic. On the whole, according to the accounts of the country, it affords a good field for miners, and the Government is desirous of encouraging them to work the mines. In our next issue we will endeavor to give further particulars as to water supply, mining laws of the country, etc., which would be likely to interest our readers.

IMPROVED STEAM BOILER.—Harvey W. Rice of Haywoods, Alameda county, has recently patented through the MINING AND SCIENTIFIC PRESS PATENT AGENCY, an improved steam boiler to be used in connection with threshing engines for utilizing straw and other light substances for fuel, by which he claims to accomplish complete combustion of the fuel without smoke or sparks from the smoke-stack, thus avoiding any liability of creating loss by fire in the harvest field. By his construction of the boiler, the tubes and the tube sheets, inside of the shell of the boiler, can readily be removed at any time, so as to be cleaned or repaired at slight expense. Mr. Rice has constructed two or three of his improved boilers, and reports that they work to his entire satisfaction, and he feels confident that when the merits of his invention become known to threshers, it will be universally adopted.

SINGLE RAIL RAILWAY.—In our last issue we mentioned some facts concerning a single rail railway in Georgia. Mr. Crawford, room 60, Grand Hotel, in this city, has the model of a single rail railway, something like the one described, which the curious can see by calling on him.

An injunction has been issued in Pioche by District Judge Fuller, to restrain the Newark Mining Company from working certain ground. The injunction was issued in the suit of the Washington and Oreole company.

"Flea Seeds" Cynips Saltatorius.

We present this week the engraving of an insect and shell from which it emerged, for the purpose of showing our readers an object which has attracted considerable attention for the past year or two in this State. They were first



"FLEA SEED."

brought to notice by the curious jumping qualities possessed by what was supposed by some persons to be mustard seed, and many theories were advanced as to how the thing was done some of which were quite amusing.

Genus Cynips—L Cynips Saltatorius, (nov. sp.)

Black, shining. Head broad between the eyes, which are very prominent. Antennae 14 jointed, the 1st and 2d joints being much swollen, and the 3d joint longer than the other two, the remaining joints are long, simple and nearly equal. Thorax densely but finely punctured, very globose in front, projecting so far as to almost hide the head. Abdomen globose, shining. Ovipositor cases, short, spatulate received into margined groove in the body. Ovipositor itself flesh color, curved inwardly toward its middle. The abdomen is 6 jointed. Terminal joint of palpi, hatchet shaped. Tarsi very hairy throughout, the anterior pair with six and the remainder with seven joints. Coxae very globose. Tibiae long, with large and powerful spines at the base.

The Victoria Spring Bed.

The accompanying cut shows an improved spring bed, manufactured by W. H. Smith, 151 New Montgomery Street, in this city. Its prominent features are its cheapness, lightness and elasticity. The bed is composed of 192 steel springs, yielding and pliable like watch springs, the helices united by metal clamps, and the whole so arranged that pressure, applied upon any one portion of the surface of the bed, is equally distributed and sustained by all of the springs. This imparts to the bed an even elasticity and general softness, which is a peculiar characteristic, preventing that sinking down of the bed in one spot, and that down-hill feeling of the surface, or sloping towards the place where the greatest weight rests—defects that are common to this ordinary spring beds.

Another striking advantage of this bed is its remarkable flexibility. As shown in our engraving, it may be rolled up like a blanket, forming a convenient package for transportation, and it may be carried about the household with the utmost facility.

Its extreme lightness is a distinctive and important quality, the total weight of a first-class double bed being only 35 lbs. A child may carry it; any woman may lift it with ease. Housekeepers will appreciate this quality, for they can remove and place the bed whenever they require, as easily as if it were a bolster.

Another excellent feature is its security against corrosion, the springs being inlaid with a water-proof fire-enamel, which renders the bed serviceable in any climate, hot or cold, dry or damp.

Both sides of the bed are alike; it can be used either side up; has no attached frame of wood or slats, but is soft, flexible and yielding in every part. In summer time it forms a cool and luxurious couch.

This bed is noiseless and durable. Rolled up for transport, as shown in our engraving, it forms a light, compact bundle of steel springs, which may be sent to any part of the world without risk of damage. At each place where the springs are joined together a piece of leather is inserted inside of the band so as to prevent any noise or scraping. Different sizes of beds are made to suit different bedsteads.

PATENTS & INVENTIONS

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

(FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS, AND U. S. AND FOREIGN PATENT AGENTS.)

By Special Dispatch, Dated Washington, D. C., Feb 10, 1874.

FOR WEEK ENDING Jan. 27, 1874.

CAR PROPELLER.—Fayette Mace, Jackson, Cal.
FINER BARS FOR HARVESTERS.—Victor N. Collins, Dixon, Cal.

APPARATUS FOR CONVERTING MOTION.—Romulus R. Stevens, assignor to self and Lewis M. Cutting, Stockton, Cal.

SHIRT.—Ismael Zacharias, S. F., Cal.

PLANK ROADWAYS.—Cornelius McGowan, S. F., Cal.

COMPOSITION FOR DRAIN PIPES.—Francis J. Bondryl, assignor of one-half interest to J. Mihy.

SHEARS.—Edward Nnnan, S. F., Cal.

AIR COMPRESSING APPARATUS.—Wm. Johnston, Lima, Peru.

The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with greater security and in much less time than by any other agency.

The Stickeen River Country.

The following Report of exploration of the Cassiar District—a locality now attracting considerable attention among miners—is published in the Oregonian of the 31st ult:

To the Honorable the Chief Commissioner of Lands and Works, British Columbia: Sir—From Fort Wrangel to the mouth of the Stickeen river, the distance is about five miles; from the mouth of the river to the Big Bend, distance about eighteen miles; and the average course east. From the Big Bend to the Great Glacier seven miles—average course north by east. From the Great Glacier to the Hudson Bay Company's post, distance about thirty-eight miles; average course north by east; portion of this part of the river is a great deal cut up by sloughs, snaggy and shallow in the fall of the year. From the Hudson Bay Company's post to Salmon creek, six miles; average course west; also a portion of this part of the river is cut up by sloughs, snaggy and shallow. From Salmon creek to Little Cañon, about seventeen miles; average course north. From Little Cañon to Klutchman's Cañon, nine miles; average course, north by east. From Klutchman's Cañon to Clearwater river, about fourteen miles; average course northeast by north. From Clearwater river to Collins' bar, eight miles; average course north by east. From Collins' bar to Shakesville, about seven miles; average course northeast by north. Three and a half miles above Shakesville there is one riffle, not navigable for steamboats at low water; with high water it is good; and with middling stage can go through this slough, leaving the riffle to your right. From Miller's bar to Telegraph creek, foot of the Great Cañon, distance ninety miles; average course north northeast.

The ice leaves the river from the 24th of April to the 5th or 6th of May. From that time, suitable river steamers can run the river until the first or middle of October, some seasons they may run later, from Collins' bar to the first North Fork.

Vegetables and good potatoes are raised to good advantage. From the Little Cañon up, the snow falls light, from two to four feet. From the cañon down, snow lies, after it has settled, from five to nineteen feet deep in places on the river bottoms. On the Upper Stickeen, the spring opens early; the snow disappears in the latter part of March or the first of April. The weather from the first of May, and through the summer months, is at times excessively warm.

When my sons and I arrived at the foot of the Great Cañon, on the 22d of May, 1873, where we expected to get an Indian for a guide, after a day or two's delay, we started without a guide; as there were no Indians on the Stickeen at that time of the year, we could gather very little information about the trail. The trail follows the Stickeen river for about twenty-five miles, along a bench country, cut up by numerous deep gulches, including the first and second North Forks. At the second North Fork, we were detained two days and a half building a bridge; then the country is tolerably level and dry for twenty miles; then traveling through swamps for twelve or fourteen miles further we came to a mountain which we were obliged to climb; we traveled on these mountains for about fifteen miles, and found ourselves getting into a slate range, which we followed for ten miles or more. This ridge of mountains runs about north and south. The waters of these mountains, as you will perceive by the map, run into the second and third North Forks of the Stickeen river. Then coming to a large valley, running northeast by north, followed this valley for twelve or fourteen miles. There is a large creek running through the center of this valley, with numerous small creeks and gulches emptying into it. I have since proved that this creek is the headwaters of Dease's creek. Not knowing the exact locality of the lake, we turned a little more to the eastward, and struck Dease's lake, about midway between Dease's creek and the head of the lake, on the 13th June, with double packs to each man. A day or two before we got to the lake, we crossed a creek which I prospected, and found a few fine "colors;" cached our provisions; went up the lake and started back to the Stickeen through the valley; arrived at Miller's bar on the 17th June. The first forty miles on the road to Dease's lake, from Stickeen, the feed for animals is good and extensive; but the balance of the way, the feed is not so good, and limited.

Left Miller's bar on the 20th for the lake, with double packs each. Anxious to find out the best practical pack trail, I took the mountain trail, eastward of the third North Fork, which is the trail the Indians travel to Dease's Lake. To the Upper Stickeen, I found this part of the country much higher than what I anticipated; and also numerous swamps and deep moss. Patches of snow lying along the trail in the first part of July.

We arrived at the lake again on the 7th of July. On the 8th we started down the lake. On the afternoon of the 9th we arrived at the mouth of Thibert creek. I went up a short distance and prospected a little; found a few fine colors, and came back to camp. Next morning I went up the creek again; found Mr. Thibert and his two partners, who were all the men who were on the creek; prospected some that day, and returned to camp. Next morning we started to pack our provisions on the creek, which took us several days. On the 15th July, we located our claims on Thibert creek, and got ready to work. On the 25th, I and my son went prospecting on a creek which

we call Delure creek; it empties into Thibert creek. I prospected there until the 30th; found a little gold but not in paying quantities. I ran a cut in one place; found a little gold in the gravel, but none on the bed rock, as the rock was smooth washed. In other places I could not get to the bed rock on account of water, as the creek was high.

Thibert creek has turned out very good, but there is a great drawback on this creek—that is frost—in some places on the shady side of the creek the ground is frozen right down to the bed-rock.

The Rath Co., Collins Co., Reynolds Co., Discovery Co., and the Waldon Co., are considered the best claims on Thibert creek. These companies have made from two to four ounces a day to the hand; all working with rockers, except the Waldron Co., who had sluices.

Not being well and having a sore leg, I was unable to travel. On the 19th of August I sent my two oldest sons out prospecting. They arrived on Dease's creek on the 20th, and on the 23rd staked off the Discovery claim, and came to Thibert creek on the 27th, with a prospect of 20 cents to the pan, having prospected the creek about three miles, and found paying prospects all the time. But this did not start the miners from Thibert creek; they said it was only a few spots of fine gold; but according to what my sons told me of the creek, I was satisfied there was good digging on this creek and sent them over again on the 29th. On the 2d of September, I sent my youngest son and an Indian with packs of provisions; when they came back again, I started over, and found my sons running up a drain and washing the gravel with a rocker, which paid them five ounces a day; they had been rocking then two days. I also went up the creek and prospected. Being satisfied that the creek was rich and extensive, I returned to Thibert creek, and informed the miners that the creek was good. Nearly all of them went over to Dease's creek and located ground. All found big prospects, that will pay from ten to one hundred dollars a day with sluices.

On the 24th of September, the weather turned cold, with a northeast wind, and continued so until the 29th; then it started to snow, with a northeast wind; all the miners leaving the creek. It continued cold, and snowing heavy, until the 1st of October; we then packed up and left. Found Mr. Rath and brother at the mouth of the creek, and traveled out together; weather very cold, and blowing a heavy wind, with snow. On the 3d of October it moderated. By this time the snow was from 20 to 30 inches deep; the same day it commenced to rain. On the 7th we arrived at Buck's Bar.

Dease's Lake opens from the 15th to the 25th of May.

Yours Respectfully, WILLIAM MOORE.
Victoria, B. C.

PORT WRANGLER.—This place, which is now attracting no little attention as the embryo American city in the extreme Northwest, and the commercial entrepot to the recently discovered gold placers in the Cassiar country, is located near the north end of Wrangel Island, and is about five miles from the mouth of Stickeen River. It was, years ago, settled by the Russians, who built a trading post on what is known as Etaline Harbor. Soon after Mr. Seward's purchase of the country, the United States authorities built a large stockade fort near the site of the old Russian House, which they occupied until 1870, when the buildings were sold to W. K. Lear, by order of the War Department. They have been occupied by that gentleman since that time. Mr. Lear has established a thriving trading post and has carried on a lucrative business with the Indians of the coast and the Stickeen. The town already contains sixteen substantial buildings, and preparations are being made for further improvements. A vessel is now loading at the Sound with lumber, and a substantial wharf is to be built in time for the spring trade. In Monday's dispatches it was announced that the Post-office Department had established a Post-office at this place, to be known as Fort Wrangel, with William King Lear as Post-master. This will prove a great convenience to those parties who design visiting the new gold fields.—Oregonian.

SWOCK MINES.—A correspondent of the Walla Walla Union writes as follows of the mines on the Swock river: Several claims that have been opened on the Swock are now being worked with encouraging results. The weather is about as mild there as in this valley. Persons have been coming in and going out all winter. The snow has not been to exceed twelve or thirteen inches at its deepest, and at this time there is not more than six or seven inches, and should the present weather hold a few days longer the whole country will be rid of snow, except on the highest mountains and the intervening gulches. Five persons a few days ago passed up through the valley from below en route for the diggings. This would appear to be timely. It shows that there are some persons who have faith in these mines, notwithstanding the many counter rumors afloat to the contrary. Those who are fixed for it can mine now just as well as any time. There is no freezing of nights, and the days are warm and fine. The old ice is about the only drawback there is to successful mining at present.

It is a notable fact that in only one or two of the many recent wedding receptions in New York has wine been served. And it is supposable that the participants enjoyed themselves themselves none the less from the fact.

Utilization of Mineral Waste Products.

There are numerous useful applications of mineral waste that might be cited. Immense heaps of refuse, or "tailings," as they are technically termed, accumulate where mining operations are carried on upon a large scale, as in Australia and California. These contain a good deal of metal, which is now frequently economically recovered. The Chinese especially manage to make profits out of old waste heaps. A mine owner at the Sandhurst gold-field, in Victoria, sold the right to wash a large heap of tailings to the Chinese three times, and each time the men seemed satisfied with the result of their labors. There are immense heaps of tailings containing auriferous pyrites in Victoria, which if properly stacked and operated upon on a large scale, would yield nearly all the gold they contain, at but little cost of money or labor. The yield of gold thus obtained in Victoria from 1869 to 1871, by operating on about 8,200 tons, was at the rate of rather more than two ounces fourteen pennyweights per ton. At one large establishment twenty-five tons of pyrites on the average are now treated per week, the yield being at the rate of more than three ounces six pennyweights of gold per ton.

Some few years ago the Greek Government sold for a mere trifle to two foreigners their right over the rubbish heaps at the Laurium mines, which were first worked several thousand years ago, by the King of Athens, from the profits of which Pericles is said to have built the Parthenon. A company was formed to work them, for it was soon found that even the debris, which had been cast aside by the ancients as worthless, possessed great value. Extensive beds of scoria, the refuse of the silver and lead mines worked during eight centuries by the Athenians, now yield to modern metallurgic skill some 7,000 to 8,000 tons of lead annually, which contains silver in the proportion of about one-half per cent. The company now conduct their operations on so large a scale, that a town containing 4,000 inhabitants has sprung up on what was formerly a solitude; a railway has been constructed to the nearest port, and a small vessel plies twice a week between Argosteria and Piræus, for the transport of the argentiferous tailings to the roasting furnaces, of which there are twelve at work.

When sulphur became scarce and dear, owing to the monopoly in Sicily, our manufacturers who depend so much upon sulphuric acid, looked about where they could supply the demand, and pyrites, a waste mineral substance, was seized hold of, and now we import upwards of half a million tons annually from abroad, of the value of more than £1,400,000, besides a quantity obtained at home. The residue of the iron pyrites, after extracting the sulphur, is used in blast and puddling furnaces.

There exist in various parts of the globe sea-beaches and beds of titaniferous iron-sand, a material formerly valueless. Now it has begun to be utilized in various ways as a molding sand, for making paint, and the manufacture of high-class steel.

Other instances of the useful application of formerly waste substances that might be cited, are the petroleum oils, now forming so extensive an article of commerce, the asphalts, ozokerit, asbestos, etc., to say nothing of the immense trade in old soap iron, old lead and copper, and the recovery of tin from tin clippings. The slag and scoria of metals have now many industrial applications. The alkali and other wastes recovered from our chemical manufactures form now very profitable industries.—Artisan.

Resources of Utah.

In an article on this subject the Utah Mining Gazette says: The Territory of Utah contains an area of 70,000 square miles, and is situated between 37° and 42° of north latitude, and 109° and 114° west from Greenwich, and has a population of over 100,000 souls.

The principal products are minerals, of which nearly every variety has been found in greater or less quantities. Free gold has been discovered in Bingham, and is found in connection with other metals, in many of the ores of the different districts. So far, however, gold has not been discovered in sufficient quantities to make it an important product. Copper also is found in several of the mining districts of Utah, viz: Ophir, Tintic, Bingham Cañon and Bear Valley. Iron ores of excellent quality are plentiful in Weber and Cache Valleys, and Iron and Washington counties. The smelting, however, of iron ores on a large scale, has not yet been commenced, although arrangements are being perfected to engage in the business at an early date.

Coal of good quality is found in many parts of the Territory, and the last returns from the Surveyor-General's office, show that some 45,000 acres of coal lands have been surveyed in Castle valley and along the Weber river; besides which there are immense deposits in Sanpete county, in Southern Utah, and other sections.

We have also gypsum, niter, alum, bismuth, cinnabar, pyrolusite, marble and fire-clay. Of the last named article, extensive deposits have been found in Brigham cañon; and clays suitable for pottery ware, abound in the neighborhood of Sanpete and Ogden. Building stone of every description is plentiful, limestone forming the chief rock of the country.

Utah is traversed by a great mineral belt

about seventy miles in width and several hundred miles in length, running in a north-easterly and south-westerly direction, and covering a wide range of metalliferous deposits. Valuable discoveries have been made in chlorides and horn silver, varying from \$500 to \$2,700 per ton.

How Sargent's Bill will Work.

Under the head of "A Bad Section to a Bill" the following is communicated to the Stockton Independent:

Senator Sargent has introduced into the Senate of the United States a bill providing for the disposal of the greater part of the public mineral lands in California. This bill was introduced some while ago, but was so clearly objectionable that its author amended it, but as amended, it is so plainly defective that it should never become a law. The present methods of procuring title and settling conflicting claims to mineral lands are perplexing and uncertain enough without the introduction of any other element of confusion. The Senator is himself a miner and very familiar with mining laws, and the wants of that class of our people, but he nevertheless greatly mistakes the wishes of the miners when he would give the force of law to the fourth section of his bill. That section is as follows:

"Section 4. That all affidavits and proofs required by law to be made before local land offices in mining or preemption cases may be taken before any officer authorized to administer oaths, and when filed with the Register and Receiver shall have the same effect as if taken before those officers. Effect shall be given to this Act by regulation to be prescribed by the Commissioner of the General Land Office; provided, that when such affidavit or proofs are taken at any place other than within the land district, it shall be by the Clerk of any Court of record in the United States."

It is true enough that the present laws in reference to taking evidence and making affidavits in preemption, homestead and mineral cases, work a hard hip in certain individual instances, but it is the same hardship that is wrought by all laws of a general nature, as the revenue laws and the laws concerning jurors for instance. Taxation, from its very nature cannot be reduced to a system of practical uniformity any more than it is true that all jurors within a given jurisdiction can live within a mile of the Court House, or go home and remain with their families over night while discharging the duties of jurors. But the exceptional cases of hardships do not prove that taxation may not approximate uniformity any more than they establish a reason for dispensing with jury trials altogether.

Under existing laws and the instructions of the land department there is something like certainty as well as dispatch in the settlement of disputed claims to mineral lands, whereas under Senator Sargent's no claimant will be able to guess, much less see, the end of his dispute. Now, under this section four of the proposed law, the officers or persons who will be authorized to take evidence in contested preemption and mineral claims, are District and County Judges, County Clerks, County Assessors, Notaries Public, Justices of the Peace, Police Judges and ministers of the gospel, and so on, who, as a rule know about as much about the prescribed course of procedure in such matters as they do about the "Moabite stone"—always excepting District and County Judges and ministers of the gospel, though these exceptions are hardly worth mentioning. We will take not a very extreme case, by way of illustration, and just see for a moment where the Senator's law would end up: Say the land in dispute is on a sixth section; it is claimed by A as State school land; by B as a pre-emption; by C as a homestead, and by D as mineral. Locate the land within the limits of Poker Flat. Well, having laid a foundation for a considerable dispute, A having got a State patent, sues B and C in ejectment, and their time expires on the 23d day of August, 1874. The county seat is at San Andreas. But, in the meantime, B has cited all the rest to appear before the County Assessor at Mokelumne Hill on the same 23d of August, 1874, to show cause why he shall not be allowed to make final proof as a preemption claimant; still, in the meantime, C has cited all the rest that he intends to commute his homestead into a pre-emption and make final proof before Justice Numskull at Ragtown on the same 23d of August, 1874, while D, taking advantage of this crooked law, cites all the rest to Whisky Hill, where, before Deacon Stiggins, on the self-same day, he proposes to clearly show that he is entitled to purchase the land as mineral. Well, to proceed, on the same 23d of August, 1874, at San Andreas, A gets judgment in ejectment against all the rest by default. B at Mokelumne Hill, shows his right as a pre-emptor. C, at Ragtown, commutes his homestead, and at Whisky Hill D establishes his right to purchase the land as being mineral. Thus far each claimant has succeeded well, he has, in fact, got along swimmingly, but now comes the rub. On the evidence and record made in the four different tribunals the Register and Receiver are required to decide which of the claimants has the better right to the land, and if it can be shown that they can do so without any difficulty, we will support the bill, otherwise we shall have to vote against it.

ANALYSIS OF SOFT SOAPS.—According to the analysis of M. Herm, these soaps were found to contain Prussian blue, resin, starch and sulphuretted hydrogen, besides the fatty acid and alkali. The method of analysis is given somewhat in detail.

Cornucopia Mines.

A correspondent of the *Enterprise* gives the following condensed description of the mines in Cornucopia District, Nev:

Leopard.

This mine is the discovery and "brag mine," around which the others cluster. The Superintendent, Wm. Garrard, is pushing the work of development rapidly, and his reward in ore increases every day. He calculates by spring to have five hundred tons of ore that will mill \$800 per ton beside any quantity that will mill from that figure downward.

Grant Hussey Tunnel.

This mine is situated directly east of the Leopard and immediately adjoining. The tunnel is in about one hundred feet, at the end of which they are sinking a shaft in the ledge. The ore taken out is of excellent quality—working and assaying better than its looks would indicate. This mine employs four men.

Handy's Claim.

The shaft in this mine is down about eighty-five feet in good ore. There is considerable ledge water in the shaft which is a good indication. This claim conflicts with the Leopard.

Cope Mine

Is owned by Cope, the discoverer of Cope District. He is working this mine when the weather permits. Plenty of ore on the dump. This mine also conflicts with the Leopard.

Chloride.

This Chloride is situated northeast of the Leopard and has been leased to Grant, Plummer and Anstin, who are engaged in sinking a shaft on the ledge. The ledge is small, (18 inches in width,) with well formed and perpendicular wells. The ore is splendid, showing considerable horn silver. The shaft is down twenty-seven feet. Some of this ore was shipped to Winnemucca last week for reduction. Returns not yet known.

Black Diamond.

This mine is directly east of the Leopard, distant a quarter of a mile. They have abandoned their shaft temporarily and commenced a tunnel. In about thirty feet; calculated to strike a ledge at about seventy-five feet further east.

The Constitution

Has commenced a drift from the bottom of their shaft yesterday. They struck the ledge and cut through it. The ledge is very hard and appears to have considerable mineral in the ore.

The Carrie Mine

Is being worked by Messrs. Hutchinson & Terry. The incline is down about forty feet, having excellent ore in abundance from the beginning. They have several tons of ore on the dump which assays \$500. The Carrie is destined to be one of the leading mines of this district.

The ore of this district is uniformly free from base metal and exceedingly easy of reduction. The general character of the ore is sulphurets, not chlorides.

Surrounding Districts.

Bull Run—Little is known about this camp. They have some excellent mines there, one of which, the Blue Jacket, was sold two weeks ago for \$15,000 to parties in Eureka. They propose commencing work on it immediately and have already shipped considerable stores to the mine. Some day this camp will be a lively place.

Cope district has probably seen its best days. Still there are good mines there that will pay very well for the working, if managed properly. Tinscarora is situated at the head of Independence Valley. Placer mines abound, worked principally by Chinamen, who make from \$3 to \$5 per day out of them.

The Surrounding Country.

In no portion of the State is there better land for stock raising. All the year round the hills are covered by bunch and rye grass. Bull Run basin is one large meadow, from which numerous herds of cattle and horses obtain sustenance. Independence Valley in summer is covered with thousands of head of cattle. During the severer portion of winter they have to be driven south, as the snow covers the valley to the depth of eighteen inches.

Game.

Game abounds throughout the country. In winter, ducks of all descriptions, hare, rabbit, sage hens, prairie chickens and blue grouse. Let me here make an observation to the sporting men of Virginia and California. I see by the papers that they are importing game birds for propagation from the East at great expense, while here we have the finest game birds in existence, prairie chickens, etc., which belong to this country. They thrive and multiply rapidly in just such a climate as surrounds Virginia. Why don't these men, who love fine shooting, procure some of these birds and turn them into the sage lands of the Carson? The expense would be nominal compared with what it is to bring them from the East, with much more gratifying results, as they are already acclimated.

Beef.

Beef of the very best quality can be bought by the quarter here for 7 and 8 cents per pound. Such beef as you cannot procure in Virginia without paying an exorbitant price. There is a joint-stock company here (of which Abe.

Edgington is a member) whose cattle roam through the country and number thousands.

Mills.

Now is the time for some enterprising company to bring in a mill; the roads are in their best condition, better than in summer or fall; in two months more the roads will be almost impassable, owing to the deep mud.

Mill Sites.

The river Owyhee runs within three miles of this place, and affords excellent water power, with plenty of wood at hand. Deep Creek is two miles distant, easy of access from this place and would furnish plenty of water for a good mill.

Wood.

Wood is abundant within fifteen miles, easily hauled, with good roads for hauling.

Every one is anticipating good times this summer. I sincerely hope for the benefit of the camp that parties holding conflicting claims will compromise for their own good, and the good of the camp.

Accidents in Coal Mines.

They are divided broadly into five groups or categories, viz., explosions of fire-damp, falls of coal from the "face," as it is termed, of the seam, or from the roof; accidents in shafts from ropes or chains breaking, overwinding, etc., miscellaneous accidents underground, such as explosions of gunpowder, suffocation from gases, accidents from trams and tubs, etc.; and accidents on the surface by machinery, boilers bursting, etc. The total number of deaths in England from all these causes amounted last year to 1,060, the majority of which were due to separate accidents. In the first category, explosions of fire-damp, the deaths numbered 154; in the second, falls from the face or roofs of mines, they numbered 456; in the third, accidents in shafts, they numbered 155; in the fourth, miscellaneous underground accidents, they numbered 217; and in the fifth, accidents on the surface, they numbered 78. It will be perceived that of all these classes of accident by far the most frequent is the second, that of falls of coal, either from the face of the seam, upon which the men are at work, or from the roof of the mine. Falls from the roof are stated to have been more than usually numerous last year, owing partly to the large number of inexperienced hands employed in the collieries. It seems that it requires many years' experience to enable a man to gangle the safety of a roof, and to render a dangerous place really secure. But, apart from the question of inexperience, many deaths might have been averted if the timbering of the working places had been carefully watched by the persons in charge. We are glad to see that the inspectors of mines are pretty generally of opinion, that if the provisions of the new Mining Act, which came into operation on January 1, 1873, be fairly carried out, a material reduction will be effected in the number and nature of accidents under this head; the owner, agent and manager being now held responsible for the security of the roof and sides of every "traveling road and working place."—*American Artisan*.

MARINE SCHOOLS.—Sargent, from the Senate Committee on Naval Affairs, has reported a fifth amendment to the bill to encourage the establishment of Marine Schools, as amended by the Committee. It provides that in order to promote nautical education, and to educate officers and seamen for the merchant and naval marine in scientific and practical navigation, and in arts, trades and occupations pertaining to seamanship, the Secretary of the Navy shall be empowered to supply, upon the written application of the Governor of a State, or the authorities of the cities of New York, Boston, Philadelphia, Baltimore and San Francisco, a suitable vessel, with all her apparel, together with charts, books and instruments, if the same can be conveniently spared, from the Public Marine Schools, in each of the above named ports, and the ships and materials so furnished may be loaned to said cities or States in which they are situated, upon condition that said States or cities establish at their own expense nautical schools for the education of youths desirous of entering the merchant or naval marine, or, if already in service, of improving their nautical education. The President of the United States may detail naval officers to act as superintendents or instructors of these schools. In conclusion, the bill provides that no person shall be sentenced to or received at such schools as a punishment, or commutation of punishment, for crime.

THE ST. LOUIS MINE PATENT.—A dispatch from Washington says: The decision in the case of the application of the St. Louis Mining Company of Nevada for a patent, has been delayed in the Land Office, and further testimony has been offered which will have little effect in changing the condition of the case. The application is not considered as made in good faith, and is looked upon as an attempt to get possession of neighboring mines. The St. Louis is a new name for the Hidden Treasures Company.

Work on the cinnamon mines, recently in Oregon discovered in the Coast Range of mountains, has been suspended on account of the snow, which is seven feet thick and quite wide around there.

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Dividend of nine per cent. per annum (act 9 per cent.) upon the operations of the French Savings and Loan Society, for six months ending December 31st, 1873, has, in conformity with the report of the Committee of Verification appointed by the members of the Society, been declared by the Board of Administration, at the Annual Meeting held on the 15th inst. This dividend will be payable on and after the 19th instant, at the office of the Society, 411 Bush street.

GUSTAVE MAHE,
Director of French Savings Bank.
je24-1m

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ATTORNEY AT LAW,
712 Montgomery St.
PATENT LAW A SPECIALTY. 11

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SIZE, 40 BY 66 INCHES; SCALE, 8 MILES TO AN INCH.
Handsomely engraved on stone, colored in counties, and mounted on cloth, showing the Counties, Towns, Rivers, Lakes, Railroads, Mines and Mining Districts throughout the Territory, and all GOVERNMENT SURVEYS made to date. Price, mounted, \$3; Pocket form, \$5.
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Showing the boundaries of the principal mining districts, some 30 in number, adjacent to Salt Lake City. Price, pocket form, \$2.50.

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That Obnoxious Mining Bill.

Ward's Mineral Land bill, compelling miners to expend \$500 and buy their claims for \$10 per acre within one year, to which we have frequently referred, is universally condemned. Our representatives in Congress are opposed to it, and the Legislature has instructed them to oppose its passage. The whole press of this coast condemns the bill, as does every mining man with whom we have conversed. We suggested at the time of making our first comments on the bill, that as the bill would make considerable business for the lawyers, perhaps Mr. Ward was one who had business in view for his friends. The Washington correspondent of the *Bulletin* says concerning it: "It is understood to have been presented by the Illinois representative at the instance of a well-known mining lawyer of San Francisco who may have not been unmindful of prospective fees in the rush for patents and the scramble of litigation which would follow its enactment. The same gentleman is said to be the originator of a movement now on the tapis to extend the land surveys over Alaska, with a view to acquiring titles to sundry extensive tracts of coal land in that region."

"That accounts for the milk in the cocoanut." However, the bill is not very likely to pass, as Mr. Page is a member of the Committee of mines and mining, to which it has been referred. All of our representatives are opposed to it, and moreover it has occasioned such a storm of indignation that the members of Congress will look into it carefully, and must see its impracticability. Concerning this bill a practical miner writes to us as follows:

I have been reading Mr. Ward's bill, and if it passes, in effecting the object proposed it will promote the depopulation of all the mining States and Territories to a great extent, because, after we have expended \$500 in development of a location, we find ourselves without the means to defray expenses of procuring a patent. In fact it often requires much greater developments before we can feel assured that we have a mine valuable enough to justify the expense even if we had the funds. After we have complied with the law under which we locate, we feel that the property belongs to us already without the sanction of a patent, which we may or may not desire, and the Government would be acting in bad faith with us now to undertake to withdraw rights and privileges heretofore granted. So far as it affects prior locations, I very much doubt whether Mr. Ward's bill could legally apply; with it in force, the time would be short before the matter would become the subject of judicial investigation, when the question would arise as to whether the Act did not impair the obligation of contracts, in violation of the Constitution of the United States.

So far as new localities are concerned, of course we are bound to submit to such laws as are in force at their date, but with such a law as Mr. Ward would give us, we would seldom hear of a new discovery, for prospecting would cease, as the inducements would all cease to exist.

From your issue of Jan. 24th, I find you have commenced ventilating the accursed thing, and I hope the whole Press of this coast will join you in it. Your remarks are in perfect accord with the sentiments of all miners, who will be glad to find the subject receive further attention in the *MINING AND SCIENTIFIC PRESS*.

LEATHER.

SAN FRANCISCO, Wednesday M., Feb. 11, 1874.

Leather is quiet and firm. A similar feeling rules in the New York market. In 1873 California shipped to New York alone 83,000 Hides. We think that the day will soon arrive when such shipments of raw material from the State will cease. We have every facility for tanning our own leather here—good sites, large supplies and low rates; and a variety of native animals. As it is our Country Leathers are comparatively low, and do not fully represent our capabilities. Findings and Linings are moderately active.

City Tanned Leather, No. 1 25/25
Santana Leather, No. 1 25/25
Country Leather, No. 1 25/25
Stockton Leather, No. 1 25/25
Jodot, 8 Kil., per doz. 50/00
Jodot, 11 to 15 Kil., per doz. 60/00
Jodot, second choice, 11 to 15 Kil., per doz. 55/00
Carnelian, 12 to 15 Kil., per doz. 60/00
Carnelian Females, 12 to 15 Kil., per doz. 60/00
Carnelian, 15 Kil., per doz. 60/00
Simon, 15 Kil., per doz. 60/00
Simon, 20 Kil., per doz. 60/00
Simon, 24 Kil., per doz. 60/00
Robert, 24 Kil., per doz. 60/00
Fresno Kip, per doz. 1/00
California Kip, per doz. 1/00
Fresno Sheep, all colors, per doz. 1/00
Eastern Calf Boot Legs, per pair 5/00
Sheep Hides for Tanning, all colors, per doz. 1/00
Sheep Hides for Linings, per doz. 1/00
California Kip, all colors, per doz. 1/00
Best Jodot Calf Boot Legs, per pair 4/00
Good French Calf Boot Legs, per pair 4/00
French Calf Boot Legs, per pair 4/00
Harness Leather, No. 1 25/25
Fair Bridle Leather, No. 1 25/25
Skirting Leather, No. 1 25/25
Welt Leather, No. 1 25/25
Buff Leather, No. 1 25/25
Wax Side Leather, No. 1 25/25
Eastern Wax Leather, No. 1 25/25

New Inventions!

Of real merit, if brought plainly before the public when fresh, are most likely to become profitable to the patentee. For this reason, patentees (of worthy devices) should have the best of Engravings Made, and published in the *Press*. Superior Engravings Made, at reasonable rates, by artists in this office. up-1f

SAN FRANCISCO METAL MARKET.

WEDNESDAY M., Feb. 11, 1874.

Metals generally are quiet. Braziers' Copper has declined. Tin Plates are firmer. Cast Steel is in slightly better request. An exchange says that during the past year there has been a considerable increase in the use of American Lead for all purposes except ordnance, and a corresponding decrease in the importation of ordinary foreign Lead. While Missouri has produced a little more than in previous years, and Galena its usual amount, the Nevada and Utah mines have been greatly developed. The percentage of Gold and Silver in the bullion produced by mines in these last named Territories is so high that the Lead in its secondary consideration.

Scotch Pig Iron, No. 1	24 00	—	—
White Pig, No. 1	24 00	—	—
Refined Bar, good assortment, No. 1	24 00	—	—
Refined Bar, good assortment, No. 2	24 00	—	—
Refined Bar, good assortment, No. 3	24 00	—	—
Refined Bar, good assortment, No. 4	24 00	—	—
Refined Bar, good assortment, No. 5	24 00	—	—
Refined Bar, good assortment, No. 6	24 00	—	—
Refined Bar, good assortment, No. 7	24 00	—	—
Refined Bar, good assortment, No. 8	24 00	—	—
Refined Bar, good assortment, No. 9	24 00	—	—
Refined Bar, good assortment, No. 10	24 00	—	—
Refined Bar, good assortment, No. 11	24 00	—	—
Refined Bar, good assortment, No. 12	24 00	—	—
Refined Bar, good assortment, No. 13	24 00	—	—
Refined Bar, good assortment, No. 14	24 00	—	—
Refined Bar, good assortment, No. 15	24 00	—	—
Refined Bar, good assortment, No. 16	24 00	—	—
Refined Bar, good assortment, No. 17	24 00	—	—
Refined Bar, good assortment, No. 18	24 00	—	—
Refined Bar, good assortment, No. 19	24 00	—	—
Refined Bar, good assortment, No. 20	24 00	—	—
Refined Bar, good assortment, No. 21	24 00	—	—
Refined Bar, good assortment, No. 22	24 00	—	—
Refined Bar, good assortment, No. 23	24 00	—	—
Refined Bar, good assortment, No. 24	24 00	—	—
Refined Bar, good assortment, No. 25	24 00	—	—
Refined Bar, good assortment, No. 26	24 00	—	—
Refined Bar, good assortment, No. 27	24 00	—	—
Refined Bar, good assortment, No. 28	24 00	—	—
Refined Bar, good assortment, No. 29	24 00	—	—
Refined Bar, good assortment, No. 30	24 00	—	—
Refined Bar, good assortment, No. 31	24 00	—	—
Refined Bar, good assortment, No. 32	24 00	—	—
Refined Bar, good assortment, No. 33	24 00	—	—
Refined Bar, good assortment, No. 34	24 00	—	—
Refined Bar, good assortment, No. 35	24 00	—	—
Refined Bar, good assortment, No. 36	24 00	—	—
Refined Bar, good assortment, No. 37	24 00	—	—
Refined Bar, good assortment, No. 38	24 00	—	—
Refined Bar, good assortment, No. 39	24 00	—	—
Refined Bar, good assortment, No. 40	24 00	—	—
Refined Bar, good assortment, No. 41	24 00	—	—
Refined Bar, good assortment, No. 42	24 00	—	—
Refined Bar, good assortment, No. 43	24 00	—	—
Refined Bar, good assortment, No. 44	24 00	—	—
Refined Bar, good assortment, No. 45	24 00	—	—
Refined Bar, good assortment, No. 46	24 00	—	—
Refined Bar, good assortment, No. 47	24 00	—	—
Refined Bar, good assortment, No. 48	24 00	—	—
Refined Bar, good assortment, No. 49	24 00	—	—
Refined Bar, good assortment, No. 50	24 00	—	—

LUMBER MARKET.

WEDNESDAY M., Feb. 11, 1874.

We quote the following: Carga prices for Oregon Pine are \$16@18 for rough and \$20@22 for dressed; Lathes \$30@32. Sugar Pine is quiet at \$35@36; Cedar, \$42@50, \$32@50, and \$22@50 for the three qualities.

CARGO PRICES OF PUGET SOUND PINE	REDWOOD
Rough, No. 1	25 00
Rough, No. 2	25 00
Rough, No. 3	25 00
Rough, No. 4	25 00
Rough, No. 5	25 00
Rough, No. 6	25 00
Rough, No. 7	25 00
Rough, No. 8	25 00
Rough, No. 9	25 00
Rough, No. 10	25 00
Rough, No. 11	25 00
Rough, No. 12	25 00
Rough, No. 13	25 00
Rough, No. 14	25 00
Rough, No. 15	25 00
Rough, No. 16	25 00
Rough, No. 17	25 00
Rough, No. 18	25 00
Rough, No. 19	25 00
Rough, No. 20	25 00
Rough, No. 21	25 00
Rough, No. 22	25 00
Rough, No. 23	25 00
Rough, No. 24	25 00
Rough, No. 25	25 00
Rough, No. 26	25 00
Rough, No. 27	25 00
Rough, No. 28	25 00
Rough, No. 29	25 00
Rough, No. 30	25 00
Rough, No. 31	25 00
Rough, No. 32	25 00
Rough, No. 33	25 00
Rough, No. 34	25 00
Rough, No. 35	25 00
Rough, No. 36	25 00
Rough, No. 37	25 00
Rough, No. 38	25 00
Rough, No. 39	25 00
Rough, No. 40	25 00
Rough, No. 41	25 00
Rough, No. 42	25 00
Rough, No. 43	25 00
Rough, No. 44	25 00
Rough, No. 45	25 00
Rough, No. 46	25 00
Rough, No. 47	25 00
Rough, No. 48	25 00
Rough, No. 49	25 00
Rough, No. 50	25 00

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Should see to it that their Notices are advertised legally in the *MINING AND SCIENTIFIC PRESS*, at much less cost than the usual rates of daily publications. Every person interested in the property of legitimate mining enterprises should favor such practical economy. Send for circular of convenient notes for advertising, free blanks, and a copy of the New Code Corporation Assessment Law.

Mining and Other Companies.

Due to the time necessary to mail the present large edition of the *M. & S. Press*, we are obliged to go to press on Thursday evening—which is the very latest hour we can receive advertisements.

Buena Vista Petroleum Company—Location.

Location of principal place of business, San Francisco, California. Location of works, Kern County, California. Notice is hereby given that at a meeting of the Board of Directors, held on the 28th day of January, 1874, an assessment of No. 22, at one dollar per share, was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, No. 430 Jackson street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 15th day of March, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 18th day of March, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors, J. M. SPINNEY, Secretary.

Office No. 430 Jackson street, San Francisco, Cal.

Diamond Silver Mining Co.—Notice.

A meeting of the stockholders of the Diamond Silver Mining Company, of Placer County, California, at the office of the company, No. 430 Jackson street, San Francisco, California, on the 18th day of February, 1874, at one o'clock P. M., at Sherman's Building, No. 606 Montgomery street, Room 12, for the election of Trustees for the ensuing year. The subject of levying an assessment upon the capital stock of the company will also be determined.

By direction of the Board of Trustees, W. M. SPINNEY, President. O. M. MILLER, Secretary. San Francisco, Cal., January 12, 1874. ja-5t

Commercial Coal Mining Company, of

San Francisco. Principal place of business, City and County of San Francisco, State of California. Notice is hereby given that at a meeting of the Board of Directors, held on the 10th day of December, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A. E. Crocker	135 and 136	50	25 00
A. E. Crocker	138 and 141	75	37 50
H. Forrester	179 and 188	100	50 00
H. Forrester	192 to 206	255	127 50
J. Forrester	4	100	50 00
S. B. Hanson	128	10	5 00
W. E. Peck	175 and 176	20	10 00
H. E. Shepherd	185 and 186	175	87 50

And in accordance with law, and at order of the Board of Directors made on the 10th day of December, 1873, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the

of the company, No. 402 Montgomery street, Room No. 23, city and county of San Francisco, California, on the 23rd day of February, 1874, at the hour of 12 o'clock M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

S. B. HANSON, Sec'y. (By F. N. W.) Office, 402 Montgomery street, Room No. 23, San Francisco.

Cupel and Tiger Silver Mining Company.

Principal place of business, San Francisco, Cal. Location of works, Wallapai Mining District, Mohave County, Arizona Territory.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 25th day of October, 1873, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J. P. Ridgeway	86	1000	\$200 00
J. P. Ridgeway	87	1000	200 00
J. P. Ridgeway	88	1000	200 00
J. P. Ridgeway	89	1000	200 00
J. P. Ridgeway	90	1000	200 00
J. P. Ridgeway	91	1000	200 00
J. P. Ridgeway	92	1000	200 00
J. P. Ridgeway	93	1000	200 00
J. P. Ridgeway	94	1000	200 00
J. P. Ridgeway	95	1000	200 00
J. P. Ridgeway	96	1000	200 00
J. P. Ridgeway	97	1000	200 00
J. P. Ridgeway	98	1000	200 00
J. P. Ridgeway	99	1000	200 00
J. P. Ridgeway	100	1000	200 00
William Miller	49	500	100 00
William Miller	50	500	100 00
William Miller	51	500	100 00
William Miller	52	500	100 00
William Miller	53	500	100 00
William Miller	54	500	100 00
William Miller	55	500	100 00
William Miller	56	500	100 00
William Miller	57	500	100 00
William Miller	58	500	100 00
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William Miller	97	500	100 00
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William Miller	99	500	100 00
William Miller	100	500	100 00

W. H. Smith, 24 25 5 00

W. H. Smith, 25 25 5 00

W. H. Smith, 26 25 5 00

W. H. Smith, 27 25 5 00

W. H. Smith, 28 25 5 00

W. H. Smith, 29 25 5 00

W. H. Smith, 30 25 5 00

W. H. Smith, 31 25 5 00

W. H. Smith, 32 25 5 00

W. H. Smith, 33 25 5 00

W. H. Smith, 34 25 5 00

W. H. Smith, 35 25 5 00

W. H. Smith, 36 25 5 00

W. H. Smith, 37 25 5 00

W. H. Smith, 38 25 5 00

W. H. Smith, 39 25 5 00

W. H. Smith, 40 25 5 00

W. H. Smith, 41 25 5 00

W. H. Smith, 42 25 5 00

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W. H. Smith, 44 25 5 00

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W. H. Smith, 49 25 5 00

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JOSEPH MOORE.....Vice-President and Superintendent
LEWIS B. MEAD.....Secretary
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PACKING, for new and old cylinders.

And all kinds of Mining Machinery.

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Rolling Mill Company,

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Established for the Manufacture of

RAILROAD AND OTHER IRON

Embracing ALL SIZES of

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Of every description and size

Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention.

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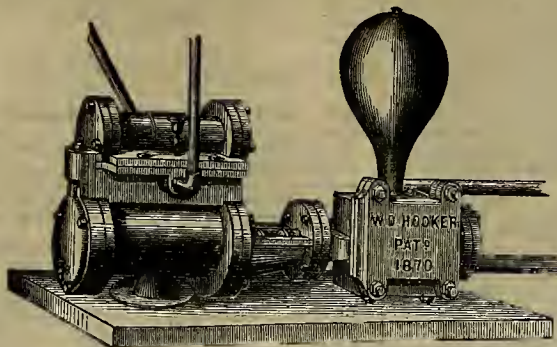
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Hooker's Patent Direct Acting Steam Pump.

SIMPLE, CHEAP AND
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CROCKER'S PATENT TRIP HAMMER QUARTZ BATTERY.



This machine, complete, weighs 1,500 lbs. Has an iron frame, five steel arms with stamps weighing 17 lbs. each, which strike 2,000 blows per minute, in a mortar provided with screens on both sides, and crushes 1,000 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$600.

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The Cheapest and Most effective Furnace now in use. Parties desirous of building above furnace, or for any information on same, address,

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PRICE, \$50.

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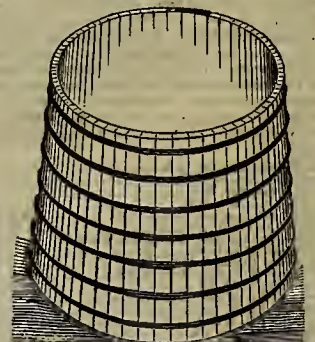
and Maker of Models for Inventors. All kinds of Dies Stamps and Punches made. Also, all kinds of Small Gears Cut.

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Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Ropes of any special lengths and sizes. Constantly on hand a large stock of Manila Ropes, all sizes; Tarred Manila Rope; Hay Rope; White Line, etc., etc.

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PATENTED CAST STEEL SHOES

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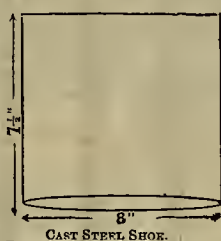
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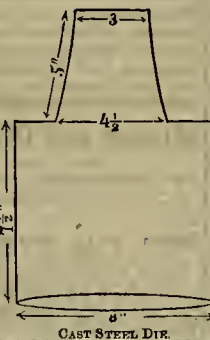
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OF ALL KINDS, A SPECIALTY.



CAST STEEL SHOE.



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Steam Engines—all kinds of Mining Machinery.

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ALL KINDS of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Shastling Nails, Rudder Braces, Linings, Ship and Steamboat Bolts and Gears of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch.

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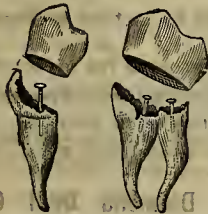
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Location of Mines, Mulege District, Lower California.
OFFICE, ROOM 10, No. 605 OLAY STREET.

Correct information from the Mines of the Company
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LAST ASSAY, \$263 PER TON IN SILVER.

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DR. BEERS' PATENT ENAMELED GOLD
CROWNS, for Covering Teeth broken down by Decay,
have been thoroughly tested, and when properly applied
will surely restore them again to usefulness and beauty.
Call and see them. Office, 230 Kearny street.
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When heard from last, ten years ago, was at Pikes
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GAVAR, at 1309 Vallejo street, San Francisco.
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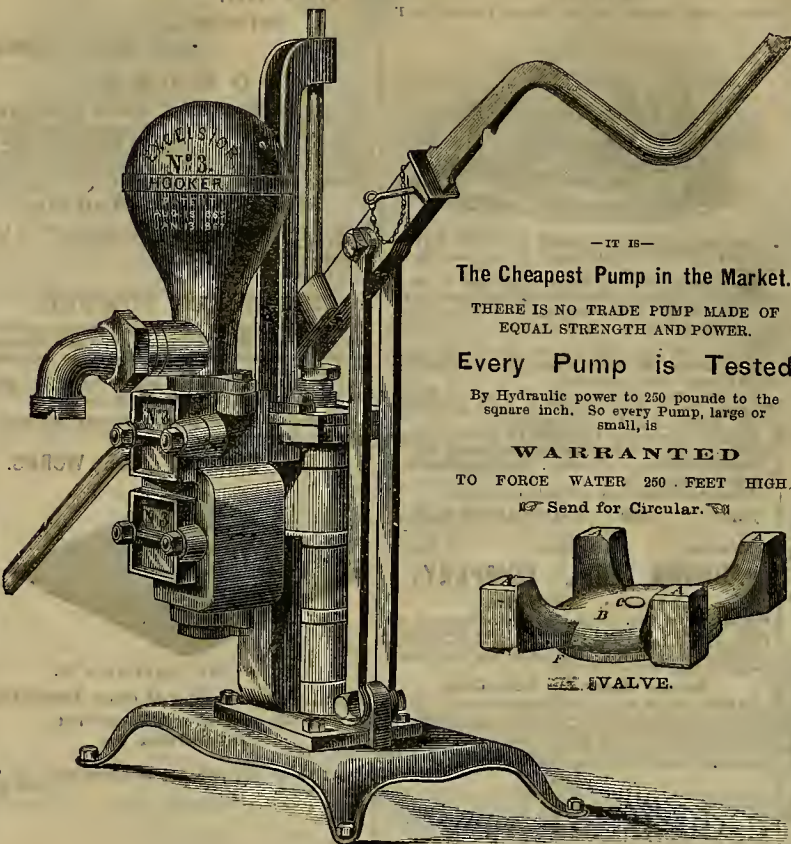
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THERE IS NO TRADE PUMP MADE OF
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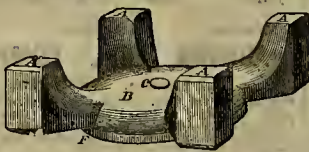
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Fisher's Machine is worthless unless the discharge
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I am sole LICENSEE to sell Machines manufactured
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I Guarantee Full Indemnity to all my
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Machines of all sizes always on hand.

If you want a Machine that will give satisfaction,
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Brass and Bell Founder,

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Hose and all other Joints, Spelter, Solder and Cop-
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Particular attention paid to Dielectric Work. Manu-
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They have proved to be the most durable and economi-
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THE BEST GUNPOWDER

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and Progressive Industry.

BY DEWEY & CO.,
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Number 8.

A Quicksilver Pump.

At some of our large quartz mills, where heavy quantities of quicksilver are used, great difficulty is experienced in providing proper pumps for raising it. Mr. Martin P. Boss, of Bullionville, Nevada, has recently invented a pump to raise this metal, which he has patented through the SCIENTIFIC PRESS patent agency. The difficulty in pumping this metal is from its great weight, and consequent action in keeping all lifting valves of whatever material open, by floating them up, and thus preventing the pump from working. By Mr. Boss' construction of the pump, he is enabled to so arrange the different parts that no leakage or waste of metal will occur, and the valves will work well.

By referring to the accompanying engravings the operation will be understood. Fig. 1 shows an elevation of the pump. Fig. 2 shows the pump in detail and the manner in which the quicksilver is drawn from the settlers into the pump, and forced into the tub ready for use again. A is the barrel of the pumps, within which the piston, B, moves through a suitable stuffing box, C. D is the induction pipe, having below it a chamber, E, within which the valve, F, works. Any suitable form of valve may be employed, being made to open downward, but Mr. Boss prefers to use a ball of iron, and the chamber, E, serves as a cage within which it works. A passage, G, opens from the bottom of the chamber, E, into the pump cylinder below the piston. Another passage extends from the opposite side of the pump cylinder and opens into the chamber, I, which is situated below the passage, H. This chamber has also a downward opening valve, J, and from below this valve a passage, K, opens into the discharge pipe, L.

The whole of this mechanism may be bolted by means of lugs into the bottom of a basin or tray, which is easily secured wherever desired. By means of this the inventor is enabled to catch any quicksilver which may leak from the pumps. In those now in operation, the valves, valve-seats and plunger are of steel; the seats screw in to allow removal for grinding in valves. Instead of being attached to a tray at the bottom, it is cast to an upright bed-plate, which has a pulley and crank at the other end. A suitable receptacle is placed underneath to catch leakage. This bed-plate is bolted to a post, the extreme length of pump being four feet four inches, so that it occupies a very small space.

In operating the pump, the quicksilver is run into the bowl, S, (Fig. 2,) attached to the settler. Its discharge-pipe rises one inch above the level of the settler-bottom inside. The quicksilver runs into the strainer, T, from the bowl, S. From the strainer, T, it falls into the tub, U. The pipe, A', from the tub, U, will always stand full, as the pipe, D, with which it connects with the pump is on a level with the bottom of the tub. V is an air-vent to avoid suction. The pump being operated, the metal runs up the pipe, L, into a reservoir, W, one foot above the level of the pans. The pipe, B, leads from this under the floor and back of the pans, branches from it discharging into the measures, Y or Z, through an iron cock. The discharge from the measures, Y or Z, to the pans may be regulated by iron cocks, c', or by the wooden plugs shown in Y.

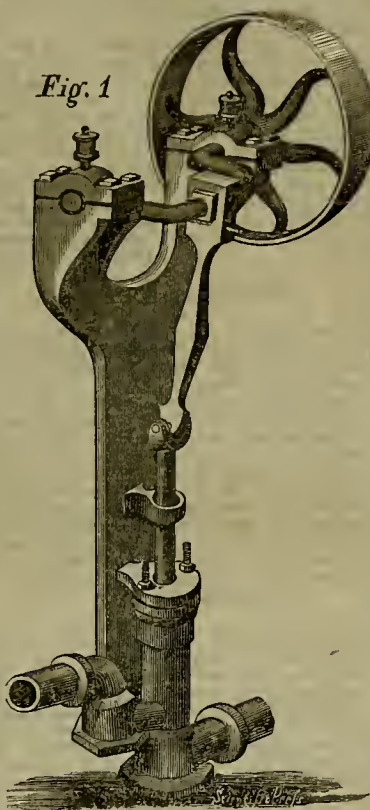
The operation is as follows: The piston of the pump being drawn up, the quicksilver will be drawn into the pump barrel from the tub, U, and pipe, A' through the pipe, D, valve, F, and chamber, E. When the piston is again forced down, the valve, F, floating upon the quicksilver, will be immediately closed and the valve, J, will be forced open, thus allowing the quicksilver to escape into the passage, L. The valve, J, will also be floated by the quicksilver and the two valves will thus be kept to their seats. By this action the quicksilver is raised up into the receptacle or reservoir, W, at a height above the pans which admits of its being drawn off as before described, by its own gravity.

A quicksilver pump of this description has been in use in one of the Raymond & Ely mills for over six months, and one has lately been put in the other mill of the same company. Parties desiring further information can address Martin P. Boss, Bullionville, Lincoln county, Nevada.

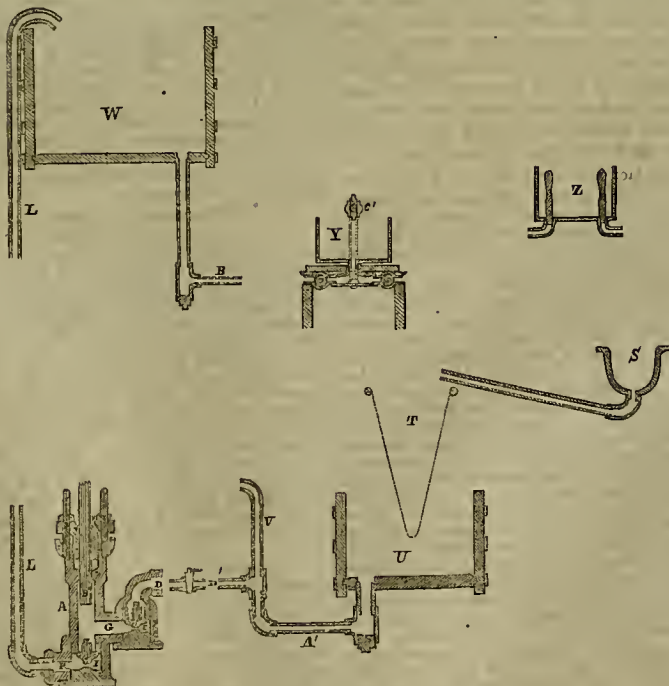
The Comstock Mines.

The county assessor, of Storey county, Nevada, furnishes to the Gold Hill News an

Fig. 1



Boss' Quicksilver Pump.



Operation of Boss' Quicksilver Pump.

abstract statement from the assessment rolls of the proceeds of the mines of the county for the quarter ending December 31st, 1873. We take the following figures from it: The Belcher

mine produced 41,674 tons of ore, the gross yield of which was \$2,871,133 06; net yield, \$1,896,647 46. Consolidated Virginis, 11,296 tons; gross yield, \$644,582 27; net yield, \$342,326 46. Caledonia, 1,583 tons; gross yield, \$22,148; net yield, \$4,429 60. Chollar-Potosi, 9,358 tons; gross yield, \$163,029 46; net yield, \$32,605 89. Crown Point, 33,940 tons; gross yield, \$1,347,891 15; net yield, \$539,156 46. Empire, 3,180 tons; gross yield, \$44,609 60; net yield, \$8,921 92. Hale and Norcross, 5,405 tons; gross yield, \$37,425 03; net yield, \$17,485 01. Silver Hill, 864 tons; gross yield, \$5,935; net yield, \$593 50. Sierra Nevada, 5,160 tons; gross yield, \$32,917 13; net yield, \$3,291 71. Justice, 2,252 tons; gross yield, \$18,016; net yield, \$1,801 60. Woodville, 700 tons; gross yield, \$14,160; net yield, \$7,510. Total net yield, \$2,854,769 61 for the quarter.

THE SIGNAL SERVICE BUREAU.—With the approval of the Secretary of War, and at the suggestion of Professor Henry, the signal officer has assumed charge of the system of meteorological observations hitherto conducted by the Smithsonian Institute. Volunteer observers heretofore reporting to the Smithsonian Institute are requested to continue their labors, reporting to the signal officer. Stamped envelopes with blank forms of instruction will be supplied on application to the chief signal office; and whatever aid can properly be given by the War Department to facilitate the researches of voluntary observers who have heretofore reported to the Smithsonian Institute will be cheerfully tendered. In recognition of their assistance it is proposed to furnish such observers, as may by this arrangement become correspondents of the Signal Office, with copies of the various papers published by it. Monthly records of observations made since January 1, 1874, in the form hitherto addressed to the Smithsonian Institution, may hereafter be mailed, addressed to the chief signal officer at Washington.

MAP OF SIERRA COUNTY.—The high relief topographical map of Sierra county and a portion of Plumas county on a scale of 1½ inches to the mile, referred to in a recent issue, was made by Charles W. Hendel, U. S. Deputy

Burning Quartz Before Crushing.

We see by our English exchanges that some experiments have recently been tried with what is called a new process of treating quartz, discovered and patented by Mr. E. Reading, of Sydney, Australia. As far as the experiments have gone, they are said to have been highly successful. It is described in brief as follows: The treatment consists first in burning the quartz; and, then, whilst red hot, plunging it into a bath prepared with acids. The effect of this is to utterly destroy the silica in the quartz, and to render it perfectly friable, so much so that it can be readily reduced to powder by the Chilian mill, without the intervention of the ordinary crushing battery. Besides this, the silica being destroyed, what had previously been stone is converted into an earthy matter, which is carried off easily by a gentle flow of water through the basin of the mill. The sulphurets, too, are all destroyed, and the quicksilver continues bright and lively, taking up every particle of the gold, however fine.

We do not think that there is much of anything new in this process, nor is it of any practical value. It is now over seventy-five years since Professor Trunks, of Bavaria, discovered that silicates were soluble in caustic ley, under a high pressure of—say about five atmospheres. The process has been carried on in various parts of Europe on a large scale, and this dissolved quartz is used in a liquid state for fire-proof paint—or other purposes. Instead of "destroy" the silica, Mr. Reading probably means "disintegrate" it.

It is a common thing for miners in this country when running an *arastra*, to burn the quartz, and then "slack" it in water before grinding it. This is, of course, only done on rich, selected rock, where a few hundred pounds at a time are worked. It never could pay to do it on a large scale, as the fuel would cost more than it came to. The writer, in pounding up selected rock on a mortar, operated with a spring pole, always burnt and slacked his quartz before crushing, as did the other miners in the same locality. All those who run *arastres* did the same thing, as it made a very great difference in the time required to crush it. In these cases, however, only selected rock of a high grade was crushed.

Burning the quartz and subjecting it to a bath of acids would be even more expensive than burning it and dropping it in water. It would, therefore, be impossible to apply the "improved process" in other than exceptional cases; and, where a large quantity was worked, it would be impracticable altogether. It has been shown that quartz can be dissolved, and the gold in the rock set free, but it is not by any means practical, and never went any further than experiments. Somebody must get up a cheaper process than the one referred to, before quartz will ever be worked in any other way than it is now.

OCEAN SOUNDINGS.—The U. S. Steamer *Tuscarora*, now engaged in taking deep sea soundings in the Pacific, arrived in Honolulu on the 2d inst. They took 62 soundings in a direct line between San Diego and Honolulu, the soundings averaging 40 miles apart. The greatest depth was found near the Islands—3,054 fathoms, or about 3½ miles. The soundings were all made with Belknap's improved apparatus, attached to a piano wire. The quickest time made was in a sounding of 2,562 fathoms, in 1 hour, 28 minutes, 8 seconds; the next best was at a depth of 2,936 fathoms, in 1 hour, 50 minutes 47 seconds. These times include the total time occupied from the moment the sinker left the surface of the water, until a specimen of the soil was brought up from the ocean bed.

MASTODON.—It is stated that in the State of Antioquia, U. S. of Colombia, while some men were digging in search of a salt spring, they came upon the skeleton of a mastodon, the tusks of which weighed over 40 pounds each.

MONTANA has made an appropriation of \$5,000 to facilitate the exhibition of Montana products at the Centennial Exposition of 1876.

Mineral Surveyor for this State, assisted by his friend Dr. Thiessen. They have been at work on this map for over two years. The latter mentioned gentleman is also busy preparing a work on the diseases of the skin.

CORRESPONDENCE.

A Miner's Opinion on Mining Laws.

EDITORS PRESS:—In your issue of the 24th of January, you invite discussion from the mining community about this Ward amendment to the mining bill of May 10th, 1872. I am not quite certain that this is the last amendment to that bill; I used to keep track of them all, but have given up discouraged and disgusted. Sometime when they are done with making amendments to the mining bill, I shall want you to send me these laws, but there is no use spending money for them at present. There are so many representatives in Congress that want to get their names up that we miners (who are helpless anyhow) will have to gain and bear these showers of amendments trusting to the justice and integrity of the Executive to put his veto on all such impracticable bills. Who this man Ward is I don't know, politics not being my forte; this much I do know, that if he is an honest, well-meaning man, he don't know from personal observation anything about the subject he is treating of; if he is serving base purposes of other unscrupulous parties knowingly to himself, his nearer acquaintance can't be desirable to the producing portion of the community.

We hope, and trust there are a sufficient number of practical men in Congress to prevent such men as Mr. Ward, either through ignorance of facts in the premises, or through their insane desire for notoriety, to commit such a palpable public injury as to depopulate, in a great measure, by legislation, many of our mining camps, put a stop to further prospecting and development of our unknown mineral resources. Now, if this amendment should pass as it now stands it will really amount to that much. It will cause serious injury not only to the poor miner but also to the community at large—farmers, merchants and others will feel the weight of it. Mining companies already in operation will have a dearth of labor, and often be obliged to send to other places for workmen to the serious injury of their operations. They might think that capital will do the prospecting. Well, that may be so in a measure, if they don't get tired of it too soon, but even so as you say, they won't buy a "pig in a bag." The *Chronicle* is advocating the idea of extending the time to two years, but that won't do either, it is only keeping the blister on a little longer. It will prevent poor men, and for that matter sensible rich men too, from going into heavy prospecting, which in a majority of cases becomes necessary in order to find out whether they have got a mine or not. Ten dollars an acre is not unfair for mining ground, a person don't want many acres; anyhow, at least the present size of a mining claim is about right as to maximum, whoever can't pay for that much allow him to take less if you please, but if so, in order to make it fair to all parties, and to guard against "schenanigan" on the part of the patentees, compel them to include a certain amount of ground on each side of the center of the lode as to minimum.

In surveying claims a line should first be run from the point of discovery and notice following the center of the lode, to the two ends; perpendiculars on this line will strike the side lines, and if done correctly must of course prove accurate. This mode would be in strict conformity with the law, will add no extra labor for the surveyor, and will be found more comprehensive to the holder.

The sticking point about obtaining a patent is the amount of money it costs to obtain it, for poor folk particularly, where they are still only prospecting. There is surveyor's mileage, together with his other, at present, lawful charges, which, if not exorbitant, are at least so high that a poor prospector can't pay them, and, consequently, what? Is that man to be considered ineligible to hold his claim, for which he may have spent years of hard toil and endured privations, and upon which he has worked faithfully, under the former fair representation of the United States Government? Is this government, because it has the power, going to take away from him or them the sacred rights embodied in their former promises, enactments and laws? I think not; I think we are not going to be degraded as low as that. I have seen a picture of a woman who held the emblem of justice in one hand, and in the other she held an open book, on the leaves of which, in broad, plain letters, was written the word "Constitution." Now, if Constitution and Justice walk together, I say this bill of that man Ward is unconstitutional with a vengeance.

I have been looking at the picture of that woman again, and I presume she is meant to represent the blind goddess; but she is hoodwinked. Is there any need of a bandage over a blind person's eyes? Men will, as you and I know well enough, prospect for years in one mine, just as they are able to work. When they get "broke," they will go and hire out to others, if they can, to replenish funds for another start, always in hopes that eventually pay-day will come to remunerate them for their toils and hardships. Alack and alas, how often have we seen these hopes die in fruition, after strong men have spent their best years in vain! Mr. Editor, they say a rat even will fight, if he gets cornered. I wonder if it ever got into the

sagacious heads of some of those wise men in the East that miners even might get cornered and be forced to defend themselves, and fight for the rights and privileges under which they have already obtained constructive title to their mines. Do they expect good, sensible American citizens to stand tamely by and see themselves "robbed" of the fruits of hard toil and labor, just because they are unable to comply with unreasonable demands for more money through such infamous legislation; or do they mean to drive us out of the country, so they can have it all to themselves? They have perhaps no idea that it might cost Uncle Sam more to enforce this bill as it stands than the nation will benefit by it, providing there is not some measure taken in connection with any such bill so that a poor man can obtain his patent as well as the wealthy one.

Most everybody would like to obtain a patent or some kind of certain, confirmed title to their claims, could it be done within their means. Why don't the government appoint some special surveyors to go around from one district to another and survey claims for a fair remuneration above expenses, say twenty dollars per claim, or even less, if possible. Tax the mines thereafter according to their intrinsic value, products or otherwise, but make the tax on the poor prospector as light as possible. The original Mining Bill was pretty fair and does credit to its originator. Some modification might be necessary, but it should be proposed by parties conversant with the subject, by such as Jones or Kemble from this State for instance; they both possess the confidence and esteem of the people, besides they are known to be versed in mining matters. What can this Chicago man know anyhow? Commissioner Drummond, I believe, places a fair and honest construction upon the mining bill; at least I have not seen anything to the contrary. He is generally spoken well of in the mining camps. Of course he can't please everybody; that would be impossible, as his decisions must be adverse to somebody. It is almost amusing, I should say preposterous, to read the figures of some of these smarties, about how the sale of the mineral lands of the United States is going to be made to liquidate the public debt. Well, it is to be laid to their ignorance we will say. I feel pretty confident this Ward bill will not pass, it is too glaring a monstrosity. I don't think the Government wants to keep our mineral resources from being developed. It is the poor adventurer who finds new districts by wandering over these uninhabitable deserts, often suffering from hunger, cold and thirst. This State, even, still contains far more mines than have been found, and is a fair field for prospectors, providing they have not to buy a "pig in a bag." Pardon me for giving you the trouble of reading these rambling remarks, but you have yourself to blame by inviting it. In appreciation of your good-will towards miners, I hereby send you \$4 for a year's subscription for the PRESS. All miners ought to read the PRESS anyhow, as it gives a great deal of useful information difficult to obtain otherwise. H. SCHULLEN.

Spruce Mountain, Elko Co., Nevada.

Hydraulic and Lode Mining.

EDITORS PRESS:—It is a fact known only to well informed miners on this coast that our hydraulic mines are only in their infancy—just beginning to be prospected. None of them are daily heralded in the stock market to be "bullied" or "beared" on the street, or in the Board to suit the "vain tricks and dark ways" of stock manipulators. Those owning them are satisfied with their investments, their dividends, and future prospects. Those purchasing and developing them have gone into no blind speculation, whereby the work of a crew of men for a week or a month would disclose the fact that there was not a mine; and then from month to month, and year to year, levy assessments to hunt for one, by which means the unsuspecting are fleeced to keep up well furnished offices and a well organized band of high-salaried officials.

Three-fourths of the lode mines on this side of the Rocky Mountains were never worth the name of a mine—have never paid a dividend, and never will. A discovery is made of a hauler, or seam of quartz, between the rocks at or near the surface—rich often, in gold or silver—it dazzles and bewilders the gain-loving mind—everybody rushes in and takes stock at fabulous prices, not knowing whether the seam or bonder extends ten or a thousand feet deep. An organization is effected by the election of three or five trustees at high salaries, a high-toned office with luxurious furniture is rented somewhere in the vicinity of California and Montgomery streets. A clerk or secretary is there during office hours—the trustees drop in almost daily—Sundays excepted, to enjoy quietly their Havanas, and rack their over-worked brains in figuring up the amount of assessments necessary from month to month to enable the trustees, aforesaid, to pay themselves their salaries, their office rent, fuel, stationery, and keep so many men at work at so much per day. And so it goes from month to month, and year to year—the stockholders coming "down with the dust, in the vain hope to save what they have already expended; or, on the encouraging report of the gentlemanly superintendent, who 'shows plainly' on paper—that there are 'splendid indications ahead.' Had the money that has been foolishly expended on this kind of mining

been invested in hydraulic mining—if I could not pave your streets with gold—I could insure that your banks would have plenty of money to loan at seven or eight per cent. per annum; instead of one to one and a quarter per month, "interest payable monthly."

Let any man with a practical eye travel through our gravel ranges from Trinity to El Dorado, see the territories of gold-bearing gravel waiting to be washed away by the waters in the streams on either hand, and the golden nuggets swelling the commercial arteries of the world; building cities and manufactories, cultivating the hundreds of thousands of unbroken acres, and rearing homes of happiness and palatial magnificence from where the waves leap against the shore to away up the sides of the Sierras, and he will be astonished to see how this age has gone mad, in a blind hunt for the imaginary, when the real was so plain before them. With a hydraulic mining experience of more than twenty years, I am not able to call to mind a single failure when conducted under the system of high pressure with approved nozzles. To invest in a gravel mine is as plain as to buy a lot in your city—everything is in sight—you can measure its width, depth and length. You can within a fraction tell the number of cubic feet or yards it contains; after a cheap test, you can tell within a few cents how much it will pay per cubic yard; you can closely estimate the cost of separating the gold from the earth, in fact, you can measure it like a pile of lumber and tell how much it will pay per thousand feet.

Now, if hydraulic miners would from time to time give statements to the press of the number of cubic yards of earth that they wash from one clean-up to another; the gross yield per cubic yard, and also the cost in water, labor, etc., per cubic yard, and the net products per cubic yard; they would not only create a fund of valuable information for themselves but assist each other and benefit mankind in the development of mines that would yield handsome dividends instead of levying ruinous assessments. Thousands of acres wait development.

HYDRAULIC MINER.

That Mining Bill Again.

EDITORS PRESS:—In your issue of Jan. 24th, I notice editorial comments on the provisions of the new mining bill lately introduced in congress by J. D. Ward, of Chicago.

It is not necessary to state here the objectionable features of the bill. They are or soon will be, well known to the whole mining community of the Pacific slope. Should it become a law for one year only, the country would not recover from its effects in the next ten. It is difficult for us to form any conception of its objects. It benefits no particular class, not even the capitalists. For they never precede the prospector, and only become mine owners by the right of purchase. As a law it will

Strike a Fatal Blow

At the interests of that large class of enterprising industrious miners who spend the half of the year in working for wages that, they may prospect or work on their own mines the remaining half. It is their fearless energy and enterprise that have in the last ten years opened up all that vast region from the eastern slope of the Rocky Mountains to the shores of the Pacific Ocean, and made the world acquainted with the unparalleled mineral resources of more than one million of square miles of territory, which, but for them, would still be a *terra incognita*. Should this bill become a law it will affect these men as a class, far more than any other, as it in reality takes away all their heretofore acquired rights to mining property, thus at one blow robbing them of the fruits of years of patient toil, for not one in ten of them is able, to comply with its provisions. The result is easily anticipated; thousands of them will abandon the business altogether for some other that offers greater inducements, thereby partially depopulating the already sparsely settled districts of the mineral States and Territories.

Cost of Mineral and Agricultural Lands.

The miners as a class are satisfied with the law of 1872, although it unjustly discriminates against them as compared with agriculturists. The total cost of agricultural lands is less than \$2 per acre; let us see how this compares with the cost of mineral lands, and for a fair example we will take the Eureka Land District, comprising the counties of Lander, Eureka, White Pine and (I believe) Elko also, in the State of Nevada. From the passage of the first mining law of Congress to the present time there have been 240 applications made for U. S. patents to mineral lodes. The average area of each survey is about 6 acres. The lowest cost of any patent under the new law is \$220; the highest under the old law was \$300; the average is about \$260, or \$43.33 per acre. To this we may add the \$500 improvements required by law, amounting to \$83.33 per acre or an actual outlay of \$126.66 per acre before the miner can obtain a title to his mine, and all this expenditure is not really so much added value to the property. Of all the mines in the above district only seven have paid more than the expenses of working; and not over fifty have been self-sustaining. Thus one hundred and eighty-three have cost their owners by law \$139,080, and returned nothing. But this is not the whole showing of expenses without returns. A number of them have had sums spent upon them varying in amount from \$20,000 to \$350,000; or, perhaps, about \$1,500,000 in the aggregate. How does that

Compare with Agricultural Lands?

But the discrepancy does not stop here. Every dollar expended on the farm gives a return; either in the added value of the improvements, or in crops that go to the support of the farmer and his family. Not so with the mine. It often requires years of patient toil, and a large outlay of money to make it profitable; and, in many cases, disappoints after all. Its ores may be rich in valuable metals, but it requires costly mills or furnaces to convert it into marketable bullion. And, even after all this trouble and outlay of money, the ores may prove refractory, and resist every effort to convert them into a marketable commodity; but the farmer's grain can always be cheaply converted to flour. This is no fancy sketch, but actual fact, as hundreds of deserted districts, thousands of abandoned mines, and numbers of decaying and deserted mills and furnaces can fully attest. But then the question may be asked: "What induces the miner to spend his time and money in so unprofitable a business?" The answer is plain: the merit of splendid successes is the *ignis fatuus* that lures him on; or, how does he know but he may be the next lucky one, and find Crown Points or Belchers?

All the actual paying mines in the State of Nevada both past and present scarcely number a score even though the product of the State be \$35,000,000 annually. A great many more will doubtless pay with cheaper transportation and cheap and improved methods of reduction for the ores, but until that time comes, the miner must wait with what patience he can. He will be fortunate indeed if the wise Solons of the East do not legislate him out of the country and give it over once more to the wandering tribes of Indians. There are fertile valleys in California and rich prairie lands in the West, that will surely reward his toil with subsistence. It seems to be a pet idea with some of the pseudo-political economists of the East that the mines of the Pacific slope should in some way be made to pay the national debt. They had better come out and try the business themselves for a few years. They will be fortunate indeed if they are able to pay their own debts after a fair trial, let alone the nation's. I would suggest that they turn their attention to the fruit and pea-nut stands of the eastern cities; perhaps by a judicious system of taxation they would realize as much revenue as they would be likely to get from the sale of the few paying mines on the Pacific slope; or, perhaps, they had better make a study of the laws of those countries that practically give the mines on the public domain to any one who will work them and make their wealth available as a medium of commerce. They might learn a useful lesson from their superior political economy.

Treasure City, Feb. 2d, 1874.

Stickeen and Cassiar.

The following items concerning the above mines, which may be of interest to the public, especially to those who have caught the "gold fever," we obtain from the *Victoria Colonist* of a recent date:

A large number of miners—probably 100—are preparing to leave by the *Oler* for Cassiar. Twenty miners are expected from Portland on the *California*. Both steamers will have full cargoes of goods for the new mines.

The number of toboggans and snowshoes now being made in this city by Cassiar-bound miners is very large. Dogs, too, are being trained for the purpose of drawing sleds over the ice and snow. Yesterday we met a party of three miners, in the suburbs, each dragging a toboggan heavily weighted with stones to represent provisions. They were accustoming themselves to dragging heavy loads, with a view to hauling their "grub" and tools into the mines before the soft weather shall have set in.

We have a word or two of caution for miners who contemplate making an early start for the new diggings. They are going too soon. They will find the river frozen, the cold intense, the snow deep, and suffering and privation of every kind will assail them at every step of their journey. There will be no comfortable cabins to receive them on their arrival at the Forks, and then they must sit down and consume their little stock of provisions until travel into this diggings becomes safe, when, even if they have preserved their health, the purchase of new supplies, at enhanced rates, will be necessary before they can venture to start for the mines. For these and many other considerations, we have no hesitation in saying that the miners are going too soon, and we fear that many will have to regret their imprudence.

COPPER.—The *Foothill Tidings*, says: A few miles below here in the direction of Wheatland lies a belt of copper veins which twelve or fourteen years ago created quite a furor in the mining world of California. For several years past the copper fever has run low and most of these old claims were abandoned or had passed into other hands. Some time ago Mr. G. F. Deetken, long a famous worker of sulphurets in this city, took charge of the business for a San Francisco company and erected smelting works at Spenceville, in the face of the discouraging fact that in several other places in California such trial has been made without success. We are glad to learn that this enterprise is likely to be crowned with complete success; that a few days since Mr. Deetken shipped to San Francisco a ton and a half of pure copper, the first of a series of shipments which will add greatly to the business of this section and bring out many old claims now unproductive.

MECHANICAL PROGRESS.

Little Engines.

There is no difficulty in making a small steam engine. Such a device has commonly been the first *chef d'œuvre* of the ambitious machinist's apprentice, and a California mechanic at a recent fair in San Francisco, mounted upon the top of a post a motor with a three-quarter inch cylinder, made from the first silver smelted in Nevada. We speak now of bona fide engines, those with slide valves and other essentials, not of the small toys that of late have been sold for \$1, and proved how interesting for amusement a scientific and useful fact may be. But there is no good reason why a little engine of some kind should not be found a paying article in every household. In cities it should drive sewing-machines, and in rural regions operate the churn and the wood-saw.

There is, indeed, much more attention now given to this matter than was the case a few years since. Not long ago the French technical journals described a petroleum furnace with a self-adjusting wick, giving a uniform heat to a small tubular boiler which fed steam to a small steam-engine. One of the exhibitors at the American Institute Fair has introduced a machine on a somewhat similar plan for sewing-machines. In this, petroleum burners heat a vertical boiler, and an oscillating cylinder connects its piston-rod direct to a crank on the shaft of a machine. Doubtless many modifications of the principle may be made, and the present low price of petroleum would seem to encourage the use of this fuel for small motive power. But the objections to steam are manifest, and although not insuperable, are of sufficient weight to render it well worth while to consider whether some other means cannot be used in its stead for giving the moderate power now a decided desideratum for many purposes.

In this the employment of illuminating gas, mingled with atmospheric air, has attracted attention for the third of a century past. For several reasons, perhaps among others the accumulation of sooty deposits from imperfect combustion, this has not met with much favor. Possibly the cheapness with which, it is alleged, hydrogen gas may be manufactured by novel processes, may supply a superior substitute for carburretted hydrogen, and Brown's gas engine of forty years ago (dependent for its operation upon the explosion of mixed hydrogen and air, and proved a failure on a grand scale in pumping and boat propulsion) be revived again with more of practical utility, but less of sanguine notoriety than of old.

It has been claimed by manufacturers of hot-air engines that a calorific motor of small size would "fill the bill" in the matter under consideration. But if we may judge of the inordinate sizes in proportion to the work done, of those used in coffee and spice warehouses for grinding in sight of the public, the assertion referred to may well be doubted. The safety of this motor is a strong recommendation for it, and it is to be regretted that no one has yet seen fit to test the capabilities of a hot-air engine occupying a space of, say one cubic foot, and heated by a petroleum flame.

There remains, in addition to the methods mentioned above, the use of electricity as a motive power; a matter debated with much ridicule on the part of those adverse to its use and with much earnestness on that of those who believe in its final success. On the one hand the cost of running an electric motor and the failure of many an apparently promising project are urged as unanswerable arguments against the feasibility of electricity for any such function; on the other, it may be pointed out that long ago, Prof. Page ran a heavy locomotive at nine miles an hour with mechanism imperfectly put together, and that there is no limit to the possibilities of applied science and practical mechanics. Between the two the impartial observer may be justified in saying, "wait and see;" but none can deny that a light motor is one of the needs of the times, and that, consequently, it is the duty of some one to produce it.—*Newark Manufacturer.*

IMPROVED WOOD FENCE.—The stakes are used in pairs, set at such an inclination toward each other that they intersect or cross, and are placed at the usual distance apart to form a panel of fence. A rider is supported in the angles formed by the intersection, and an upright is placed centrally between each pair of stakes, with a rider extending across the top ends thereof. Braces are attached to the stakes at one end, while the other end rests beneath the lower angle of the latter, on the rider. The uprights are connected with the stakes by elats, and placed at an angle of fifteen degrees with the surface of the ground. Rails rest on these slats, and their ends lap past each other by placing them on opposite sides of the uprights. The fence is said to be straight, and proof against unruly stock, as well as high winds.

HINGED FIRE-LIGHTERS.—In the matter of fire-lighters, it might be thought that there was no room for "improvement," but an ingenious gentleman seems to think that if they had "hinges," above all things it would render them more handy. We fail, however, to perceive the utility of the appendage, which seems to us to be allied to the fifth wheel of a coach.—*Iron.*

Another Type Writing Machine.

A patent has recently been issued to Mr. John Galloway, of New York for an improved writing machine, which the inventor describes as follows: There is a roller, of sufficient size to receive a sheet of the paper to be used, and covered with cloth. This is mounted on a horizontal shaft which revolves in bearings attached to the frame. The paper, in connection with the colored paper or cloth from which the color is obtained for the impression, is rolled around the roller, and its edges are secured by a clamp. To the inner end of the roller is attached a spiral thread, which works between the pins of a shaft, so that the roller may be moved longitudinally upon its shaft at the same time that it is carried around thereby. By suitable means, the teeth of the shaft may be turned down out of gear with the thread, so that the roller may be pushed back at once, when required. By suitable construction the roller is rotated by the upward movement of the forward parts of the frames, the downward movement of said parts raising a push pawl one tooth. A pawl which is pivoted to the frame, has its engaging end resting against the teeth of the wheel, to prevent said wheel from being turned back by the friction of the pawl as it is raised. A long block or hand piece is perforated longitudinally to receive a slide upon the forward bar of the movable frame. Upon the inner side of the forward end of the sliding block is formed an arm which projects through a slot in a plate, the ends of which are secured to the side bars of the frame. In the plate, at the upper and lower edges of said slot, are formed notches, and the free end of the arm is so formed that it may fit into the upper or lower notches, according as it is inclined upward or downward. Upon the top of the slotted part of the plate are formed the alphabet, the nine digits, a comma and a period, which characters are arranged in two rows, one corresponding with the upper and the other with the lower row of notches. Upon the lower side of the sliding block are formed two rows of raised type corresponding with the characters, and which project at such an inclination, that when the arm is in the notch of either the upper or lower row of notches, the corresponding row of types will be in proper position for making the impression. In using the machine, the paper is placed upon the roller and the block is grasped with the hand, and is moved to bring the arm successively into the notches corresponding to the letters of the word to be formed upon the paper. As the arm is brought into each notch, the block is forced down, and the letter is printed upon the paper. At the end of each word the roller is caused to rotate twice the usual distance, and thus forms a space between the words.

Safety Hoisting Apparatus.

English patentees claim certain improvements in apparatus to be used with cages for mines and shafts, for the prevention of accidents through overwinding or breakage of the winding rope. These consist in attaching two ordinary diagonal suspension chains to the winding rope or chain, and from these suspending the cage. The supporting catches to which the diagonal chains are attached are not permanently secured to the cage, but are held vertically in position at each side of the cage by means of latches turning upon horizontal pins, each latch having a handle or tail end projecting horizontally when in ordinary use. The guides between which the cage travels terminate at a suitable height above the mouth of the pit, and are furnished with strong bolts, which project in such manner as to catch and depress the tail ends or handles of the latches, should the cage be overwound or raised too high. The catches are thereby set free from the cage, and pass away with the winding rope. In departing, each catch lifts into a horizontal position an arm, which is hinged at its upper end to the cage, and which, when it is in its ordinary vertical position, transmits the weight of the cage to the supporting catch. Each hinged arm has a stop to prevent it from rising above the horizontal line. Upon the said cage attempting to fall after the release of the supporting catches, the horizontal hinged arms catch upon the top of the vertical guides and support the cage in safety. Each of the aforesaid supporting catches is made in two pieces, the upper piece being hinged to the lower piece. The upper piece has an external hook or catch at its upper end, which, when the rope breaks, is forced by a spring into gear with ratchet shaped teeth formed upon the inner face of each guide bar, but as long as the rope or chain is unbroken, and the cage hangs therefrom, the tension of the diagonal suspension chains counteracts the force of the spring, and holds the upper catches out of action.

COTTON SEED PLANTER.—In view of the interest now being taken in cotton raising in this State, all implements connected with the growing of that crop should be studied. A new planting machine is claimed to be an improvement in the class of planters having a furrow opening plow and covering devices arranged, respectively, in front and rear of a hopper, from which the seed is centrally discharged as the machine advances. The improvement relates to the arrangement of plows or shovels in rear of a centrally discharging hopper, whereby one distributes or disperses the seed after being deposited in the furrow, and the others cover it.

SCIENTIFIC PROGRESS.

Can Electricity be Profitably Employed as a Source of Power?

The *Technologist* thinks not, and offers an entirely new line of argument to support its belief. If our esteemed contemporary will satisfy us that frictional electricity is more cheaply produced than that resulting from chemical decomposition, we will accept the inference. But we think that is, to say the least, not proved. The *Technologist* says:

There was recently on exhibition in one of our industrial expositions a series of pumps, worked by exhaust steam, over which was placed the startling announcement, that, by means of them, water might be raised to a given height in quantity sufficient to drive a water-wheel which would give out more power than the steam-engine itself! The placard was well calculated to attract attention, but then nobody believed the statement printed on it, for the simple reason that no engine, far less the exhaust steam from one, could ever pump up water enough to drive a wheel which would give out half the amount of power of the original motor. The waste in pumping and the loss caused by want of efficiency in the water-wheel would be sure to consume the other half. Now it happens curiously enough that there are in common use two methods for producing dynamic electricity—one being the voltaic battery and the other any form of mechanical power. In regard to the latter, it is evident that the same principle holds true in regard to it that is at the same time true in regard to the water-wheel and steam-engine above mentioned. If electricity, which has been produced by the agency of mechanical power, be applied to the driving of an electro-motor, the latter can never be made to give out as much power as has been exerted by the engine employed to produce that electricity. In other words, no one could be found so foolish as to employ a steam-engine to produce electricity for the purpose of operating an electro-motor intended to drive machinery. It would evidently be vastly more economical to drive the machinery by means of the engine itself, without the intervention of any complicated apparatus.

This proposition is so self-evident that it requires no elaborate demonstration; but from it follows the very obvious conclusion—that, if by means of the steam-engine we can produce electricity more cheaply than we can by the voltaic battery, then it is evident that the battery can not compete with the engine, as a source of power, no matter how perfect may be the electro-motor through which the energy derived from the battery is applied. Hitherto, it has been claimed that the only difficulty in the way of applying electricity as a motive power, consists in the absence of a properly constructed electro-motor; but if it can be proved that electricity can be produced more cheaply by means of steam than by the consumption of zinc, then it is clear that even a perfect motor—that is to say, one that utilizes all the electrical energy, and converts it into mechanical power—can not enable the battery to compete with steam.

Here, then, is a crucial test which is easily applied. And we believe that the results already attained do not leave the question in any doubt. In the case of the electro-deposition of metals, as well as the production of the electric light—two instances in which the comparison between the engine and the battery may be made with great accuracy—it has been found that the engine is the most economical. *A fortiori*, it should be far more economical as a source of mechanical power.

IRON IN PLANTS.—So far as investigations have shown, iron forms no essential part of the plant or animal, yet without it all growth and assimilation cease. If seeds are placed on a little cotton-wool in a solution containing all that is essential to plant growth, with the exception of iron, they will sprout and grow until the iron contained in the seed itself is exhausted, the plant then quickly bleaches and ceases to grow. If a little phosphate of iron, which is almost totally insoluble, is added to the solution, and occasionally stirred up so that it may be kept in suspension and thus come in contact with the root, the plant quickly revives and continues its growth. Iron is an essential constituent of chlorophyll, the green coloring matter of leaves. Although found in all plants, and constituting an essential part of their food, it has never been thought necessary to supply it to them artificially, all soils being supposed to contain sufficient for their wants. But no one can have failed to observe the greater luxuriance of vegetation on the strong iron soils derived from the old red sandstone than on those granite soils which are comparatively free from it.—*Journal of Chemistry.*

Still another chemist, Mr. Wodermann, of England, claims a new process of producing aluminum without using metallic sodium or potassium. He also proposes a method of direct production of caustic soda from sodic chloride. Why do these wonderful discoveries never get beyond the newspaper item stage?

Meyer deduces, from long-continued experiments, 95.8 as the atomic weight of molybdenum.

The Philosophy of the Sand Blast.

At first sight, the cutting of a diamond or other hard substance, by another so much softer as sand is, seems flatly contradictory to common experience. Still, to any one who has ever fired a rifle ball against a rock, the fact that a flying soft body will bruise or crush a harder one is neither surprising nor new. The possible perforation of a pine board by a tallow candle, fired from a musket, is an illustration of the same fact, familiar to every school-boy. In the sand blast, however, the effect seen is so manifestly disproportionate to the momentum of the individual particles that the explanation usually given in the grosser cases fails to hold good. Grains of sand, of very unequal size, appear to do precisely the same work when moving at the same rate, thus directly contradicting what has hitherto been an unquestioned law of impact.

Whence arises the discrepancy between what is and what might be expected? To answer this question, an English investigator has reconsidered the laws of impact, and finds that one of great significance and importance has heretofore been overlooked. It is this: At the moment of first contact, the pressure between impinging bodies is independent of their size.

This law has been undetected heretofore, simply because the laws of impact have been considered mainly with reference to the centers of gravity of the bodies, while little or no attention has been paid to the points of impact and what goes on there between the instant of first contact and the time when the center of gravity is changed. Even with the compact bodies, it takes time for the pressure to extend to the inner particles.

Hence, on the instant of impact, it is only those particles in contact which are affected, and the rest of the body might be removed without altering the effect. In other words, the effect of impact is independent of the quantity of matter behind the particles which actually impinge.

That the effect of the sand blast is—as this law indicates—a hattering, not a grinding action, is clearly shown by the microscope. A polished glass surface, that has been exposed for an instant to the blast, is spotted with points from which scales of fractured glass have been broken away in irregular directions. Each spot appeared as if a pellet of glass had been driven in by the collision, and the wedge-like action thus set up had driven away the surrounding glass. The polariscope confirms this inference. When thus tested, each spot shows a colored halo, proving that the surface of the glass is under strain.—*Sc. Am.*

THE DETECTION OF DEATH.—The late Marquis d'Orche, one of whose friends was buried alive, left a sum of 20,000 francs to the French Academy of Medicine, to be given to the inventor of a simple process of ascertaining when death has really occurred, and a further sum of 5,000 francs to be awarded to the discoverer of a scientific method of verifying death. Altogether 102 essays were sent in for adjudication. Most of the papers contained such absurd suggestions that the list was practically limited to 32 competitors. The large prize was not awarded, but the 5,000 francs were divided between four competitors. No new facts, likely to enlarge the domain of forensic medicine, have been elucidated by these investigations.—*Sc. Am.*

A mining engineer, P. De Royster Ricketts, of New York, has introduced improved processes and apparatus for effecting the separation of tin from tinners' waste. The scrap tin or tinners' clippings are first to be treated in hydrochloric acid of the strength of 20 deg. Beaumé, until the bath becomes exhausted; and then the gradual addition is made, to the bath, of nitric acid, of the strength of 40 deg. Beaumé, in conjunction with chloride of potash, either pulverized or in the condition of a concentrated solution. Or the tinners' waste is to be treated with hydrochloric acid until about two-thirds of the tin is dissolved therefrom, when they are to be introduced into a bath of mingled hydrochloric and nitric acids and chloride of potash, until the remainder of the tin is eliminated in solution.

EXPLOSION OF CHLORINE AND HYDROGEN.—A correspondent of *Nature* gives the following simple method of showing the explosion of chlorine and hydrogen by artificial light: "Equal volumes of the two gases, prepared separately by the usual methods, were mixed in a stout test tube and confined by a greased cork. This was placed upright on a little wooden stand, and kept in its place by a brass clip. About an inch of magnesium was suspended in a small tin shade by means of a wire clip. The magnesium being placed near the tube and lighted, the gases united with a report, jerking the cork to the ceiling, but in no case breaking the tube."

GARDENERS have long affirmed that the moon's rays give great activity to the growth of mushrooms. M. Charbonnier, of Paris, states that he has observed in his aquaria a very remarkable growth of cryptogamous vegetation under the influence of the light of the full moon.

The cultivation of science spreads steadily. A scientific society has recently been established at Buenos Ayres, Mr. A. Luise Huergo for its first president. According to their programme, the members have arranged for carrying out several branches of original research.

Exports of Gold and Silver for 1873.

The following table shows the description of treasure exported from this Coast in 1873:

	BARRE.	COIN.	DOLLARS.
January.....	\$198,684	\$ 227,412	\$1,680
February.....	69,964	1,465,329	3,290
March.....	129,237	1,776,302	3,000
April.....	\$34,845	1,152,696	6,380
May.....	129,429	229,766	4,920
June.....	308,664	285,936	3,680
July.....	385,687	218,768	2,550
August.....	836,707	200,686	2,920
September.....	34,174	788,162	2,050
October.....	43,168	1,324,439	9,400
November.....	329,938	1,182,696	36,800
December.....	26,344	363,902	14,730
Totals.....	\$2,889,871	\$9,077,492	\$78,445

	SILVER.	BARRE.	COIN.	DOLLARS.
January.....	\$ 745,786	\$10,000	\$43,280	
February.....	329,164		314,445	
March.....	393,080	5,940	249,260	
April.....	627,250	700	266,000	
May.....	1,264,142	6,000	327,680	
June.....	795,019	100	326,635	
July.....	636,827	8,486	236,622	
August.....	976,716	11,600	334,215	
September.....	818,444	46,800	119,770	
October.....	657,999	114,610	256,020	
November.....	704,300	68,000	319,611	
December.....	717,362	112,464	528,185	
Totale.....	\$3,936,857	\$479,337	\$2,720,630	

New Incorporations.

The following company has filed certificates of incorporation in the County Clerk's office, San Francisco, Cal., Feb. 14:

LORD BYRON MINING AND SHIPPING CO.,—Feb. 14.
 Object: To freight and ship high-grade silver-bearing ore from Fort Mohave and other places on the Colorado river to San Francisco, to sell the ore or reduce it to bullion, or to a practical commercial form. It is also proposed to work mines in Arizona and erect reduction works, to trade in merchandise and other products. Trustees—Wm. H. Cummings, Wm. B. Ever, D. C. Carson, Leander Ransom and J. B. Whitcomb. Capital stock, \$3,100,000, in 31,000 shares.

Meetings and Elections.

EMERALD HILL M. Co.,—Jan. 13. Trustees—Fenn. K. Horton, C. P. Hurley, John A. McGlynn, John M. Johnson, George Secretary, John B. Oliver, Henry A. Fox, B. D. Murphy and T. W. Colburn. The Board organized at the election of Penn. B. Horton, President; John M. Johnson, Treasurer; F. Mulge, Secretary, and D. C. McGlynn, Superintendent.

SAN FRANCISCO MICROSCOPICAL SOCIETY.—President—H. G. Hanks; Vice-President—Dr. A. B. Stone; Recording Secretary, C. Mason Kline; Corresponding Secretary, H. C. Hale; Treasurer, F. P. Bellman.

JUTROE M. Co.,—Feb. 16. Directors—A. P. Minear, J. T. Hill, E. Hestres, J. Clem. Uhler and J. P. Jackson. At the commencement of the year there was only \$8 in the treasury. Five assessments have been collected amounting to \$147,000, and about \$14,000 has been received for bullion. The total receipts have been \$168,906, and the disbursements \$149,037, leaving a profit on hand. Other assets consist of supplies valued at \$7,327. The liabilities amount to only \$441.

said to be rich. The Yellow Jacket has let a contract to sink the main shaft 100 ft. deeper. The contractors have commenced. The Trus Blue, a recently incorporated company hailing from Stockton, have also commenced work on their mine near Camp Flores. Miller & Co., Anderson Flat, are ready to commence sinking. The Woodhouse is also making vigorous preparations. Considerable pay ore remains on the dumps of different mines until the roads harden.

DISCOVERY.—Messrs. Donn & Brown have lately discovered a quartz ledge, near the Good Hope mine at Mosquito, that prospects well.

WHISKEY HILL.—A recent clean-up in the Whiskey Hill Tunnel Mining Company's claim near Jenny Lind, after a run of only thirty days yielded \$5,000.

SAN BRUNO.—The lowest tunnel in the San Bruno mine at Mosquito has been run a distance of 40 ft. in the finest chert of pay ore yet developed in the district. The ledge is 26 inches thick in the face of the tunnel, and the entire vein shows free gold. Stopping will be commenced next Monday.

EVERLASTING MINE.—*Citizen*, Feb. 14: Work at this mine progresses favorably. The main shaft is down over 270 ft., and the company are now engaged in running a drift, 80 ft. from the surface, with the hope of striking the lead where the former proprietor found good rock at a depth of 45 ft. They have now some 35 ft. to run before expecting to reach the lead and the rock is very hard and solid.

EL DORADO COUNTY.

STRUCK IT.—*Mountain Democrat*, Feb. 14th: The Oregon Hill Mining Co., a little distance south of town, at a depth of 300 feet, have this week struck the ledge, which is between three and four feet in width, is solid, and looks remarkably well. Those familiar with the class of rock developed are confident that it will pay from fifteen to twenty dollars per ton. We are glad to note the present fine prospects of the company, not only on personal account, but for the interest of the whole community, as it shows there is good pay in our ledges and a full and rich reward for those who have the pluck and means to go deep down below the surface. With the exception of the old Pacific, the Oregon Hill Mining Co., we believe, are deeper on their ledge than any other company in this vicinity.

REMARKABLE YIELD.—We mentioned last week that there was being crushed the rock taken from the shaft, sunk from the bottom of the tunnel in the Ida Mitchell mine. The new company had crushed all that came out of the shaft, quartz, talc, slates and every thing else, and that is what makes the yield remarkable, it being an ounce per ton. There are few mines that would yield this. Had the rock been sorted, as is generally done, and none worked but pure vein ore, the yield would without doubt have been at least double or three times as large.

ROSE.—The owners of the Rose mine have a hundred tons of rock ready for the mill, which will commence crushing the same on Monday next, weather permitting.

GEORGETOWN ITEMS.—Barklage, of Georgia Slido, uses between 700 and 800 inches of water daily at the Jones Hill mine. He uses a fifteen inch pipe and a "giant" with a four inch discharge orifice.

DOW & McCONNELL have tunneled into Mam-eluke hill to a distance of 800 ft. in search of a gravel deposit.

The Bryant brothers are also tunneling Mam-eluke hill, and they are now washing out pay dirt. The gravel deposits in that vicinity are supposed to be very extensive, and they are rich beyond doubt.

Bennett and Swift are rapidly deepening their cut. A transverse section of the cut shows a great number of parallel seams of decomposed quartz varying from one inch to a foot in width.

Mr. Altars is prospecting a ledge of asbestos which is full of gold bearing seams. This is a curiosity in the way of mining and more will be said regarding it as soon as the ledge is developed.

When Chas. Wentworth cuts into the hill 40 ft. further, he will have reached the seam that he seeks.

CINNABAR.—*Amador Ledger*, Feb. 14: The latest reports from the recent cinnabar discovery in El Dorado county are very favorable; as far as work has progressed 8 feet of ore was drifted through, which it is estimated, from tests made, will yield 10 per cent. After passing through the 8 ft. ledge, the workmen came to a "horse;" drifting through this, rich ore was found, of a foot or two in width. Pursuing the course of the drift, the workmen cut through another "horse," and came on to a vein of ore of remarkable richness, being two feet wide, and the weight and appearance of the ore will justify an estimate of 60 per cent. of quicksilver. There can now be no question as to the great value of the ore as far as developments have been made, and if the ore should prove abundant, as present appearances indicate it will, the discovery will prove of immense value.

NEVADA COUNTY.

KENTUCKY.—*Tidings*, Feb. 14: The stamps at this mill have been dropping some of late; enough to show that with more men at the breasts so as to furnish as much ore as the mill could use up fair, clean ups could be made and the expenses at least, of the mine and mill cleared. The situation of the mine is a bad one on account of water at this season of the year and the pump is not able to keep the

lower levels clear, so the work of drifting and taking out rock is confined to the 100-foot level.

PLACER COUNTY.

YANKEE JIM ITEMS.—*Cor. Argus*, Feb. 14: The Georgia Hill Mining Co. let off a highest on Saturday last, at two o'clock p. m., 310 kegs of powder were fired and proved a perfect success. It is estimated that 35,000 cubic yards of gravel was loosened. They will be ready to work in about ten days.

PLUMAS COUNTY.

A HUON ENTREPRENEUR.—*Notional*, Feb. 7: The Dutch Hill Co. are making arrangements for work on a canal, to bring the waters of Deer creek to their extensive mining claims at Dutch Hill. The undertaking is a large one, as it is necessary to have something like 40 miles of ditch and pipe, and they propose to construct it of a capacity, at the head, of 2,000 inches of water. This will insure them 1,000 inches at the claims. They already have a large lot of iron pipe on the way, and will commence work as soon as spring opens.

NAPA COUNTY.

QUICKSILVER.—*Cor. Register*, Feb. 14th: P. H. Lillie brought down 15 flasks of silver from the Sonoma mine on Monday. Charley McOrory brought down 14 on Saturday from the Missouri; showing that our mines are beginning to pay. Messrs. Lillie & Stratton have struck a rich prospect near the Great Western. They took over a load of tools and provisions on Wednesday.

SAN BERNARDINO.

GOON ORE.—*Guardian*, Samuel H. Baird, a proprietor in one of the recently discovered mines in Holcomb Valley, put in a blast 6 inches deep, 30 feet above the surface. The rock was white quartz; and from one of the chips brought in here an assay was made, averaging \$600 to the ton. Even in this rock, this high above the surface, free gold was plainly discernible. In one piece of rock, about three pounds in weight, a small particle of gold was lodged in the surface, as large as a small pea.

SISKIYOU COUNTY.

OAK BAR.—*Yreka Union*, Feb. 14th: Owing to the high water in the Klamath river, all the mining operations in the river claims at Oak Bar have ceased and the machinery has been all taken out of the different claims. During the period of high water the miners will prospect and work around in the gulches and small streams contiguous to Oak Bar. The country is very rich in that section, and we expect to hear of considerable gold being taken out.

TRINITY COUNTY.

MCGILLIVRAY DISTRICT.—*Journal*, Feb. 14: Jos. McGillivray is running both the McGillivray and Stoddard mines on Trinity river, to their full capacity. His Cañon Creek ditch furnishes a full supply of water for both claims, and bed rock is being stripped at an unprecedented rate. Several clean-ups have been made; and we are assured that these mines fully maintain their former reputation for richness.

CLEANING UP.—Some of the miners in the neighborhood of Junction City have lately made partial clean-ups. Heger & Haas realized more than \$500 from their under-currents and all are well satisfied with the results.

Nevada.

WASHOE DISTRICT.

OPHIR.—*Gold Hill News*, Feb. 14: The north cross-cut on the 1,300-ft. level is still pushed ahead, the face in fair grade ore. Sinking the winze from this level to connect with the up-raise from the 1,465-ft. level is making good headway, the bottom still in good ore. The up-raise from the 1,465 ft. level is also still in rich ore. The winze from the 1,465-ft. level to connect with the up-raise from the 1,700-ft. level has passed through the body of quartz and low grade ore into what appears to be a continuation of the west ore body, the ore in the bottom being of excellent quality, and gradually increasing in richness as a greater depth is attained. The main drift south on the 1,700-ft. level is being driven ahead to connect with the winze from the 1,465-ft. level, and thus ventilate the lower levels of the mine.

BELCHER.—Main incline down 98 ft. below the 1,400 ft. level, in hard blasting ground. The main drift north from the incline, on the 1,400-ft. level is in 62 feet, the face in very hard rock. The south drift, on the 1,100 level from the incline, is in 152 feet, and the main south drift from the incline on the 1,300-ft. level, is in a distance of 212 feet, the face in quartz of a very promising character. The south winze, on the 1,300-ft. level, is down 127 feet, the bottom in hard blasting rock. Preparations are rapidly being made for the opening of the 1,400-ft. level. Daily yield of ore, 525 tons. The ore steps throughout the mine are looking splendidly, and promise a rich yield for the future.

CROWN POINT.—The main south drift on the 1,500-ft. level is pushed vigorously ahead, the face showing ore of increasing richness. The flow of water from the face is gradually lessening. The north winze on the 1,400-ft. level is down 32 feet, making a vertical depth reached of 22 feet, the entire depth in very rich ore. Daily yield 400 tons of ore, mostly from 1,000, 1,200, and 1,300-foot levels.

LADY WASHINGTON.—The new shaft is down 184 feet, the bottom in soft picking ground, the sinking progressing at the rate of three feet a day.

SIERRA NEVADA.—Sinking the new shaft is progressing three feet per day. The ore breasts

are looking well and yielding the usual amount of milling ore. The mill is in fine condition and is kept steadily running, crushing ore from the mine.

CHOLLAS POTOSI.—Daily yield of ore, 40 tons, the assay value of which is \$32 per ton. The dumps are again all full, and should this present stormy weather continue, the extraction of ore will have to be discontinued until the roads will admit of getting the ore to the mills.

SOUTH COMSTOCK.—New shaft down 32 feet. It has passed through the hard quartz strata mentioned last week, and is now in a softer stratum of decomposed gypsium, etc.

INDEPENDENT AND OMEGA.—The shaft is down to a depth at which it is expected every day that a body of water will be tapped. The sinking is making good headway. The tunnel is cleaned out and repaired to the ledge, and a body of fine looking quartz has been opened, containing spots and streaks of ore that gives some excellent assays.

NEW YORK CONSOLIDATED.—The main shaft is down 480 ft., the entire bottom is a mixture of clay and quartz. The shaft in sinking the last 100 ft. has passed through ten different spots or streaks of quartz, the last found in the bottom assaying more than any heretofore encountered.

JULIA.—Two crosscuts east, on the 1,000-ft. level, have been started to prospect the ledge, which so far as the crosscuts have penetrated, shows a fine body of milling ore.

UTAH.—But little progress has been made with the main west drift on the 400-ft. level during the week on account of tapping and drawing the heavy body of water from the old upper works, and foul air encountered in the face of the drift.

EDGEMO.—The main west tunnel has passed through 90 ft. of vein matter, with no sign of west wall as yet.

GOULD & CONRY.—The main east drift on the 1,700-foot level is pushed steadily through the body of porphyry intervening between the east and west ore veins. The north drift on the 1,700-foot level is driven vigorously ahead, following the line of the west vein, the face in quartz of a very promising character. At the sixth station the old east drift has been cleaned out and repaired, and prospecting the ore vein again commenced.

OVERMAN.—Sinking the winze from the 1,000-foot level to connect with the main west drift on the 1,200-foot level is making steady headway, the bottom still in ore.

ROCK ISLAND.—Still sinking the winze, but progress is somewhat impeded by increase of water. It is down now about 25 feet and the bottom is in good looking quartz, some of which is milling ore.

LEO.—The vein matter is six feet in width, a good portion of which assays well.

SUCCESS.—Sinking the new shaft east of the hill is making rapid headway. The ore in the east drift on the 180-foot level of the little shaft in the cañon, still continues to show improvement in quality.

SCORPION.—Sinking the new large shaft for working this mine will be commenced about the 1st of March. The prospecting done in the old upper tunnel in 1861 showed some rich ore, and seems to guarantee the finding of a much larger body at a greater depth.

GLOBE CONSOLIDATED.—Sinking the main incline is making rapid progress, the rock in the bottom blasting finely.

CONSOLIDATED VIRGINIA.—Sinking the main shaft is making steady headway. It is now down 72 feet below the 1,300-foot level. Sinking the north winze on the 1,300-foot level has been resumed, the bottom still in good ore. The stopes and ore breasts on the 1,300, 1,200, 1,000-foot levels are looking splendidly throughout, and promise a rich yield for the future. Daily yield, 200 tons of ore, mostly from the 1,200-foot level.

HALE & NOACROSS.—The main south drift is in 42 feet from the incline, following the line of the ledge. Crosscut No. 2, from the main north drift on the 1,900-foot level, is in 38 feet, the face in hard blasting porphyry. Daily yield of ore, 40 tons.

BALTIMORE CONSOLIDATED.—The past week has been mostly spent in cutting out for the water tanks at the 640-foot level and making preparations for putting in the second lift pump.

IMPERIAL.—The south winze on the 700-foot level is down 63 feet in quartz of a very promising character. The north winze on the same level continues to show improvement.

KNICKERBOCKER.—The new hoisting machinery was all started up last Wednesday morning, everything working to the utmost perfection. Draining the water from the shaft has been commenced.

CALEDONIA.—The drain tunnel, to connect with the shaft at the 300-foot level, is pushed ahead from both ends.

DAYTON.—About fifty tons of ore are being shipped daily to the Woodworth mill on Carson river, notwithstanding the bad state of the roads.

SAVAGE.—The main west drift, on the 1,900-foot level, is still pushed steadily ahead, the face in hard blasting rock.

TYLER.—A south cross-cut has been started from the main west drift on the east side, and running parallel with the ledge.

YELLOW JACKET.—Sinking the main incline for the 1,600-ft. level is making good progress.

MINY.—The erection of the new hoisting machinery is making rapid headway.

DANEY.—Sinking the shaft is making good headway, the rock in the bottom working finely.

FAIRMOUNT.—Still driving the north drift from the main tunnel, following the line of the ledge, the face of the drift still in low grade ore.

KOSKUTH.—Still prospecting through the main west drift at the 200-ft. level.

BUCKEYE.—Sinking the main incline is making the usual good progress.

AMERICAN FLAT.—Nothing doing in the mine. Still waiting on the improvements being made in the Baltimore shaft.

WOODVILLE.—The raise above the 300-foot level is still in good ore.

SCRAO.—The mine is improv'g in appearance daily, the average rock encountered in the winze during the past week assaying \$20 per ton.

OCCIDENTAL.—The stormy weather still delays the erection of the new hoisting machinery.

CALIFORNIA.—Driving the main north drift from the 1,300-foot station of the Virginia Consolidated to make connection with the south drift from Ophir on the same level is making rapid progress.

PICTOR.—During the past two weeks the Superintendent has had his entire forces at work repairing the main tunnel in several places.

OWN POINT EXTENSION.—The new hoisting works, for the development of this mine, are fast being erected and put in position, but it will be a week or two yet before sinking in the shaft can be resumed.

SILVER HILL.—The new station at the 360-ft. level is opened, and a drift started for the ledge. The extraction of ore from the ore bodies lying between the north and the Justice's winzes on the second level is being vigorously prosecuted, the ore continuing of fine quality.

NEVADA.—The main south drift as well as the raise above still continues in the ore body, which shows improvement in both extent and quality.

JUSTICE.—Sinking the main incline below the 400-ft. station, for the purpose of opening a new level.

ALPHA.—The main north drift on the 1,500-ft. level is still pushed ahead.

BULLION.—The main north drift on the 1,700-ft. level from the Imperial shaft is making excellent progress.

JACON LITTLE.—The lower tunnel still continues in ore.

CHAPIN AND EAST COMSTOCK.—Work on the new hoisting works is progressing as fast as the weather will permit.

ELY DISTRICT.

AMERICAN FLAG.—*Pioche Record*, Feb. 7: Drifting has progressed rapidly during the week, running east and west from the ninth station—both drifts in ore. The Flag mill is working about 23 tons a day, and shipments of ore are made daily.

NEWARK.—Sinking and drifting was practically suspended for several days in consequence of necessary repairs to the machinery. Ten tons of very rich ore raised on Friday.

PIOCHE.—The main shaft is now down 600 feet, and sinking is constantly progressing. There will be no discontinuance until the shaft reaches 1,000 feet.

PAGE AND PANAOA.—Working the usual force of men, and running three drifts. Indications continue favorable.

PIOCHE WEST. Still sinking on the ledge through the main winze. Will drift east and west from this winze when it reaches a depth of one 120 feet.

HUEN AND HUNT.—Still pushing ahead on the cross-drift, which is liable to strike the ledge at any day.

CAROLINE.—Still drifting on the ledge, without any change worthy of mention.

SILVER PEAK.—Incline down 467 feet, with the ledge looking well at that point.

CONDOR.—Still drifting for the ledge, with very promising indications.

CHIEF EAST.—Still sinking winze in ore. The mine generally looks well.

PEAVINE.—Still drifting. Vein looks better, and hoisting some ore every day.

INGOMAR.—Still working, without material change.

HIGHLAND DISTRICT.—The Highland Consolidated Mining Company, through G. W. Maylone, foreman, took possession of the Mendha mill and mine, and the other property of the Highland Company. Work on the mines in Highland will be resumed this week, under very favorable auspices. Ample capital has already been advanced to work the mines to a success.

Lower California.

THE JAPA MINES.—*Cor. San Diego World*, Feb. 7th: The miners are all at work, doing well and many of them very well. Alonzo Somers, for instance, weighed the result of about four hours' washing yesterday, and found it worth \$67.50. This is not mentioned as extraordinary, as some of the miners in the Wash Jacobs camp above here, have done better, but simply as a traceable fact for those who are investigating.

The great trouble of our camp has been regular communication and reliability as to supply of provisions and freight. From this time, Jacobs, Cooper & Co. propose to run a regular stage line and are prepared to keep it up, rain or no rain. The necessity of walking from San Diego and packing blankets and grub is now past. The infancy of this camp is also past and its rapid development is beyond question.

Arizona Mines.

Mining matters for the year 1873 do not make as good a showing as they should, for the reason that the assessors in Yavapai, and probably other counties, did not gather the statistics required by an act of the last Legislature. We have only a partial report from the assessor of Mohave county, from which to collect reliable data.

In Mohave county, there were in operation during the past year, four arrastras, three furnaces, and one quartz mill. The mines are but a short distance from the Colorado river, and considerable rich ore has been sent to San Francisco and sold. The mines from which ore has been worked, of which we have knowledge, were the Sixty-three, Little Chief, Cupel & Tiger, Jackson, New Era, Diana, Keystone, Arnold, Sunday School, Silver Hill and Chas. Gross—twelve mines—from which the gross yield is reported at \$66,590. As several of the mines have only shipped a few tons of ore to ascertain its value, the yield is a good indication of the richness of the country. Many very rich mines have been discovered in the country during the year and considerable work done on them, but owing to the lack of mills or other reduction works, little ore has been worked.

In Yavapai county, little progress of note has been made.

There are eight quartz mills, one steam, and three water-power arrastras, and about twenty horse-power arrastras in the county. Five of the mills, owing to Indian troubles, sulphurets in the ores, and the drouth, have been idle most of the time for three years, and the reticence of the owners of those in operation, prevents a statement of the actual results, which we estimate from such information as is at hand, to be about \$55,000 in gold. More details from the arrastras have been received, showing the amount produced by them to be about \$23,000. The year was very unfavorable for placer mining, water being very scarce, except for a few weeks of summer during the prevalence of thunder storms. Yet a few men have been steady at work on each of the auriferous streams, and at the diggings at Weaver and Antelope Hill. The gross amount of placer gold received by merchants at the various points of supply, was but little over \$30,000. Thus our total production of gold for the year will not exceed \$110,000.

No reduction works for treating silver ores have ever been erected in the county, though experience shows that silver is the predominant metal in our mines, even in those which have been worked only for gold.

Since the Tiger silver mine was opened, something more than a year ago, thirty-five tons of ore have been shipped to San Francisco and there sold for \$16,455.14 (cents), a yield of \$470 per ton. Upon the dump at the mine there are about \$800 tons of ore, selected for working, which is estimated to be worth between \$80 and \$100 per ton.

It is known that the mines of Yuma county have been profitably worked, and the ore shipped to San Francisco, but no statement of the amount realized is at hand.

In Maricopa county, parties have been developing several valuable silver mines, but no ore has been reduced that we know of.

Considerable energy has been displayed in Pima county in opening old silver mines near Tucson, and in the eastern portion of the county, in working copper mines. The latter enterprise is evidently a paying one, but no figures have been furnished.

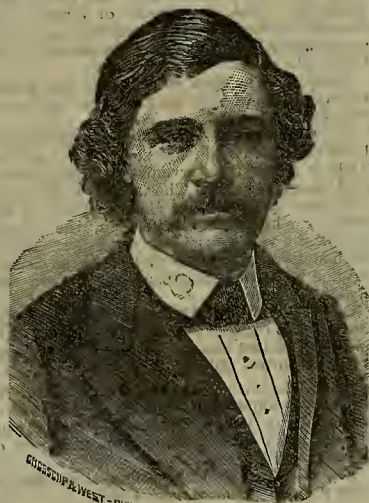
Although so little has been accomplished, our mining community is in better spirits than ever before. The subjugation of the Apaches leaves the field open to prospectors and enables men to work at less expense than formerly. A number of enterprises are on foot, looking to operations on a large scale, with sufficient means, and we are expecting this year, the commencement of a prosperous mining era in Arizona.—*Miner*.

EATING TOO MUCH.—While many people doubtless do eat too much, we believe that some are over anxious lest they should err in that direction. The following passage, from the translation of a recent paper by Dr. Max von Pettenkofer, is worth noting in this connection: "It is only a short time ago that it was customary in physiology to speak of a superfluous or luxurious consumption. According to certain physiologists, as long as the body is able to perform its functions, even though suffering from hunger, to take more food was luxury. But Bischoff and Voigt fully demonstrated by their experiments on nutrition that the result of nourishment so restricted is a state of want—a continual famine incompatible, in the long run, with the normal conditions of life. The body has used of a certain well-being—of a small excess of nourishment in order to preserve its strength and vigor. What just prevents death from hunger is not sufficient. It is as if we were to restrain the organism to produce any more heat than suffices to prevent death from cold, under pretext that all beyond this limit was superfluous and luxury."

ENGLISH LEAD AND SILVER.—The keeper of mining records reports, in this year 1872, 83,968 tons of lead ore, of the value of £1,146,165, were raised and sold in the United Kingdom; and that there was produced from these ores 60,455 tons, 15 cwt. of lead, of the value of £1,209,115, and 628,920 ozs. of silver, of the value of £157,230. Therefore, in 100 tons of ore there were 72 tons of lead, and in a ton of lead 10.4 ozs. of silver.

The Danbury News Man.

James M. Bailey, the "Danbury News Man," whose face is shown on this page is a humorist who has made his appearance in the world of letters within the past few years, and whose witty sayings are read with avidity by all fun-loving Americans. Whenever any one sees a short witty saying with a reference to Danbury or Nelson street, etc., he may be sure it emanated from Bailey's pen. He speaks of every day occurrences of home life in a most ludicrous manner, and the laughable incidents he portrays are so likely to have happened to almost any one, that his stories are more generally appreciated than those of other humorists. Mr. Bailey has lately published a work, containing a compilation of articles previously published in his paper, the *Danbury News*, which has met with a large sale. His quaint style of expression and phraseology is easily recognized after having read one or two of his effusions, and he has already a multitude of imitators, none of whom however, have been able to acquire his peculiarly original style. Mr. Bailey is still a young man, and has become famous within a year or two. Before he began to write, there were not many people who knew that Danbury was in Connecticut or that there was such a paper as the *Danbury News*. He has in a short time made himself and his paper famous. As Mr. Bailey is a new star in the literary firmament, and our readers will not find anything about him in the encyclopedia, we have given his portrait and these few remarks in connection with it, for the benefit of those who were curious to learn something of him.



J. M. BAILEY.

The Idaho Mine.

The *Foothill Tidings* speaks as follows of the Idaho (Grass Valley) mine: Idaho gold bricks are about the most regular articles in this line manufactured in the State just now, so far as we can learn. Every week, for so long a time that the folks at the bank consider it the habit of the mine, and make no ado about it, \$12,000 to \$20,000 worth of these handy little medallions of exchange make their way from the Idaho mill to Findley & Co.'s bank, and thence to the mint, to be fitted up, for general circulation. The stock of this company is not found on Montgomery street—and we think more of the mine because of this—but there is said to have been a sale made in private the other day, to a party who knows the mine well, of fifty shares, at \$750 per share. This is at the rate of \$2,325,000 for the mine, and we hardly think the heavy owners could be bought out for \$1,000 a share. Only a few years ago this mine was in the fix of the Kentucky, Magenta, and others to-day—prospecting by the aid of assessments. And the stock was often sold at nominal rates to obtain money to keep up these assessments. Many, indeed, sold out entirely, fearing they would never get anything after going down over 300 feet without pay. Good miners, who have seen the Idaho through its low, and to its high estate, say they consider the prospect in many of these struggling claims fully as good as it was in this now queen of mines in its assessment paying days. From assessments to dividends, like the step between the ridiculous and sublime, may at any time be almost instantaneously made.

REMOVING SNOW FROM ROADWAYS.—A rather roundabout method of accomplishing this is patented by a Mr. Hart, who proposes a small locomotive engine, which is surrounded at the sides by a casing, with inclined endless belts with buckets, which take up the snow from rotating brushes or wings and convey it over connecting chutes to a separate tank, where the snow is melted by steam connecting pipes and the direct application of heat. The different parts which come in contact with the snow are heated by steam from the boiler, to prevent the clogging of the machine and insure a rapid delivery of the snow to the tank. We hardly expect Mr. Hart's plan to supersede the regular snow-plow on long lines, or to successfully compete with the system of laying down steam pipes, on short ones.

Deep Gravel Mining—Big Blast.

Our distant readers may have little idea of the way banks of earth a hundred feet high are brought down and washed away for the spoils of gold found through them. The editor of the *San Juan Times* visited the American mine in Nevada county a short time since and says:

At the invitation of Mr. Spooner, we went up to the face of the bank and saw the miners tamping the tunnels. After these were all prepared the pieces of fuse were set afire, the small blast, 18 kegs, being lit some eight minutes before the second, which was the largest, being 420 kegs, and this in turn was lit a few minutes before the third and last, which was of 100 kegs. It takes about 20 minutes for a section of fuse, 50 feet, to burn, and while this was doing, all the miners retired to a distance of about 100 yards and awaited the result. Time seemed to move very slowly as we gazed on the lifeless bank, so soon to be in a convulsion.

The only sign of life was a thin wreath of blue smoke emitted by the fire in the fuse as it neared the powder. At last, however, the small blast went off and up went the large cement boulders and out came a puff of white smoke. It had done excellent work. Another suspense followed before No. 2 operated, but when it did come, a dull, heavy noise was heard and we were witnesses to the large bank making one leap up about twenty feet and then pitch headlong into the diggings all broken up and ready for washing. The third did the same and we have the miners' word for it that they all did good work. After it was over with we went to the place and where was before a high bank of almost unworkable cement there now lay a mass of broken up ground ready for easier washing by the pipes. The mine was then running 1,400 inches of water, through five nozzles—two on the west bank, one on the bottom, one in the "new diggings," formerly owned by Banks & Co., and one on the top dirt. Two drifts had already been started for another blast. In one of these they are running eight-hour shifts. The new tunnel is being sent ahead as fast as muscels and giant powder can put it. When it is ready for work, then all of the ground that they now are compelled to leave because of a want of grade to work will be washed into the Yuba. The tunnel is an extensive one and is 260 feet below that they are now using. This is low enough to work all of the ground and have "grade" left.

Lake County Quicksilver Mines.

The flattering prospects of Lake county mines now form the topic of conversation with almost every one we meet. From all accounts we may safely predict a brilliant future for our little county, hid away among ragged and almost barren mountains. Our hills, hitherto supposed to be worthless for anything save the wild home of the bear and deer, promise to pour forth such a quantity of the liquid metal as to place us in the foremost rank of mining counties. From Supervisor J. M. Davis, of Middletown, who is just from the scene of operations, we gain much information concerning our mines in general and of some in particular. The Great Western mine is turning out 250 flasks a month, with prospects of continuing in the same style. The Kearsage mine, in the Pine mountain, has run a six-foot tunnel, cutting the ledge through, and taken out \$2,500 of ore—the character of which is native and cinnabar. An assay of this ore in San Francisco yielded 22 per cent. of quicksilver and \$48 22 of gold to the ton. This mine is owned by J. M. Davis & Co. The American mine is being rapidly developed, with splendid prospects. A new furnace will be erected in the spring, when work will be vigorously prosecuted. The Middletown Consolidated Mining Company have a large body of ore in sight, and intend to push their work on the high-pressure principle next spring. E. W. Bradford has located a new mine, which prospects very favorably. A force of six men has commenced work on the "Big Injin" mine, owned by P. M. Daly & Co. The surface indications of this mine are very promising. Middletown seems at present to be the central point of our quicksilver mines, and they are being developed so rapidly and with such astonishing results that our importance as a mining county will soon have a world-wide reputation. We sincerely hope that time may prove our conjecture, and that our people may fully realize all the benefits of which they now so fondly dream.—*Lake Co. Bee*.

Mr. J. REDDY, an inventor, has introduced a new pick for excavating and other purposes. By the introduction of a socket-head on the end of the shaft of the pick, a taper hole passes through the head and handle, through which a cast-steel blade or tool can be inserted and withdrawn at pleasure, at a saving of time and expense, as a number of cast-steel blades can be taken with a pick. It is said the blade will resist the hardest substance, and the head or body will always remain fit for use.

FEATHER flowers are produced on the Continent; they are delicately dyed and arranged with great skill with reference to form and color. Relatively to the amount of labor involved and skill displayed in the fabrication, these flowers are sold on low terms.

Gold in the Yellowstone Country.

The Bozeman, (M. T.), *Courier* publishes the following letter: In 1848, myself and brother, John Rea, owned the Blackwater Mills in Cooper county, Missouri. An old trapper made it a practice of coming to our mills, and, being a dissipated man, while under the influence of liquor, would tell us wonderful stories of having discovered very rich gold diggings on the upper waters of the Yellowstone river. While trapping for General Ashley, he said, he made the discoveries. In the year 1838 he accompanied Ashley and Sublett's fleet of trapping-boats up the Missouri river to the Yellowstone. The aforesaid trapper was Owen Ruble, well and familiarly known to many people now of Missouri, especially by the earlier trappers and adventurers. Ruble said that himself and six others visited the Yellowstone country on a trapping expedition; when, after reaching the Yellowstone country, the Indians came upon them and killed all the company but himself; he only escaping by a trapper's ingenuity in dodging and hiding from the pursuing savages. He was pursued for three days by the blood-thirsty warriors. After his escape, he took a due south course, and on the second day of his hasty retreat, being weary and thirsty, he stopped at a small stream to refresh himself; and while drinking at this stream he discovered the bottom to be almost literally covered with nuggets of gold; and not having time to gather any considerable amount, he only gathered up a handful or two of nuggets, and put them in his shot-pouch. He then continued his course on south, towards the North Platte river. He there found some French trappers, and continued with them all that winter until early spring, when he returned to Missouri. He declared that there was plenty of gold in that wonderful country, but we regarded him as crazy on the subject, and attached no importance to his, as we thought, trapper's yarns.

In 1864, in company with many others, driven from our homes to seek our fortunes in the far North-West, I left Missouri for Alder gulch, and coming the North Platte route, a little incident, which I need not detail, brought me to the cabin of an old French trapper, living far up on the North Platte river, who corroborated much of old Ruble's report of gold in the Yellowstone country. He went on to say, in conversation with him in reference to this country, that if he could find an old trapper who came to his camp some twenty-three years ago, he could find all the gold he wanted. I asked him where it was. He stated that he did not know the precise locality, but that it was somewhere on the headwaters of the Yellowstone river. I asked him who this old trapper was; he said his name was Owen Ruble. I then told him I knew about Ruble, and of his tragic death. He then gave an account of the gold Ruble exhibited to the hand of trappers then together. He stated that a few days after Ruble came to his camp they all started on a buffalo hunt, and as was their custom, before setting out, every man was required to pour out all his bullets upon a blanket, and divide them equally among them. He says that when Ruble poured out his bullets from his shot pouch there was more gold than bullets, in nuggets of different sizes. "I asked Ruble where he got this gold, and he replied: 'I found it while running from the Indians on the Yellowstone.'" I asked him if he had any idea where the place was where he found that gold? Ruble replied that it was due north from that place, as he traveled due south.

This is a plain statement of facts as they came to me. I have no doubt that there are rich paying gold fields in that country. I hope the expedition fitting out may be successful in finding diggings richer far than any ever heretofore discovered in Montana. WILLIAM REA. Gallatin City, January 26, 1874.

THE PURE STUFF.—At Delano's bank one day this week we had the pleasure of hauling two bricks of pure gold weighing 528 ounces and worth over \$10,000, just in from the Empire mine. This is one of the oldest steady paying mines in this vicinity. It was located by Geo. D. Roberts and others in 1850, as the Ophir Hill lode. Old residents here still call it the Ophir. During its 24 years of existence this mine has had its ups and downs, passed through various hands and yielded several millions in gold. That it is not played out yet, but stands among our best paying mines, is evidenced by the steady production of such little remembrancers as those above mentioned. The shaft is down 1,300 feet on the incline and pay ore is being taken from the 12th, 11th and 10th levels. Mr. Bennalleck, the foreman of this mine, has been for some time prospecting in the direction of what is known as the Rush & Layton ground from the 800-foot level, being assured from certain indications known to practical miners, that something good would result. This week Mr. B. feels himself fully justified in his conclusions; having struck a ledge there showing well in sulphurets and free gold which is two feet thick.—*Foothill Tidings*.

The Co-operative Iron and Steel Works, at Danville, are in successful operation. This shows what may be accomplished by intelligent co-operation on the part of workmen. This company was organized about two years ago.

USEFUL INFORMATION.

Water-Color Decorations on Wood.

Our fathers appear to have had a horror of all plain woods, and quickly covered them up with cloth and woolen velvet and tapestry, or disguised them with painting, while our mothers were not less industrious in hiding such woods from sight by coverings of chintz, lace, and muslin. Nowadays we are beginning to perceive that these sober, quiet woods have a beauty of their own, and that they lend themselves with ready adaptability to the purposes of the furniture-maker, decorator, and designer. On the Continent even the plainest and least attractive of woods are used for furniture and decoration. Where, from a want of color or grain, the surfaces are not sufficiently varied or pleasing, they call in the aid of water-colors, and plant thereon pigments of considerable variety, beauty, and elegance, before these surfaces are submitted to the hands of the polisher.

The application of this mode of decorating is almost universal. It may be applied to pen-holders and work-boxes, to tables and cabinets, and it is our intention to advocate its more extended adoption by giving, from time to time, designs specially prepared for this kind of cheap artistic decoration.

The wood on which the design is to be made should be of as hard a quality, and with as little grain as possible. On the Continent the woods most used for this purpose are the plain white maple, linden, and box; but there are many suitable woods, some of which are of the cheapest kind. The chief point is to select a surface sufficiently close to prevent the colors from spreading, as they will do when the wood is too absorbent, or the colors used are too wet, and one on which has no dark markings or grain to interfere with the design. Having chosen your wood, and had it duly prepared in the form of a panel or table-top, or any other part of whatever article you have to decorate, the design is first drawn in outlines with a pencil lightly, in order that the surface may not be impressed. The white parts are painted on with Chinese white, the dark parts with Indian ink, and the shaded lines with sepia. The remaining portions are left untouched, unless the color of the wood is objectionable, in which case a warm grey would be a suitable tint for them. If the black portions are not uniformly and deeply black, go over them again. When the pigments are dry and hard, the pencil-lines of the design are retraced with Indian ink, and a fine mathematical pen.

The design being thus completed, and again hard and dry, it is ready for the polisher, who should do his work so thoroughly that the polish will resist effectually the action of moisture; which, penetrating to the water-color design, would soon damage, and eventually destroy it. The polished surface should be cleaned with a damp cloth, and well dried, to avoid this risk. —*London Furniture Gazette.*

ALL housekeepers have some time realized the difficulty of lighting a fire in a still, damp morning, when the chimney will not draw, and vigorous blowing proves ineffectual. Science explains the trouble as "caused by the difficulty encountered in overcoming the inertia of the long column of air in the pipe or chimney, by the small column of air that can be forced up through the interstices of wood and coal, at the bottom of which the fire is kindled." This may be remedied by first lighting a few bits of shavings or paper placed upon the top; thus, by the heated air forcing itself into the chimney and establishing there an upward current, the room is kept free from the gas or smoke which is so apt to fill the room; and the fire can then be lighted from below, with good success.

YOUNG engineers will find the following recipe a good one for polishing the brass-work of their engines: Rub the surface of the metal with rottenstone and sweet-oil, then rub off with a piece of cotton flannel and polish with soft leather. A solution of oxalic acid rubbed over tarnished brass soon removes the tarnish, rendering the metal bright. The acid must be washed off with water, and the brass rubbed with whiting and soft leather. A mixture of muriatic acid and alum dissolved in water imparts a golden color to brass articles that are steeped in it for a few seconds.

A NEW MATERIAL FOR INK.—Moigno states that the juice of the *coriari thymifolia*, or ink-plant of New Granada, resists most chemical agents better than ordinary ink. When used fresh, the writing is reddish, but it becomes black in a few hours. It does not corrode steel-pens, and cannot be removed from paper by sea-water, on which account it was used for all public documents when New Granada was under Spanish dominion, under the name of canohi.

M. GAUDIN has been making experiments to supersede borax, which is generally employed in soldering, and the result is that he finds that an excellent flux for soldering iron, and brazing copper and aluminum bronze, is obtained by a mixture of equal parts of cryolite and chloride of barium. Cryolite is a product and export of Greenland, and consists of a double fluoride of aluminum and sodium.

How to Sharpen a Screwdriver.

The screwdriver is found not only in the tool-chest of every mechanic, but in most homes, and in not a few offices. It ranks with the hammer, the saw and the axe, in general utility, and yet very few persons know anything about how it should be sharpened so as to do its work most efficiently; that is, with the least expenditure of power, and the least injury to the heads of the screws.

In driving a screw into wood, the force used to press the screwdriver against the head of the screw tends to aid the latter in penetrating the wood, but when we attempt to extract a screw, every pound of pressure that we apply tends to render it more difficult to get the screw out. It therefore becomes very important that the screwdriver should be so formed that it may be kept in the nick of the screw by the exertion of the very least degree of force; for if it has any tendency to slip out, we can keep it in place only by applying pressure, in which case we run great risk of injuring the nick and rendering it impossible to draw the screw.

If we examine a screwdriver in the condition in which it is ordinarily found, we shall find that it presents a section in which the sides of the wedge, in which all screwdrivers terminate, are curves with the convex sides outwards. Now, the effect of this curving the sides of this wedge, is to render it greatly more obtuse. Moreover, when we turn the screwdriver, the tendency to slip out of the nick is just in proportion to the obtuseness or bluntness of the wedge, and therefore this form is the very worst that can be chosen. In the hands of most good workmen, therefore, we find that the screwdriver ends in a wedge of which the sides are perfectly straight. This is a very good form, but is not equal to a form in which the sides of the wedge are curves, but with the concave sides turned outwards. In this way we lessen the obtuseness of the wedge at the extreme point, and produce a turn-screw which may be kept in the nick by the least possible pressure and twist. To grind a screwdriver into this form, it is necessary to use a very small grindstone, and many of the artificial stones found in market answer admirably. Many mechanics would find it to their advantage to keep one of these small grindstones for the purpose, as it could be run in the lathe with very little trouble. —*Technologist.*

BRONZING ARTICLES MADE OF IRON WIRE.

The following process is commended as the best and cheapest process: Clean the wire perfectly, and then immerse it in a solution of sulphate of copper (blue vitriol) until covered with a coating of metallic copper. Then wash and immerse the articles in the following solution: Verdigris, 2 ounces; sal ammoniac, 1 ounce; vinegar, 1 pint, diluted with water until it tastes only slightly metallic, then boiled for a few minutes and filtered. The articles are steeped in this liquor at the boiling point, until the desired effect is produced; but do not keep them in too long. When taken out, wash carefully in hot water and dry.

FASTENING IRON IN STONE.—A writer strongly recommends the use of zinc instead of lead for fastening iron railings into stone. It is well known that iron corroded with lead is consumed by rust very rapidly and destroyed. The zinc, however, established a galvanic circuit with the iron, and being positive to the iron, sustains all the chemical action and becomes oxidized, while no rust forms upon the iron. While with lead the opposite takes place, it makes also with iron a galvanic combination; but the iron being positive compared with the lead, it undergoes the chemical action, is oxidized, and protects the lead at its own expense.

A NEW material for use in circulating tubes for warming purposes has been suggested. It consists simply of glycerine in which calcium chloride or some other hygroscopic salt has been dissolved, so as to bring the specific gravity up to 1.40 or 1.45. Such a mixture boils at 300° to 320°, and may be used without loss of material in many kinds of apparatus for heating where steam, etc., is employed.

AN ARRANGEMENT FOR GETTING RID OF DELETERIOUS GASES IN THE LABORATORY.—Mohr suggests that such gases be either conducted through a rubber tube into the outside air, or into a Woulff's bottle containing milk of lime and in the second neck of which a funnel is placed containing small bits of charcoal.

SWEDISH FILTER PAPER.—Dr. F. Mohr discourses the use of this article. The author asserts that there are numerous brands of German filter-paper that are far superior, both as regards strength of tissue and small amount of ash, in addition to being very much cheaper.

ACCORDING to a French journal, horses and other animals may be protected from the persecutions of flies by painting with a pencil the inside of the ears, or other parts liable to be bitten, with a few drops of empyreumatic juniper oil.

AS A MEANS of avoiding explosions in the use of hydrogen apparatus, Fresenius says the gas may be passed through a tube containing a number of small discs of fine wire placed between cotton.

GOOD HEALTH.

Law of Transmission.

The *Herald of Health*, in answer to a correspondent, republishes Dr. Hough's observations, with comments, as follows:

1. In general, children of both sexes resemble their mother more than their father in physiognomy, habits, constitution and temperament.

2. Usually boys resemble their mother more than their father, in physiognomy, habits, constitution and temperament. In the same relationship girls resemble their father more than their mother.

3. As to whether there is any constant relationship between the physiological resemblance and a predisposition to the diseases of the person resembled, it is very difficult to decide from the data at hand; but it would appear from the few facts in which any observations were made in this direction, that there was a large percentage of cases in which inherited diseases were exhibited where there was such physiological similitude. In other words, children have resembled one parent in general physiognomy, while they have inherited the constitutional peculiarities and diseases of the other more frequently than where they have derived both these conditions from (one) the same parent.

In general, then, hereditary and acquired diseases and defects are more likely to be transmitted to offspring of the sex in which they originated, and thereafter to be subject to the principle of sexual limitation, either directly from the parent to child, or by interrupted or atavistic descent, from grandparent to grandchild.

Though sons are usually best able to follow the advocacy of their fathers, it is undoubtedly true that men inherit the genius, talent and intellectual excellence and morality of their mother or mother's father, while daughters inherit the same quality from their father or paternal grandmother.

Females more frequently transmit hereditary diseases and defects than males, though they less frequently exhibit them. Males less frequently transmit, and more frequently exhibit, inherited diseases and defects.

The reason that females do not exhibit hereditary disease as frequently as males is because of a higher degree of vitality in them which gives them greater power to restrain the appearance of the predisposition, and an inferior degree of development evolution, retaining in their constitution as germs what in men become fully developed diseases and defects.

POISONOUS COLORS.—In opposition to our expressed opinion that all anilin colors are not necessarily poisonous, some of our contemporaries think that it is better to err, if at all, on the safe side, and to avoid the use of anilin dyes for culinary purposes altogether. We do not object to this advice, and surely those anilin dyes in which arsenic enters as a component part are certainly poisonous. A warning has even been raised against fabrics dyed with anilin colors as injurious to the wearer. This has been contradicted by German chemists, who think to prove that it cannot be so. But then it is asserted that people have been poisoned and no sufficient cause could be found than the wearing of anilin dyed clothes. A writer in California goes even so far as to assert that carmine is a fully poisonous, and hangs up an alarming tableau of the consequences—loosening of the teeth, falling out of the hair, scrofulous eruptions, dyspepsia, insanity and idiocy. It is curious that carmine has from time immemorial been considered utterly harmless, and used by druggists to color tinctures, etc. It is also stated that experiments were made in France, and that a baby died under terrible convulsions after eating four ordinary plates of ice-cream, colored with carmine. Our esteemed contemporary, the *Boston Journal of Chemistry*, remarks justly in this regard, that four ordinary plates of ice-cream are very likely to disagree awfully with a baby, whether it (the cream, not the baby) were colored with carmine or not. —*Manufacturer and Builder.*

PHYSIOLOGY.—Prof. Garrod has set up a hypothesis that nerve force is generated by thermo electricity, generated by the difference in temperature of the inside and outside of the body. The experiments of men exposed for a long time to a temperature equaling the blood heat appear not to favor this hypothesis, because notwithstanding it must be acknowledged that such a temperature is not promotive of health or comfort, the simple fact that man can live in an atmosphere of which the temperature equals that of the interior of the body, is a proof that nerve force does not depend on this. It depends of course on the consumption of food, absorption of oxygen by the act of respiration, and the continual repairs of all the tissues, nervous and muscular, by the materials contained in the blood.

POISONING BY PLANTS AND INSECTS.—A standing antidote for poison by oak, ivy, etc., is to take a handful of quick-lime, dissolve it in water, let it stand half an hour, then paint the poisoned parts with it. Three or four applications will never fail to cure the most aggravated case. Poison from bees, hornets, spider-bites, etc., is instantly arrested by the application of equal parts of common salt and bicarbonate of soda, well rubbed in on the place bitten or stung. —*Boston Journal of Chemistry.*

Topical Application of Heat.

A correspondent of the *Boston Journal of Chemistry* recommends the topical application of dry heat instead of cloths moistened with hot water, fusions of hops or other plants, in cases where these remedies are usually employed. He considers this application much better than moist applications, as the latter, when they become cold, often chill the parts, and require to be frequently renewed and re-applied. In making the application of dry heat he has sought for the best medium, and instead of sand and other substances, of which the weight is objectionable, he proposes to substitute ordinary Indian meal, which is of very light weight and not unpleasant in odor, and holds heat for a very long time. In regard to the heat-holding qualities of the meal he speaks as follows:

"This latter fact I noticed when a mere boy, finding that corn meal would, after grinding, bear several miles' transportation, and, after delivery and deposition in the bins of the granary, would for hours still be warm from the friction of grinding. When, therefore, it is desired to apply dry heat to any person, it is only required to place a quantity of the Indian meal in a baking pan on a heated stove, and stir constantly till thoroughly warmed. It should not be burnt. It can now be put into woolen sacks and tied up and applied as a hot bottle usually is, or into large flannel bags, if for the abdomen. In a case of successful resuscitation of a new-born child, the heated meal was poured into an oblong chopping tray, a flannel cloth laid over it, and the infant in it. The cloth yielded, and the child was partly buried in the warm meal. It is found that the meal retains its heat long, and when it cools it does not chill, which is a very important consideration. Two sets of bags or wrappers may be provided, so that while on its being applied the other may be heated. The meal is not weighty. The aroma of it when heated is rather agreeable than otherwise."

Diseases of Artisans and Mechanics.

A careful investigation has been made of the special diseases incident to the occupation of artisans and mechanics, and the following are some of the most interesting among the mass of facts and data brought to light:

It appears that gliders are subject to mercurial affections. They suffer from giddiness, asthma, and very frequently from partial paralysis, which often induces a peculiar kind of stammering; they also frequently suffer from unpleasant ulcers in the mouth.

Miners in the quicksilver mines suffer from vertigo, palsy and convulsions, and the occupation cannot be pursued a long time.

Pottery glazers, who use lead largely, get into a condition very similar to that described above, with the addition of dropsy, loss of teeth, and enlarged spleen. Palsy of the limbs, especially of the arms, is a common disease among them, as also is consumption.

Glass-blowers are the victims of those affections produced by sudden vicissitudes of temperature—rheumatism and various inflammations. They are apt to become thin and delicate, and their eyes get weak.

Stone-cutters inhale the sharp particles, which tend to produce disease of the lungs, while plasterers suffer from the gases disengaged and from excessive moisture—they are also troubled with labored breathing, and they digest badly.

A CASE OF OPIUM CURE.—The *Druggist*, of London, says that a young lady who had been long accustomed to the use of opium applied to an eminent physician to make hypodermic injections of morphia. He commenced by making the injections as desired, of morphia and water; by degrees the quantity of morphia was lessened without her knowledge, until within a few days nothing but pure water was injected; after each injection she would lapse into a quiet sleep, in the same manner as she had been accustomed to do under the actual use of morphia. This treatment was continued for several months, during which time tonics had been used, to strengthen the system and bring about a healthy condition after being so long a time under the influence of opium. When he considered it safe to do so, he told her plainly that she had not taken a particle of morphia for several months, and was entirely free from its influence; this statement of course was received with intense surprise, as well as unbounded joy. The lady is to day entirely free from any desire for opium.

DURING the reheating of the furnaces in an iron establishment in England, says the *British Journal of Science*, the men worked when the thermometer, placed so as not to be influenced by the radiation of heat from the open doors, marked 120°. In the Bessemer pits the men continue a kind of labor requiring great muscular effort at 140°. In some of the operations of glass making the ordinary working temperature is considerably over 1000°, and the radiant heat to which the workmen are subjected far exceeds 212°. In a Turkish bath the shampooers continue four or five hours at a time in a moist atmosphere at temperatures ranging from 105° to 110°. In enamel works men labor daily in a heat of over 300°. On the Red Sea steamers the temperature in the stove hole is 145°. And yet in none of these cases does any special form or type of disease develop itself.



W. B. EWER.....SENIOR EDITOR.

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San Francisco:

Saturday Morning, Feb. 21, 1874.

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A Prosperous Season.

From a miner's point of view the present season is an exceptionally favorable one. The abundant and drenching rains of the past few months have soaked the ground down to bed rock in most localities, and the miners are jubilant. It is often said that a special committee in the interests of the farmers would be unable to regulate the weather to suit more than half of the farming population, even if they had the power; but we are of opinion that the most exacting of miners are pretty well satisfied this year, if the farmers are not. The heavy snows have laid up a summer supply in the mountains, and the sluicing season will last along in the year.

The hydraulic miners, who are a numerous body, all rejoice over these facts, and can dream of heavy streams, heavy runs and heavy "clean-ups," with a certainty of their dreams becoming realities. None of them "growl" when they have all the water they want, for that is the most important consideration to them. The ground is of no value without water, while, with an abundance of it, the old hills will be astonished at the facility and speed with which they are transformed into valleys, and their locked-up treasures wrested from them in the process. Considering the attention our hydraulic mines have attracted abroad during the past years, the present season is a peculiarly fortunate one. An abundance of water will increase the yield and still further advance this class of mines in the estimation of those who are looking toward their purchase. Speaking generally, the outlook for mining affairs all over the coast, for this year, is better than we have ever before experienced. From all quarters we hear of new mines being opened, new improvements being made, mills being repaired and operations on an enlarged scale being commenced. We are going to work in earnest now-a-days on this coast, and will try to mine—not scratch and burrow.

The Greatest Mine in the World—Ten Millions and a Half in One Year.

The Belcher mine, in the Comstock lode, Nevada, is without doubt the greatest bullion producing mine in the world. It has produced in the last two and a half years the immense sum of \$16,772,965. In 1873 it produced \$10,779,171 and paid out as dividends \$6,760,000 during the year, a large surplus being carried forward. The annual meeting of the stockholders was held on the 27th ult., as we mentioned at the time. The pamphlet report of the Company was issued this week and from it we condense many interesting items. Before doing so, however, we may mention that the mine contains 1,040 feet divided into 104,000 shares. The first bullion produced was in 1864, at which time it paid a dividend at the rate of \$21 per foot or 21 cents per share on the present issue. In July, August and December of that year dividends of \$24 per foot were paid. In January, 1865, the mine paid \$51 per foot; \$60 in February and \$75 in March; \$75 in April and \$51 in May. Within a year, nine advances were paid, aggregating \$421,200. From that time until April, 1871, assessments were levied to work the mine. There were 21 assessments, aggregating \$660,400. At that time the assessments were \$239,200 in excess of the dividends. During these seven years of unproductiveness the mine was continually worked, though at times the stock sold for less than the delinquent assessment. In October, 1870, shares were sold as low as what would be equal to 10 cents per share of the present issue. As the ore developments improved, the mine of course increased in value to a wonderful extent. The mine has paid dividends regularly since January, 1872.

Ore and Bullion Statement

Gives the product of the mine for the past two and a half years.

	1871.	TONS.	PER TON.	BULLION.	DIVIDENDS.
August.....	680	74.90	\$ 50,935.47		
September.....	2,009	80.19	161,103.09		
October.....	4,209	74.52	313,640.88		
November.....	6,717	60.41	345,419.28		
December.....	5,653	55.33	328,036.45		
	18,468	64.93	1,199,134.87		
1872.					
January.....	8,474	50.29	426,127.51	\$104,000	
February.....	5,504	52.76	290,396.57	155,000	
March.....	6,721	52.76	354,681.08	156,000	
April.....	7,542	48.51	365,915.15	208,000	
May.....	7,411	67.99	502,349.35	312,000	
June.....	6,709	58.43	407,847.53	312,000	
July.....	5,000	62.48	321,421.93	312,000	
August.....	5,890	42.77	251,790.83	312,000	
September.....	6,545	67.56	442,201.16	812,000	
October.....	4,690	78.10	366,326.54		
November.....	7,656	59.80	454,394.63		
December.....	10,787	56.00	604,206.82		
	83,195	67.63	4,794,659.10	2,184,000	
1873.					
January.....	8,501	51.48	437,480.50	312,000	
February.....	10,417	70.07	730,013.87	312,000	
March.....	12,008	73.08	888,393.39	416,000	
April.....	15,981	74.11	1,184,475.62	520,000	
May.....	18,965	79.15	1,500,823.81	832,000	
June.....	13,074	69.96	914,592.10	1,040,000	
July.....	13,685	66.70	912,781.15	832,000	
August.....	10,483	65.99	691,768.39	728,000	
September.....	9,876	65.58	647,709.82	520,000	
October.....	12,825	64.82	831,262.83	312,000	
November.....	13,702	68.61	940,195.75	416,000	
December.....	15,147	72.60	1,099,074.48	520,000	
	164,664	69.69	10,779,171.07	6,760,000	
1871, 5 months.....	18,468	64.93	1,199,134.87		
1872.....	83,195	67.63	4,794,659.10	2,184,000	
1873.....	164,664	69.69	10,779,171.07	6,760,000	
Total.....	256,327	65.40	18,772,965.04	8,944,000	
Value in Gold.....			9,439,718.44		
Value in Silver.....			7,244,943.60		
Assay Grains.....			85,303.00		
			\$16,772,965.04		

By adding the dividends under the old organization and deducting the assessments levied, we have the following results up to this month:

Dividends June 1864 to May 1865 inclusive.....	\$ 421,200
Dividends to 1872.....	2,184,000
Dividends " 1873.....	6,760,000
Dividends in Jan. and Feb. 1874.....	1,040,000
Total dividends.....	\$10,405,200
Assessments Dec. 1865 to Apr. 1871.....	650,400
Stockholders' profits.....	\$ 9,744,800

Ore Products.

Following is a statement of the monthly milling operations of the mine for 1873:

	Tons Worked.	Bullion.	Average.
January.....	8,501	437,489	\$51.46
February.....	10,417	730,014	70.08
March.....	12,008	888,393	73.98
April.....	15,981	1,184,476	74.11
May.....	18,965	1,500,824	79.15
June.....	13,074	914,592	70.33
July.....	13,685	912,781	66.70
August.....	10,483	691,768	65.99
September.....	9,876	647,710	65.58
October.....	12,825	831,263	64.82
November.....	13,702	940,196	68.61
December.....	15,147	1,099,074	72.60
Totals.....	164,664	10,779,171	\$69.69

Cost of Production and Reduction.

The detailed cost for producing and reducing 154,664 tons of ore, was as follows:	
Labor.....	\$85,503.97
Hoisting ore, (Jacket Co.).....	86,653.00
Supplies, (tools, etc.).....	108,750.00
Timber.....	116,760.00
Assay charges.....	9,906.79
General expenses.....	14,430.22
Freight, supplies, etc.....	8,676.05
Wood and coal.....	85,876.11
Salaries and office expenses.....	21,235.00
Total.....	\$1,317,876.14
The cost of crushing the ore was \$12.10, and the cost of mining was \$8.51 per ton; total, \$20.61. In 1872 the cost of crushing was \$12	

per ton, and the cost of mining was \$9.07; total, \$21.07. The number of tons worked in 1873 was 154,664; in 1872 the mine produced 83,195 tons. The total receipts of bullion in 1873 were \$10,779,171.07; in 1872, they were \$4,794,659.10. The average yield per ton in 1873 was \$69.69 and in 1872 it was \$57.63.

The bullion statement is as follows, from the stamped value of bullion for assay certificates: Value in gold, \$5,725,247.50; value in silver, \$5,009,520.51; assay grains, \$44,403.06; total, \$10,779,171.07. Number of ounces of refined bullion, 4,173,535.74-100. Average fineness of gold, 66 1/2 thousandths, average fineness in silver, .929 thousandths. Value per ounce in gold, \$137.19-100; value per ounce in silver, \$1.20-2-100. Value of bullion per ounce \$2.57-21-100; average value per ton in gold, \$37.16; average value in silver, \$32.53; total value per ton, \$69.69. This statement will appear strange to those who suppose the Comstock lode produces nothing but silver, as it shows that in this, the greatest producing mine on the lode, the gold predominated. The Secretary's report gives the following as

Receipts.

Bullion.....	\$10,779,171.07
Virginia and Truckee R. R.....	2,117.24
Cash, Jan. 1st 1873.....	1,011,124.11
Total.....	\$11,792,412.42

Disbursements.

Crushing Ore.....	\$1,874,401.00
Labor.....	85,503.97
Mine Expense.....	153,723.76
Discount on Bullion.....	254,403.41
Hoisting Ore Yellow Jacket Co.....	56,653.00
Timber.....	193,031.36
Fuel, Wood.....	79,517.28
Contract on Incline and Drifts.....	44,526.83
Assays Bullion.....	52,466.33
" Ore, etc.....	28,522.06
Treasure Freight.....	9,906.79
Supplies.....	42,914.64
Taxes on Proceeds of Mine.....	44,689.90
City, County and State.....	83,582.41
Insurance.....	4,082.55
Legal Expense.....	9,902.00
Construction.....	5,500.00
General Expense.....	26,966.89
Freight.....	14,430.22
Office Expense.....	8,676.05
Exchange.....	9,135.00
Crown Point G. & S. M. Co.....	8,407.00
Dividends Nos. 10 to 21, inclusive, \$65 per share.....	137,500.00
W. H. Smith Cash.....	6,760,000.00
Cash, January 1st, 1874.....	19,804.86
	980,165.10
	\$11,792,412.42

The Superintendent's Report.

From the report of the Superintendent, W. H. Smith, we found that of the 156,000 tons of ore, 40,000 tons came from the 1,000-foot level, 16,000 tons from the 1,100-ft. level, 40,000 tons from the 1,200-ft. level and 60,000 tons from the 1,300-ft. level. The main incline has been sunk 380 feet and stations opened on the 1,200-ft., 1,300-ft. and 1,400-ft. levels. On the 1,000-ft. level the ore body has been worked out 200 ft. in length and 98 ft. in height, varying from 15 to 98 ft. in width.

On the 1,100-ft. level work was suspended in July last, all the high grade ore having been extracted; there still remains on this level from 10,000 to 15,000 tons of low grade ore.

The 1,200-ft. level looks as promising as the Supt. has ever seen it, and he judges that the product this year will equal the last.

The ore taken from the 1,300-ft. level up to the present has been hoisted through the Yellow Jacket shaft. The ore yet remaining on this level will at least equal the amount already extracted from it, and prove quite as good. The appearance of this level as far as opened is as good as any of the levels opened in the mine, a significant fact in reference to the continuance of the ore body with depth.

Careful estimates of the quantity of ore now remaining in the mine show that there are at least 150,000 tons. The openings to the mine and the appliances are all in first-class order, and will compare favorably with any on the Comstock.

On the surface a number of improvements have been made this year. A switch and bridge from the railroad has been built for the purpose of receiving supplies for the mine. The ore dump has been enlarged to double its former capacity; the boiler room has been enlarged and four boilers added. Machines for repairing and four boilers added. In addition, a Burleigh air compressor and two Burleigh drills with 1,400 feet of 6-inch pipe to carry air from the compressors to the machines, have been purchased. This is most complete apparatus of the kind on the Coast and is a perfect success.

During the year, 3,692 lineal feet of ore, and winzes have been run, 380 feet of main incline, and 4,072 feet of car track laid. The material at the mine and in Carson is valued at \$142,337. At the first of the year there were on the dump and at the mills 1,340 tons of ore to be reduced, which were extracted during the year.

This mine has no parallel in the world, the Crown Point adjoining it being the only one approaching it in richness. The mine produced in two and a-half years nearly seventeen millions of dollars, and since its opening has paid nearly ten millions of dollars as dividends above all assessments. The success of this and the Crown Point has encouraged mine owners on the whole Comstock to pursue developments at greater depths. The circumstances connected with the development of the Belcher into a first-class mine furnish an example for other mines in similar circumstances. After their ore gave out, they worked systematically and uninterruptedly until they developed the largest ledge ever opened in any mine in the world.

Academy of Sciences.

The regular semi-monthly meeting of the California Academy of Sciences was held at their new rooms on Monday evening last, President Davidson in the chair. The following named gentlemen were elected to membership: George W. Beaver, Hon. George Oulton, G. Niebsnm, life members; Dr. J. G. Moore, John C. Merrill, Csrton Newman, Thos. B. Bishop, Frederick Msson, John R. Sherrstain, J. E. Squire, H. F. Cooper, Emanuel Newsmn, F. C. DuBrutz, and James S. Gilham, resident members.

Among the donations to the museum were the following:

From W. H. Dall, large collection of fossils of the post-pliocene period, from Esmeralda, on the west coast of South America, near the equator, collected by Captain R. A. Hodgkins, of the schooner "Urania."

From a member of the Coast Survey, a crustacean from the Island Miguel, supposed to be a new species.

From Captain E. E. Smith, specimens of coal from the Arctic coast, near Point Lisbon. The coal was observed in that locality for a distance of thirty to forty miles, and crops out in veins of great thickness.

From Mrs. James McEwen, an object supposed to be a petrification, obtained on the Poso Caliente Rancho, Sonoma county, in a portion known as the Indian Garden. The lady had also discovered, in the same locality, stone-wrought mortars and other Indian implements, which were tendered to the Academy.

Deep Sea Soundings.

Professor Davidson announced that he had received permission to inform the Academy of the important results of the soundings made by Captain George T. Belknap, of the United States steamer "Tuscarora," during last year, with reference to the projected laying of a telegraphic cable from this coast to Japan, and which he proceeded to explain with the aid of a series of large charts and profiles prepared for the occasion. This work had accomplished a remarkable development of the depths of the Pacific Ocean, which had no parallel in the plateaus of the Atlantic. The "Tuscarora" first started in her line of soundings from the entrance to the Straits of Fuca, across that portion of the North Pacific designated as the Gulf of Alaska, toward the Asiatic coast. After leaving the entrance to the straits, the bottom slopes gradually to a depth of 100 fathoms, and then a sudden descent occurs, which reaches a depth of 1,400 fathoms, at a distance of 150 miles from the coast. The temperature of the water at the greatest depth on this line of survey was 34 degrees.

Commander Belknap then returned, prosecuting off and on soundings all along the coast to the entrance of San Francisco bay. This work determined the fact that the sudden descent of the bottom of the Pacific to a great depth is continuous down the entire coast, varying from twenty to seventy miles out. In the latitude of San Francisco bay, the great bench is reached a short distance off the Farallones, where the bottom suddenly descends to a depth of two miles. Off Cape Point weather the bottom descends precipitately from 400 fathoms to a depth of 1,500 fathoms, and then the plateau continues westward for hundreds of miles, and comparatively as level as a billiard-table. Off Cape Mendocino, where shoals have been erroneously supposed to exist, from the seaward jutting of the mountains, a depth of 2,200 fathoms is reached eighty miles from the shore. Thirty miles off the Golden Gate the bottom is reached at 100 fathoms; at 55 miles it has descended to 1,700 fathoms; and 100 miles out, the enormous depth of 2,548 fathoms has been measured without reaching bottom. The Professor has prepared some interesting tables in connection with temperature and depth, etc., which we will shortly produce in connection with a more detailed article on this subject.

Miscellaneous.

A paper by Henry Edwards was submitted by title and referred to the publication committee. It is the fourth of his papers on the "Pacific coast Lepidoptera."

The President referred to improvements in sextant for hydrographic work, made by Mr. Lowry of the Coast Survey, which is spoken of more at length in another column.

Mr. Stearns promised a paper on the mollusca of the Atlantic and Pacific Oceans and their relation to each other, a subject suggested by the President's remarks on ocean currents and temperatures.

EMMA.—A private letter from Salt Lake, Feb. 10th, informs us that sales of Emma dated Feb. 10th from the new strike in the mine, are as follows: 25 tons, deepest work, 320 ounces per ton, \$38,000; 29,000; 100 tons, 230 ounces per ton, 100 tons of third class ore, 230 ounces per ton, \$25,000; 100 tons of fourth class, 132 ounces per ton, \$15,000. Total value of the 325 tons, \$107,000. Good for Emma.

THE WHITE PINE TUNNEL.—A petition, circulated through Eastern Nevada, has been signed by 2,000 names, asking Congress for permission to run a railroad tunnel, of light or nine miles in length, through the White Pine mountains. They ask for no subsidy or loan; merely the franchise of the land.

ON FIRE.—"Ore Beds—Their Origin and Conditions," also, Letter from "J. D. P."

The California Acclimatizing Society.

This Society, which has now been permanently established has in the short time it has been in operation been productive of many benefits to the State of California.

In January, 1870, there was organized the "Ornithological and Piscatorial Acclimation Society of California," which had for its object the introduction and acclimation of game birds and fishes, on the Pacific slope. The original plan contemplated its support to be derived from contributions of the members, but it soon became apparent that the amount that would be so received would be inadequate to accomplish the desired results; the Society was therefore re-organized as a joint stock company, and incorporated under its present name. Commencing operations under this new arrangement, the Society entered into communication with kindred institutions in the Eastern States and elsewhere, and started a system of purchase and exchanges, from which signal benefits have since been derived.

In January, 1872, the first installment of Eastern trout ova were received from Seth Green, for which hatching troughs were constructed at Hayes' Park. The ova were hatched with a loss of about 50 per cent. The results of this first experiment induced the Trustees to locate their subsequent operations at San Pedro ranch, where are now contained in the nine separate ponds, (since constructed,) Eastern, Native and Tahoe trouts, and Lake Ontario salmon trout, and a few black and rock bass. At San Pedro there will in a few days be constructed an enclosure, wherein the wild turkeys, received from Judge Caton, of Illinois, will be kept for breeding purposes.

The operations of the society having assumed greater proportions, they are now conducted with a certainty of success; the dams, ponds, hatching houses, cages, and other improvements have attained a fixed value. During the past year the most cheering results have been realized. The society is now able to supply any amount of ova or young fishes that may be called for; it has demonstrated that the hatching process can be carried on in California every day in the year, by exchange of eggs from different parts of the world; and that while the period of incubation in this State is shorter, our fish are larger and come to maturity sooner than they do in the Eastern States.

The financial aspects of the Society are no less flattering; while its assets, including stock, fish, ponds, houses, fixtures and utensils, are estimated to be worth \$20,000, its liabilities amount to only \$1,500.

An assessment has recently been levied in order to expunge this indebtedness, and to make further improvements in and about Lake Merced, (now under lease to the society,) which has been stocked with 300,000 fish. It is proposed to throw open this lake during the coming fishing season to the public, and to charge such a fee to anglers as to make it a source of income. This, with the proceeds of a sale of 50,000 young fishes, shortly due, and such other receipts which the past justifies them in anticipating, will enable them to conduct future operations without requiring further assessments from the stockholders.

It will thus be seen that the Association is conferring an absolute benefit, not merely to those who may go in search of a few weeks' enjoyment during the season, but to society at large, for in propagating fish and birds, and keeping our streams and woods inhabited by them, they are ministering both to the pleasure and wants of the people. Many streams within the vicinity of San Francisco, which once contained large numbers of fish, and the shooting grounds which were alive with game, are now unproductive; and the process of gradual destruction would still go on until all game would be exterminated, unless some such conservative organization as is here represented took active measures to prevent this unfortunate result.

NEW ELECTRICAL MACHINE.—By the late Panama steamer the St. Ignatius College, of this city, received from Paris one of Nollet's improved electrical machines. This is the apparatus with which the French government has of late years been experimenting, with the view of introducing the electric light for light-house purposes. The machine is now in place at the College on Market St., and will probably be in full operation ere we go to press. It is one of the most powerful machines ever constructed, and is one of twelve which were recently manufactured for the French Government, and the only one of its class in this country. So much interest attaches to it that we propose to prepare an engraving for the purpose of illustrating its construction and use, which will probably be ready for our next issue.

"A SUBSCRIBER," writing from Brigham, Utah, is informed that we are unable to give the names of the Trustees of the Ironsides, Gold and Silver Mining Co., re-incorporated a short time since, either in this State or Nevada. It may have been re-incorporated under some other name, or in Nevada, but we have been unable to find the name among recent incorporations in this city.

Snow.—More snow has fallen on the Sierra Nevada mountains the present season than ever before known. This looks well for a prosperous season in the milling and agricultural line.

Improvements in the Sextant.

At the last meeting of the California Academy of Sciences, Professor Davidson described some improvements made in the sextant by T. J. Lowry, of the U. S. Coast Survey. The improvements referred to are very important, making the instrument better adapted for hydrographic work than it has heretofore been. The sextant is the most universal of instruments in the hands of the geographer, navigator and astronomer, because it alone is available at sea as well as on land. To the navigator it is invaluable; and in the special work of hydrography along a coast line, where the position of the boat or vessel is generally determined by observing from the boat, the sextant is the only instrument of precision in use, and yet in its present forms it has certain deficiencies which prevent its universality of application. It fails to measure the angles between one hundred and forty and one hundred and eighty degrees, and the hydrographers of all countries have studied to remedy this defect with only partial success.

M. Daussey, the French hydrographer, measurably solved the problem by a device as simple in construction and beautiful in theory as it is difficult in practice. By means of a second

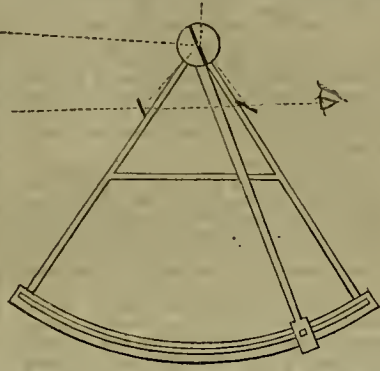


Figure I.

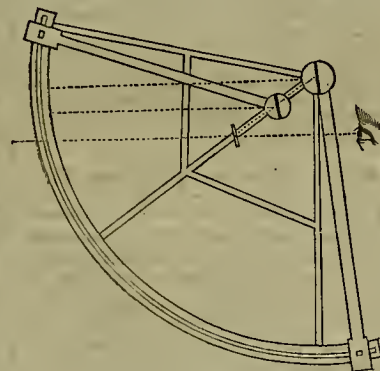


Figure III.

NEW FORMS OF SEXTANT.

horizon glass, he added, as it were, a constant angle of about ninety degrees to that measured by the index and horizon glasses, and thus obtain any angle from naught to one hundred and eighty degrees. In observing large angles he reflects both objects, which increases the difficulty of manipulation by the observer even when on land with well defined objects, but when the observer is in a boat, disturbed by the waves, and both objects indistinct, it is next to impossible to see them; and certainly not with any degree of quickness, which such operations especially demand. Daussey's instrument has not come into practical use.

Piston & Martins of Berlin have also partially solved the same problem with the prismatic sextant bearing their name. This instrument will measure any angle from naught to one hundred and eighty degrees whilst reflecting but one object, but in measuring the angles from about one hundred and forty to one hundred and eighty degrees the sextant must be inverted, and the manipulation is therefore embarrassing. Their sextant is too heavy for practical use and has not been largely adopted.

Mr. Lowry has solved the problems very ingeniously, and Prof. Davidson had models made to exhibit their practical application. And in studying the subject several other problems which occur to the practical hydrographer had been very well solved. In the work of the U. S. Coast Survey and in the hydrographic surveys conducted by the navies of all countries there arise daily demands for such instrumental aid to solve these problems, and it is believed that most of these devices of Mr. Lowry are novel. Very few can thoroughly appreciate their full value unless they be practical hydrographers.

Mr. Lowry has given the following statement of the requirements demanded by the hydrographer in his work and the solutions thereof: *Problem I.* To measure with a sextant any

angle from 0° to 180° without inverting the instrument and while reflecting but one object.

This may be solved in the following manner: The front and back faces of index glass (of ordinary sextant) are made reflectors, and a second horizon glass placed on the line of sight (behind the index glass) and at such an angle as to reflect the rays, which are reflected first from the back face of the index glass, parallel to the line of sight. *Fig. I* illustrates this form.

We here have an arc of only 60 degrees, graduated as usual from 0 degrees to 120 degrees, with a second reading of the same arc, commencing at 0 degrees as 120 degrees, and numbered to 240 degrees at 120 degrees. This adaptation may be designated as the "double reflecting index glass."

Problem II. To make the sextant capable of measuring two angles, one to the right and the other to the left of an object, at the same instant; either angle being any number of degrees from 0 degrees to 120 degrees.

In practice, the hydrographer sets his index arm so that the reflected and direct images of the objects (say left hand and middle) of one of the angles which he is to measure, are not coincident, yet approaching on account of the progress of the boat, then with the second index glass he makes the direct and reflected images of the middle and right hand objects coincident, and keeps them coincident with tangent screw until the first two objects are coincident.

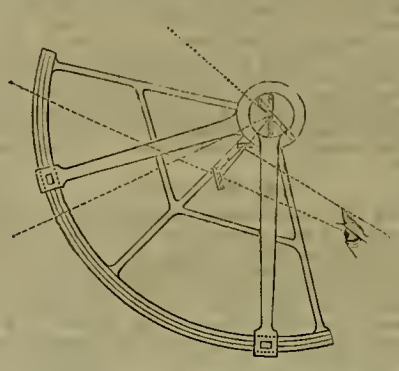


Figure II.

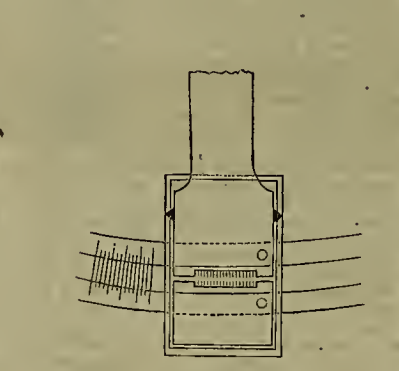


Figure IV.

This Problem II he solves in four different forms of the sextant. In *Fig. II* there are one horizon glass and two index glasses; one of the latter mounted directly over the other; but each attached to distinct index arms, which have a common center of motion. The arc is 120 degrees instead of 60 degrees, as in the ordinary forms, and the graduation is numbered in opposite directions, from 0 degrees to 120 degrees (actually at 60 degrees from each zero).

A modification of this form is given by making each index-glass half the width of the ordinary form, their inner edges meeting as it were over the center of the instrument, and thus allowing them to move in the same horizontal plane.

Figure III exhibits the next solution of this problem, and affords a much more stable instrument, suited to the rough usage of boat duty. This form is unique. There are two index and one horizon glasses whose centers of motion are in the same straight line and in the same horizontal plane; but the index glasses have independent centers of motion, so that the arcs of graduation, although of "one piece and in the same plane have different radii. The graduation is from 0° to 120° from each end to the theoretical junction of the arcs. The index glass nearest the horizon glass is one-half the height of the other one.

The fourth solution gives to the ordinary sextant an extra index-glass which may either move in the same or a parallel plane to that of the other index glass—and this extra index-glass has an arm which moves on the under face of sextant, but its extremity is curved so as to bring its vernier upon the same graduation as the upper index arm.

Problem III. To make the sextant capable of measuring two angles, one to the right and the other to the left of the central object, in quick succession, without previously estimating their relative magnitudes or inverting the sex-

tant or lengthening its arc. This is done by using the ordinary sextant with the addition of a second index glass secured upon the usual index glass and at an angle of 60 degrees therewith. It is thus evident that when one index glass measures an angle of 120 degrees the other is at the zero of the first. The index glasses may be placed one above the other or in the same horizontal plane. With this there is also added a detachable stop with vernier at the extremity of the index arm bearing its usual vernier. This stop to be so adjusted that when clamped it will allow the index arm to move freely for the next angle.

The ordinary sextant may be made to measure an angle and give an inter-range at the same instant by placing a low mirror upon the frame, and in a line joining the centers of motion of the index and horizon glasses, and at such an angle as to reflect the rays, parallel to the line of sight, from the back object, into the horizon glass. This is a modification of Daussey's improvement, but fulfils many conditions which his will not.

Automatic Telegraph.

The President of the Western Union Company having set forth, in a published letter to the Postmaster General, under date of December 27, 1873, concerning the Automatic or fast system: 1st. That the Automatic system is slower than the Morse; 2d. That it requires five times as many operators; 3d. That consequently it is more expensive, the Automatic Company determined to test the accuracy of these statements by a public demonstration over their line of one wire between Washington and New York. The trial took place on the evening of the 27th ult. By invitation; the electrician of the W. U. Co., Mr. Geo. B. Prescott, was present in New York, and Mr. Whitney, manager of the W. U. office, Washington D. C., was at that end. In addition there were present in the New York office, Hon. Hiram Barney, Gen. J. H. Wilson, H. G. Pearson, Assistant Postmaster, and Mr. Hinchman, also of the Postoffice Department, New York, J. G. Smith, General Superintendent of the Franklin Telegraph Co., and several others; and in the Washington office, Mr. Lines, of the Postoffice Department, and Capt. Howgate, U. S. Signal Corps, and others.

The matter transmitted was the President's late message, with the Spanish protocol attached, numbering 11,130 words; it having been selected in consequence of the declaration that its transmission over eight wires by the Western Union Company, on December 24, 1873, in 70 minutes, was a feat unparalleled in telegraphy. The work commenced in Washington at 5.39 p. m. The document was copied complete in New York at 6.48, p. m. occupying in all but 69 minutes, as against 70 minutes, the time consumed by the W. U. Co. The average time was 55½ minutes, as against 59 minutes by the W. U. Co. The Automatic used but one wire; the W. U. Co. used eight. The Automatic used ten perforators, thirteen copyists, and two Morse operators, as against sixteen expert Morse operators by the W. U.; the average pay of perforators and copyists being \$40 per month.

We have received a circular giving the details of the experiment and give some of them, as people are interested in knowing whether the capacity and economy of the new system are to be to their benefit. Mr. E. H. Johnson, the general manager, makes a statement of the trial, from which we condense the following: Matter transmitted, 11,130 words; length of circuit, 281 miles; conductors used, one wire. *Labor.* New York—One Morse operator, and thirteen copying operatives; Washington—one Morse operator, and ten perforating operatives. Total, twenty-five operatives.

Time. Washington—Perforating commenced, 5.39; and completed, 6.24½; New York—copying commenced, 5.42; completed, 6.48. Total time, sixty-nine minutes.

Cost. Morse operators, \$100 per month; automatic operatives, \$40 per month.

The characters were legible and well defined; and were copied with facility. The average time the operatives were at work was 45½ minutes, making an average per operative, per minute, of 25 words. The average time of copyists was 50 minutes, making an average per copyist, per minute, of 17 words. The average time occupied by the Automatic was 55½ minutes. The average time occupied by the Western Union Company was 59 minutes. No attempt was made to attain a high speed of transmission on this occasion, as that point had already been proved in the presence of the Hon. John A. Cresswell, Postmaster-General, and numerous other gentlemen, including Senators and Representatives in Congress, on the evening of December 11th, 1873, when they transmitted some twelve thousand words over one wire from Washington to New York in twenty-two and a half minutes. The manager thinks that with the experience gained at this trial, they could readily dispense with at least two perforators and three copyists, and yet perform an equal amount of work.

MINES are said to be leaving Pioche for new diggings. There is considerable talk among them of San Juan and the Sticken country, and quite a number will go to both these localities.

The Eberhardt and Aurora mill is working, notwithstanding the inclemency of the weather and bad roads.

Antimony Mining and Smelting in Canada.

By ARTHUR F. WENDT, E. M., in *London Mining Journal*.

Antimony was discovered in York county, New Brunswick, about the year 1863. The ore occurs in the Lower Silurian slates, in a low ridge running nearly southeast and northwest. Two miles east of the mines the slate abuts against the junction of the granite area, and a small and shallow outlier of the Carboniferous system. The granite underlies the slates, which in turn seem to underlie the conglomerates and coarse sandstones of the Carboniferous. The ore is stibnite, and occurs in segregated veins with distinct clay selvages, conformable with the general stratification of the country; the strike is about north 55° east, and the dip varies from 30° to 50°. The gangue consists of compact white quartz or a bluish slate, highly charged with numerous small crystals of iron pyrites. In addition a conchy quartz and white and grey calcite have been found as vein-stone in two of the mines. The walls of the veins are very irregular, yet well defined, the hanging wall often showing signs of slicken-sides. In width the vein varies considerably, ranging from a few inches to six feet, thus forming a series of pockets, often connected only by barren vein-stone. Of three mines opened on different veins only one is at present in active operation.

Mining is Conducted

By the system of long wall stoping, the vein having been uncovered, and stoping begun for nearly 200 feet. The ore, as delivered to the spalling floors, contains an average of 10 per cent. of stibnite. Besides the millstone and sterile material, some No. 1 ore, fit for the smelting works, is obtained in this operation. The mill ore is fed by hand into a Blake's crusher, which delivers the crushed ore to a pair of primitive rolls. Their diameter and width is 15 in., and their surface is formed of three wrought-iron bands shrunk on the cast-iron core of the rolls. The second roll revolves by friction, and is kept in contact with the first by a weight, acting through a combination of levers. The natural result of this disposition is an unnecessarily large production of fine ore, and since the gangue is harder than the ore, an enrichment of the finely crushed grades at the expense of the coarse ore, and a consequent large proportion of loss.

Concentration

Was formerly effected by a Krom air-jig, but this method has been abandoned as unsatisfactory. As the merits of this machine have lately been the subject of a lively discussion amongst members of the mining profession, it may not be out of place to state some results obtained by its use, and their comparison with wet concentration. I wish the reader to hear in mind that I was unacquainted with the machine, except by the description given in Mr. Krom's pamphlet, and that I believe better results could have been obtained if the grading of the ore had been more perfect and the mill a trifle less shaky. The ore was graded by wire-cloth sieves of 8, 25 and 60 meshes to the inch; all material not passing through the coarsest sieve was continually returned to the rolls by an elevator. The grade of ore between 25 and 60 in. gave the best results, and contained by assay 12.15 per cent. of metallic antimony. The ore was passed through the machine three times, and the rich stuff then assayed 30.62 per cent. of antimony. The tailings of the two last concentrations were re-jigged and the product added to the original ore. The total tailings thereupon assayed 3.25 per cent. of antimony. The product of the machine varied from 400 to 600 pounds per day, and required the attendance of one man. This result is certainly not very brilliant, but it was the evident inability of the jig to deal with the fine ore passed through the 60-mesh sieve that finally condemned it in the eyes of the company. A simple form of water concentration was then resorted to. The crushed ore is fed, without previous sizing, into an inclined sluice. At its bottom a rectangular box, the trunk box, receives the washed ore; the sludge and slime is carried off by the water and deposited in a number of large tubs. The washed ore is immediately jigged in a 22 by 36 in. sieve, hung in a large box of water, and supported by a lever, the long arm of which is set in motion by a cam on a lineshaft. The sieves receive 110 strokes per minute. Their bottoms are made of stout parallel wires, on which rest the hedging of coarse lumps of stibnite. In four or five minutes the ore is jigged, the sieve raised out of the water, the tailings scraped off by the workman, and finally three or four shovels full of fresh ore added. Previous to every third or fourth addition the chatts, a layer of stibnite and gangue in the same pieces, are scraped off, rerolled and jigged. The superfluous bedding, which is fit for smelting, is also occasionally removed. When the jig box is full of ore the water is drained out and the ore again trunked and jigged. The original ore assayed 7.31 per cent. of antimony, the first concentration enriched it to 21.8 per cent., the second to 29.75, and the third to 66.35 per cent. of metal. The chatts assayed 4.57 per cent. and the tailings .99 per cent. The result of 23 days' work of one jig was 2,347 pounds sieve ore (hedding), and 4,220 pounds jigged ore, or at the rate of 285 pounds a day. The ore contains by analysis 12.7 per cent. of moisture, hence one jig produces 250 pounds dry 60 per cent. ore in 10 hours. Since one man can readily tend two jigs, he will produce as much concentrated ore of a higher yield as with a Krom concentrator, and will achieve this end from poorer ore, with a smaller loss and with cheaper machinery.

The results obtained by Mr. Krom's machine could no doubt be greatly improved, but I do not believe it will ever be able to separate ore and rock as completely or cheaply as a plunger-jig, nor do I believe that in any form of dry concentration iron pyrites of 4.9 sp. gr. can be separated from stibnite of 4.7 sp. gr., which result I have obtained on a Rittinger's continuous shaking table. Numerous mines are so situated as to make wet concentration an impossibility; to these the air concentrator will be a boon that can not be too highly prized, and its inventor and his labors to perfect his machine deserve the warmest approbation.

The Smelting is Accomplished

By the roasting and reduction process, entirely similar to the method adopted by the Septèmes Works in France, in 1855. The only novel point is the improvement introduced by the writer in refining and smelting the metal in one operation. The concentrated ore is roasted in a reverberatory 40 ft. long and 9 ft. wide. The height in the center is 18 in., the arch having 6 in. spring. The fire-place is 2 ft. wide, and 10 doors are ranged diagonally opposite on the two sides of the furnace.

The fire-brick is 6 in. high and 12 in. wide, and the flue and stack 12x16 in. interior dimension. The furnace holds five charges; three of 600 lbs. of wet ore being introduced and drawn every 24 hours. The ore, therefore, remains 40 hours in the furnace, and is heated nearly to fusion for two hours previous to drawing. To prevent its agglomeration the ore is rumbled every five to ten minutes. The loss of metal by roasting is 7.5 per cent., which is volatilized as sulphide of antimony, as, with proper working, the heat is not high enough to oxidize the fume. This operation produces a dull greyish-yellow mixture of oxide, containing a variable amount of oxisulphide of antimony. The consumption of fuel is only $\frac{1}{4}$ cord of wood in 24 hours.

The Smelting Furnace

Is a small reverberatory, connected with a number of dnt chambers for collecting the volatilized and oxidised metal. The crucible of the furnace is lined with fire-clay, and is 5 feet diameter and 18 in. deep. The fire-brick is 16 in. wide, the throat 18 by 24 in., and the grate 2 feet wide. About $\frac{1}{2}$ cord of wood is burned to each charge. The flux used in smelting is a crude sulphate of soda in the form of salt cakes, and the charge usually employed consists of 500 lbs. of roasted ore, 100 lbs. salt cake, and 75 lbs. hard wood charcoal, all in a coarse powder. The ore is mixed with 75 lbs. of charcoal and spread evenly in the red-hot furnace, it is then covered by a mixture of salt cake and the rest of the charcoal. The fire is immediately urged, and soon a violent reaction between the salt cake and charcoal sets in, carbonate of soda is formed, and sulphurous acid and carbonic oxide liberated. A fused layer is thus formed, which protects the reduced metal and fluxes the silicic acid of the gangue as well as helping in the reduction. In about four hours the furnace is at a bright red heat, approaching whiteness, and the whole mass is in fusion and active ebullition, the cerionio oxide penetrating the layer of slag and burning with a green flame. The charge is now repeatedly well stirred, until it is in quiet fusion, at which point it is kept for half an hour, to allow all the metal to settle. The fire is then let down and the doors placed ajar till the surface of the slag is at a dull red heat, and has become thick and pasty. It can then be drawn out of the furnace with a pair of prongs, or a rake. Immediately on its removal the refining slag, a mixture of 25 lbs. salt cake and 10 lbs. charcoal, is thrown on the metal, and the fire again strongly urged. Carbonate and sulphide of soda are produced, which sulphurize and scoriafy the impurities in the metal. In $\frac{1}{4}$ hour the slag is in quiet fusion and must be perfectly liquid, running like water. The metal is immediately ledled into iron dishes holding 25 lbs., care being taken to dip enough slag to cover it about $\frac{1}{2}$ in. thick, and not to let the antimony solidify in the dish until the latter is full. The slag ought to remain soft after the metal is solidified, and must not be broken off till perfectly cold. The metal obtained by this process is nearly chemically pure, and to this it owes its beautiful crystalline structure or ster and its high price in the market.

The Smelting Slag

Has a porphyritic appearance and is mainly silicate of soda holding quartz and slat in suspension. The refining slag seems to be composed principally of a double sulphide of sodium and antimony, dissolved in, or mixed with, carbonate of soda. It contains 15 per cent. of antimony, which is extracted by smelting 500 lbs. of slag with 100 lbs. of iron. A slag is produced therefrom that contains only a trace of antimony. From experiments made with the smelting slag I am convinced that the antimony could be profitably extracted by smelting it with iron ore and coal in a low shaft furnace, as it was possible to reduce the metal in the metal in the reverberatory, but not to render the slag liquid enough to allow the antimony to settle. The fine dust obtained is a pure oxide of antimony and is smelted exactly like the ore. In conclusion, I may say that this method of smelting antimony is cheaper than any other known method; no crucible breakage has to be charged, nor is the quantity of fuel or labor nearly as large as in the old English crucible process. With well built furnaces the loss of metal need not exceed 12 to 15 per cent., which amount is lost in crucible smelting, and the metal produced is of a much superior quality.

Irish Mining Operations.

While so much is written relative to the mining operations in the various districts in England and Scotland, little is generally published in England of what takes place in Ireland, where the works are of equal importance and value to those of Great Britain. The question of how best to utilise the mineral resources of Ireland has long been a much-vexed one; and yet, when we review the various reports just now to hand from the Irish collieries and mines, we are at a loss to understand why it should be so.

From a few accounts of the working of the past year, we learn that during the last six months 1,302 tons of copper ore were raised at the Knockmahon mines, in the county of Waterford, as compared with 1,330 tons in the half-year previous. The loss upon the operations amounted to £882 4s. 3d., after an expenditure of £734 on explorations at Kilduene and other localities. The improved prospects of the Lugganure lead mines have so far been realized, that the operations have resulted in the raising of increased quantities of ore. A new lode, the "Hero," has been proved to a depth of fifty fathoms, and another promising lode has been discovered in the neighborhood. In the last six months the winnings were 682 tons, as compared with 498 tons in the preceding six months. The quantity of lead ore delivered to the Ballycorus Smelting Works, County Dublin, was 676 tons, of the value of £1,455, the profit on which was £921. The operations in the various branches of lead ore smelting and lead manufacture at the Ballycorus works have resulted in a profit of £1,516, whilst in the smelting of silver ores there has been a loss of £2,242.

The new lease of the Slievordagh Collieries (Cork) having been obtained, a pit is now being sunk in connection with Coalbrook Colliery, which has already reached a considerable depth, and which will, it is calculated, be completed in about a year. The output of coal and culm at the Slievordagh Collieries has amounted to 20,027 tons, against 19,512 tons in the corresponding six months of 1872. At the Dulkallow Collieries, the troublesome and expensive operation of unwatering and securing ventilation has been completed, and the usual raising of coal and culm has been resumed. The quantity of coal and culm brought to hawk has reached 2,930 tons, which, though less than in the previous half-year, is fairly demonstrative of the great value of these collieries.

Taken as a whole, the reports from Ireland are satisfactory; and, should capital be brought to bear in the development of the mineral wealth it contains, a marked progress and beneficial result would undoubtedly be the reward of the enterprise.—*Iron*.

A Miner's Views on Quicksilver Bills.

A practical miner favors us with his views on the bill lately introduced by Mr. Gilman in the Assembly, as follows: It is one that demands the attention of the producer as well as the consumer. Quicksilver is an article that men must have, no matter what the price. Gilman's bill proposes to regulate the price. Now I contend that the only way and the only means by which the price can be regulated, is by the co-operation of producer and consumer. But to show you the many obstacles thrown in the way of the miner, I will illustrate one case of my personal knowledge—one in many thousands. Two miles from Cloverdale there is a cinnabar lode, called the "Live Oak," located last September, and owned by Messrs. Dougherty, Walker & Co. There is a shaft sunk 40 feet, a tunnel 55 feet to strike the ledge at a depth of 40 feet. A cross-cut has been started, and they are now going through ore that assays from one to two per cent. There are several mines in this locality, where the prospect is equally as good as the "Live Oak," but owing to the winter setting in, have not been prospected so well. The owners of this mine have tried to effect a sale. So far they have failed—and why? Because the "middlemen" have formed a ring. The "middlemen" are "curbstone brokers" that have no legitimate business, but make money out of other peoples' misfortunes, and it takes a miner with a small fortune to do anything with them. They keep dilly-dallying along day after day, until the party selling the mine is either "broke" or disgusted, when from sheer poverty he will sell at any price. The mine is then sold to the third party, or capitalist, the "middlemen" making all the money, while the prospector gets virtually nothing. Now I propose that mine owners, mill men, and corporations generally, using quicksilver, assist the cinnabar miners who are poor. Buy their mines, erect suitable works, and manufacture their own quicksilver. If they would adopt this plan they need not ask legislation on the subject.

It is a universal fact that prospectors are always poor. If they were not, we would have no monopolies to dictate the price of quicksilver or any other product of the mines. The Virginia City *Chronicle* advances a capital idea, that of a unity among prospectors—in fact a Grange—which should be endorsed by all miners. Let them unite and form a general fund, and when necessary assist members until they have attained their object, provided it is honorable, in the sale of a mine.

The Raymond and Ely Mine.

In a late issue the *Pioche Record* speaks of the Raymond & Ely mine as follows: Main shaft down 1,110 feet. The level running from the tenth station is 172 feet from the ninth station; the work on the ledge is being done with whims, and has progressed 45 feet in good ore. The eighth level is being run to the ledge, and is within 15 feet of it. The seventh level contains splendid ore, which can be worked to much better advantage than any other, the matter being in a powdered state. Between the fifth and sixth levels no work is being done. Between the fourth and fifth levels a superior quality of ore is being taken out. The whole amount of ore extracted daily is from 70 to 80 tons, and the working force is about 170 men. This mine is worked better than any other mine in Nevada. The railroad track runs under the ore house, so that no labor is required to load the cars, a double track, turn-table, switches and every facility for rapid work being provided. Shipments by rail for the week were 855 tons of ore. The foregoing report was furnished by the forsmen, Thomas Andrews. The motive power of the Raymond & Ely mine consists of two engines—one 19-inch cylinder by 24-inch stroke, which runs the cage in the west shaft; the other, lately erected, the east cage, a double-decker, weighing fifteen hundred pounds—with complement of cars loaded six thousand pounds. This beautiful piece of mechanism, displaying the master-hand of genius in the design and erection, was planned by Mr. Geo. E. Ames, and was constructed by Booth & Co., of San Francisco. It is of 80-horse power, 20-inch cylinder and 36-inch stroke, with balance valve in the brake, and every improvement that steam engineering of modern times suggests. The steam supply is furnished by two sets of boilers, used alternately, to allow cleaning and repairing without stopping the works, two 56 inches in diameter and two 48 inches in diameter, 16 feet long, and built at Marysville from design of Mr. Ames. They are furnished with Richardson's automatic safety valves, out of control of engineers or firemen when set and supplied by a Knowles' steam pump, which can also be used in case of fire. There are 1,700 feet of wire cable, with engine capacity to sink 2,000 feet.

Steam Pipes in Mines.

It is a frequent arrangement now-a-days, says *Iron*, to conduct steam through long stretches of pipes, lagged and unlagged. This is especially the case in the present system of mine drainage where the engine and pump are combined, and placed at the bottom of the mine close to the water. The steam is then frequently taken many thousand yards from boilers on the surface to pumps underground.

The inevitable condensation of some of the steam forms a considerable accumulation of water in the pipes at the engine, which causes the cylinder to prime heavily, and it is therefore very injurious unless removed.

To effect this, a frequent method is to place a water-cock in a receiver at the lowest point in the line of piping. This cock is then left constantly open, the condensed water with a large volume of steam continually blowing off to waste. To avoid this waste of steam a very ingenious French invention has been introduced to pass off automatically all condensing steam with the least possible waste of live steam.

The appearance of the apparatus is that of a ball-valve oscillating on a trunnion in a cistern of water. The trunnion is hollow, with two passages. One admits the condensed water from the pipes into the hall of the cock when in its highest position. The ball now being filled with condensed water, sinks in the cistern, opening a communication with the live steam into the hall. The live steam thus admitted empties the hall of its contained water, the hall again rises, and is once more filled with condensed water from the pipes, and so on. The actual oscillations in practice are very small indeed, and the loss of steam not perceptible.

TRENCH MINE.—In conversation with Mr. Butsch, now in charge of the Trench mine, on White Pine Mountain, we learn that everything about the famous property is looking exceedingly well. Although the roads are in such condition as to render the shipment of ores impossible, work on the mine is being constantly pushed ahead, developing large and rich lodes of ore. Butsch says that every day's work reveals more and more palpably the fact of the property proving one of the most valuable in the district, and he is satisfied a 20-stamp mill can be run on the product. We learn that negotiations are in progress having in view either a consolidation with the Monte Cristo mill, situate about two miles from the mine, or a lease of the same. It has always appeared to us a needless expenditure of many dollars in taking the ores from the Trench to Eureka, some forty miles distant, when a new 20-stamp mill stands idle at their very door, capable of crushing rock with as good results as can be obtained elsewhere. It is earnestly to be hoped that the coming spring will cause a change in the management of affairs as regards the working of the really valuable ore obtained in the Trench mine. Tom. Robinson, the superintendent, is now below, endeavoring to make arrangements for vigorous working the coming season.—*White Pine News*.

The San Juan Country.

The *Pioche Record* contains the following article: So much has been said and written in favor of the San Juan country and its vast riches, that it seemed almost a waste of time and effort to attempt to resist the tide which appeared to be sweeping everybody and everything in its current. But when we give all the information—good and bad—in relation to the country, our duty to the public is performed; and, if those who go, in spite of our protests, meet disappointment and misfortune, the fault will not be ours. So far, nothing has been received in regard to San Juan that did not paint the country and its resources in rose-colored tints. So far, the effort has been to restrain people from going there, at least, until May; but from information received yesterday from Mr. Richard J. Pryke, who has just arrived here from Denver, we are decidedly of the opinion that the chances will be altogether better a year or two or three hence than now. Our informant does not question that there are immense deposits of silver in the San Juan district, and that leads can be found in abundance. But the difficulty now is that the country is wholly without machinery to work the mines; and there will not, in the very nature of things, be employment for those who hope to labor for wages. There is no settlement within 120 miles, with no wagon road for 60 miles. All supplies must be brought the year round a distance of from 120 to 200 miles; and, for eight months in the year no work, not even prospecting, can be done. They have frosts there in July and August, and snow from September to May, inclusive. Snow slides in that country are terrific, coming down the steep mountain sides in such huge masses and with such irresistible force as to break down heavy trees as if they were but weeds—tearing them up by the roots and splitting them into kindling wood. "Seeing is believing," and Mr. Pryke having seen the country, and judged of its resources, took a sensible view of the situation, and so has concluded to await the time when the country shall be thoroughly prospected, and then purchase some mine already opened. He believes, however, that experienced miners, with capital to operate with, could, in the spring, lay the foundation for a fortune; but he urges all men of limited means to stay away from San Juan at present—to let well enough alone, and to husband their resources for a couple of years—and, then, if things look favorable, to try their fortunes in this promised Silverado.

Native California Coffee.

We were favored yesterday with a call from Mr. T. H. Kelingshy, at present he found at 315 Clay Street. Mr. F. has resided for many years in South America, where he became familiar with the coffee plant, its cultivation on the mountain, plain and valley, and the peculiarities incident to its growth. He states that at an elevation of from six to eight thousand feet above the sea, coffee is raised to perfection and in great quantity, without the necessity of providing shade for the plants as in the hot, lower valleys. It appears from this, that coffee does not require that extremely tropical climate to perfect its growth that many suppose; but that, given its proper elevation it is even more at home and thrives better wholly unprotected, than when forced to grow in a torrid climate under the shade of other trees, as is the practice in all very hot countries.

Now except as an introductory there is nothing of peculiar interest in the foregoing; but when we annex to it the fact, that in many of the foothill countries of the Sierras, at an elevation of from two to four thousand feet, the same genuine native coffee is found growing in perfection and considerable abundance, may be news to many a reader. That this is the case, there can be no question. Mr. F. has made the most careful investigation of the plant and its fruit, botanically and by the gathering, preparation and use of the seed for coffee-making.

In the first place the plant looks precisely like the coffee plant of other countries, with a slight difference in the form of its leaf. The fruit, which is the outer covering of the coffee seed, is the same in color, texture and taste as the cultivated varieties in Central and South America, and in every respect is the genuine coffee of commerce except in name—wild coffee. The shape of the berry when prepared for market is the same, except that the California variety is really larger and more completely perfect than most of the coffee of commerce and would be pronounced a superior article by the side of it.

Mr. F. is ready to produce further evidence of the genuineness of the product being veritable coffee, whenever any interested party shall apply. Now what hinders the extended culture, instead of the present destruction of this indigenous coffee? Why not plant the now almost useless thousands of acres of the foothill and mountain lands of the State with this native coffee, in the very zone, belt and altitude in which it is found growing wild and of course perfectly at home? We shall hope to hear of some one this spring, engaged in collecting a considerable plantation of young coffee trees from the counties of El Dorado, Amador, Toluca or Calaveras, in all of which this native coffee is found growing though sparingly, owing to its total destruction wherever the land is improved or used agriculturally.

Do We Use Sufficient Seed?

Of course every farmer is supposed to know how much seed wheat is required to the acre to produce the best yield; but does every farmer really know this? Has he repeatedly made test experiments on the same land fitted and sown at the same time and harvested and measured the product, or is his opinion mere guess work? The wheat fields of England produce as a whole average, more wheat to the acre than any other country.

Wheat has been grown on their lands for centuries with no diminution of product but rather an increase. Of course this has grown out of judicious rotation, the free use of manures and scientific culture. But does not this kind of culture include as well the quantity of seed sown to the acre, as its management in other respects? In taking up an English exchange, the "Farmer," we find that the first wheat seedlings in the fall, only a bushel of seed was given to the acre; that a month later two bushels were used, while the last sowings as many as four bushels to the acre were not uncommon.

We doubt very much whether our farmers make any such differences in the quantities of seed, as depending upon early or late sowing. Many sow more wheat on late sown ground, but do we ever make so great a difference as do the English in this regard? And if not, are we or they in the wrong in withholding, or needlessly sowing more seed, then will produce the best returns?

Early sown wheat tillers or multiplies its stalks from a single grain from six to ten-fold more than the latest sown, yet we would hardly venture to sow six times the usual quantity because it happened to be late sown. Still we believe it would pay our farmers this year—as they will probably be able to seed as late as as they please—to try on acre or two in different soils, with what would be termed very heavy sowing, amounting to at least double the usual quantity and carefully mark the result. We believe it would inure to their benefit.

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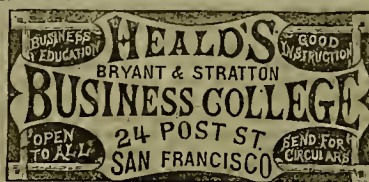
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POPULAR LECTURES.

Professor Neri's Lectures—No. 3.

[Especially Reported for the Press.]

Professor Neri delivered the third lecture of his series on Thursday evening of last week. The special branch of the subject treated on was

Galvanism,

The first and second lectures having been devoted respectively to frictional electricity and magnetism. This form of electricity, which affords the means of producing a steady force, by means of chemical action, was entirely unknown to the ancients. Its discovery only dates from 1790, and owes its origin to the accidental placing of a frog between the opposite poles of an electrical machine, when a series of startling convulsions was observed which excited the curiosity of Galvani, and induced a series of investigations, and finally led to the full development of the galvanic principle.

Galvani inferred the existence of electricity in the bodies of the frogs, and that it was decomposed at the junction of the nerves and muscles—thus developing the phenomena observed. Some even thought that the philosophy of life had been discovered. But Volta did not coincide with this theory, holding that the electricity was contained in the two metals which were brought in contact.

A Famous Controversy

Grew up between the experimenters and the two schools which arose in connection with this controversy. Neither, however, have been entirely correct. The phenomena were due neither to the nerves and muscles of themselves, nor the contact of the two metals alone, but to the aggregate of the whole. They were due to the chemical action induced in the liquids of the body of the frog or the animal by the contact of the two metals. Le Brun was the first to make this discovery and announce it to the world. Following out this idea, many new and ingenious experiments were resorted to, which finally led to another important discovery—that of

The Voltaic Pile,

Which was first announced to the world in March, 1800. One of these devices was shown to the audience, but somewhat more elegant and elaborate than that first devised by Volta, whose first effort consisted merely in placing together a series of silver and copper coins, each couple separated from its neighbor by a piece of cloth, moistened with acidulated water. He found that when he brought the two termini together, by means of two pieces of wire, that a sensible shock could be felt, which might be repeated as often as contact was broken or closed. This discovery created much sensation all over Europe, and was soon improved by Volta, himself, in the substitution of cups for plates of silver and copper, or zinc and copper. By multiplying these plates or cups the power may be increased to any desirable extent, and will continue until the acid in the battery becomes saturated with the zinc, which it decomposes. Of course the power disappears gradually, unless the strength of the acid is kept up by frequent renewals.

Various improvements on the galvanic or voltaic battery have made from time to time, the first of which was that of Daniells. Smee's battery is remarkable for its simplicity; but the most powerful and convenient battery is that devised by Grove, which is simply an improved modification of Daniell's. A modification of Groves' battery has been introduced by Bunsen, which is very popular in Europe. The galvanic current, even with a very feeble battery, is capable of supplying a very strong light. This fact was demonstrated by a large number of

Very Brilliant Experiments,

Which included also a demonstration of the comparative conductivity of the various metals. To show the latter, the current was caused to pass over a chain composed of alternate links of silver and platinum. While the latter glowed with heat, the former were not seen at all, owing to the facility with which the current passed over them. So intense was the heat produced that small pieces of wire were readily fused. While the current passed unobserved over a large wire, its passage over a small wire caused the iron to glow with heat. So intense is the electric heat that it is capable, not only of fusing, but also of volatilizing the most obdurate metals or even precious stones. Carbon in a peculiar condition of semiconduction is the only substance capable of resisting its action.

Effects on the Animal System.

When passed through the human or any other living animal body, the galvanic current produces great activity of the nerves, and is hence often beneficially applied as a remedial agent to the human system, but requires to be applied with great caution. Applied to a dead body it is capable of reproducing all the vital actions, even to respiration. Allusions were also made to the appalling effects of experiments often made on the bodies of executed criminals, where the lifeless remains are made to develop all the activities of actual life—writhing in contortions, rolling the eyes in horrible glare, moving of limbs, hands, etc.

Some very beautiful experiments were given of

The Electric Light.

Showing the manner in which it is produced, etc. This light is produced by employing small pointed pencils of carbon, as the terminal poles. When these two points or poles are made to approach each other, point to point, and the current is turned on from the battery, the passage of the same from the positive to the negative carbon point is attended with a much greater light than it is possible to produce with any other substance yet experimented with. So powerful and penetrating is this light that, when sufficiently elevated, it may be distinctly seen 200 miles. This light does not depend upon the presence of oxygen, as it may be produced as readily in vacuo as in the open air. Hence the facility with which it may be employed under water, requiring no air to sustain it. It may be so employed either in a water-tight glass globe or entirely exposed to contact with the water. In the latter case, however, the brilliancy is greatly reduced. This light may be usefully applied in many ways, as for light-houses, underground workings, photographic purposes, etc. The intensity of brilliancy is equal to about one-third that of a similar ray of light direct from the sun. The fourth lecture of the course was given on Thursday evening last,—the day on which we go to press,—and, of course, too late for a report to be given in this week's issue.

Collecting Assessments.

The decision rendered on Monday by Judge Morrison, in the case of Mowen vs. the Emerald Hill Mining Co., is so important to miners and stockholders in mining companies that we publish it in full:

This is an application to this Court for an injunction to restrain the Emerald Hill Mining Co. from collecting an assessment upon its stock; and the main and only ground relied upon which I think it necessary to notice is, that a previous assessment upon the stock of the company has not been fully paid.

It seems that the company holds its title to a certain portion, one-third, I believe, of its mining ground, under conveyances executed by Lawler, McGlynn, and Corine. This company was organized for the purpose of mining, buying and selling mines and mills, and mining property. Lawler executed a deed to the company, at the time of its organization, for a certain interest then owned by him in the mining grounds now claimed by the company. "For and in consideration of the stock to be assessed, and the covenants and agreements herein-after mentioned, on the part and in behalf of the said corporation, to be observed, kept, and performed," he deeds to the company certain interests in certain mines, which are described in the deed. There is a condition in the deed to this effect: "That the said corporation, in consideration of such sale, hereby agrees to issue, in the name of and to the said Peter W. Lawler, and deliver to him one-twelfth part of all the stock of said corporation, at all times pay at maturity all assessments or dues levied or to be levied upon said stock, or any part thereof, and forever to keep the said Lawler, and all persons to whom that stock may be delivered, or those by whom it may be held, free and harmless from any and all claims or demands to be made against him or them, or any of them, by reason of their holding or owning any of said stock so issued," etc.

It is contended by the learned counsel for the plaintiff in this case that the company had no power to make such a contract; that the contract is *ultra vires*; that it is against the policy of the law, and therefore is void. The facts are that the first assessment was paid by the other stockholders, and the amount of the assessment upon the shares of stock held by Lawler and others under these conveyances was charged up by the company on its books to the purchase account; and in this way, it is claimed, the assessment was paid. It is contended that if this party had paid over the amount of the assessment to the company, he would have been entitled to receive it back at once, as a part of the consideration for the deed from him to the company, and that the result would have been exactly the same as that produced in this case by charging up the amount of the assessment to the purchase account. That would have been done eventually if the money had been paid over by the holders of this stock, and then been returned to him; that the amount in the treasury and the ultimate result would have been the same; and that the law does not require the vain thing to be done of paying over the money with one hand and receiving it back with the other.

This is the most embarrassing question I have had to deal with since I have been on the Bench. The learned counsel for plaintiff has referred to a great many authorities; but, in my opinion, none of them are precisely in point, and none of them aid me in arriving at a correct solution of this difficult question. I have consulted the Judges of the Fifteenth and Nineteenth District Courts, and they differ in opinion as to the legality of this contract; one of them thinks that the contract is void, and the other is of the opinion that it is good. And I cannot say that I am now in as much doubt respecting this difficult question as I was when I first undertook the investigation of it. There is a condition in the deed to the effect that if

these assessments are not paid by the company, the title to the property shall revert to the grantor. The court is therefore asked to do something in the case, which, if done, may result in the loss of this property to the company, for the company cannot hold the property and refuse to pay the consideration for it. The court is also asked to stop—because that would be the effect of it—the operations of this company, and to arrest its business by injunction, in such a manner that it would be powerless to do anything.

If this were a clear case, the court would certainly enjoin the defendant from collecting this assessment, whatever the result might be. But where there is a doubt, as there is in this case, the court will consider the consequence of its action, and resolve that doubt in favor of the defendant. The conclusion at which I have arrived is by no means a satisfactory one to my mind; but it is the most satisfactory that I can reach after giving this case as much investigation as its importance demanded. The motion to dissolve the temporary injunction heretofore granted must be allowed.

We have received from Prof. J. W. Swinton the annual report of the public schools of Oakland for 1873.

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[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., Feb 17, 1874.

FOR WEEK ENDING Feb. 3, 1874.

ROTARY WINNOWER.—Thos. H. Drury, Wheatland, Oregon.

ART OF TUNNELING.—De Witt C. Haskin, Vallejo, Cal.

COMBINED WALL PROTECTOR AND TOILET RACK.—Herman Borchardt, S. F., Cal.

TRUCK.—Andrew V. Smith, S. F., Cal.

REVERBERATORY FURNACE FOR ROASTING ORES.—Ernst Heilgendorfer, Belmont, Nevada.

EYE GLASS.—Louis A. Bertling, S. F., Cal.

VALVE FOR PUMPS.—W. D. Hooker, S. F., Cal.

MEDICINAL COMPOUND.—Emil C. Jurgensen, Portland, Oregon.

DENTAL APPARATUS FOR OBTAINING THE BITE.—Edgar O. Smith, Albany, Oregon.

"The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. NOTE.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest time possible.

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The Quartz Operator's Hand-Book; by P. M. Randall. 1871. Revised and Enlarged Edition. Cloth bound, 176 pages. Price, \$2.

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[Under the New Code—January 1, 1873.]

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SAN FRANCISCO METAL MARKET.

WEDNESDAY M. Feb. 13, 1874.

Metals generally are quiet. Brasses & Copper have declined 50c. Tin Plates are firmer. Cast Steel is in slightly better request. An exchange says that during the past year there has been a considerable increase in the use of American Lead for all purposes except roofing, and a corresponding decrease in the importation of ordinary foreign lead. While Missouri has produced a little more than in previous years, and Gen. A. its usual amount, the Nevada and Utah mines have been greatly developed. The percentage of Gold and Silver in the bullion produced by the two latter named Territories is so high that the Lead is of secondary consideration.

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Braziers.....	—	—	37
Copper Tin'd.....	50	—	—
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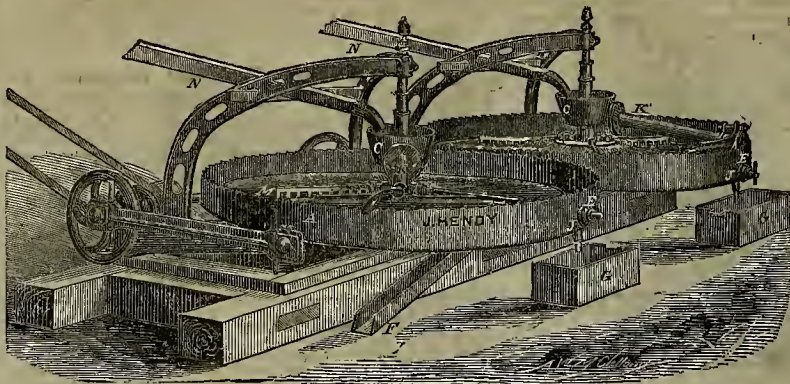
Miners' Foundry and Machine Works,

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Machinery and Castings of all kinds.

HENDY'S IMPROVED CONCENTRATOR.



Can be seen at the Manufactory, 32 Fremont Street, San Francisco.

JOSHUA HENDY, Esq.—Dear Sir—As a practical miner and millman, I take pleasure in recommending the use of your Concentrators in all mills where gold or silver ores are reduced. No mills should be without them for the following reasons:

1st. They are good sizers (no perfect concentration in pulverized ore can be effected without first sizing).
2d. The best Concentrator I have ever known—(the concentrated stuff only containing 5 per cent. of sand).
3d. They are good amalgamators, light (feathery) particles of amalgam and particles of coated gold, by attrition are brightened, and from their specific gravity and the action of the pan, fall to the bottom and adhere.
4th. They require but little power and attention to run them, and with ordinary care will last for years.
I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oaks and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,

Yours respectfully,

409 California street, or Cosmopolitan Hotel.

SAN FRANCISCO, April 27, 1872.

JAS. H. CROSSMAN, M. E.

SAVING MONEY.—The report of O. C. Hewitt, Superintendent of the Keystone Consolidated mine, in Amador county, is to the effect that they have saved about \$5,000 per month by the abandonment of blankets and huddles and the use of Hendy's Concentrators. The Concentrators have been in use there about five months and of course give great satisfaction, as they have performed their work so well.—SCIENTIFIC PRESS, Jan. 10.

The Superintendent, O. C. Hewitt, reports that a saving of about \$5,000 per month is arrived at by the use of these Concentrators.

References:

Reference is made to the following mills, some of which have had HENDY'S CONCENTRATORS in use for over four years:

EMPIRE MILL. (3 Concentrators).....	Grass Valley, Nevada County.
NORTH STAR M. & M. CO. (3 Concentrators).....	Grass Valley, Nevada County.
VULTURE CO. (3 Concentrators).....	Prescott, Arizona.
NOYES & CO'S MILL. (2 Concentrators).....	Owhee District, Idaho.
LUCY MINING CO. (3 Concentrators).....	Sonora, Mexico.
ST. PATRICK MILL. (2 Concentrators).....	Georgetown, El Dorado Co.
ST. LAWRENCE MILL. (2 Concentrators).....	Newcastle, Placer Co.
JULIAN MILL. (2 Concentrators).....	Newcastle, Placer Co.
KEYSTONE MILL. (2 Concentrators).....	Amador Co.

CAUTION—All of HENDY'S PATENT CONCENTRATORS are marked thus: "J. HENDY, Patented April 17th, 1866, and May 19th, 1868."

For full description send for Circular. Orders or letters of enquiry, address,

JOSHUA HENDY, San Francisco.

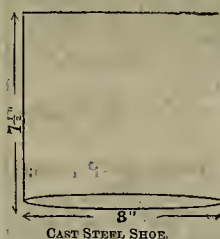
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22v27-1am-1f

CAST STEEL SHOE AND DIE COMPANY,

OFFICE—Room 28, Hayward's Building, 419 California St.,

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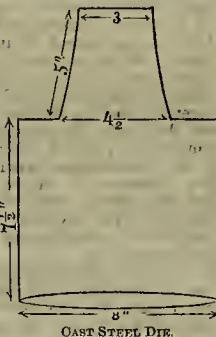
PATENTED CAST STEEL SHOES AND DIES for Quartz Mills.

An improvement greatly needed—being stronger, more durable and economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as bar steel.

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Steam Engines—all kinds of Mining Machinery.

SHIP, AGRICULTURAL, STOVE, RANGE AND HOUSE CASTINGS.

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IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Rolling Pan and Callahan Grate Bars, suitable for Burning Screenings.

Notice.—Particular attention paid to making Superior Shoes and Dies. 20v28-3m

CALIFORNIA BRASS FOUNDRY,

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ALL kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheath Nails, Rudder Braces, Hinges, Ship and Steamboat Belts and Gongs of superlative tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch. PRICES MODERATE. J. H. WERD, V. KINGWILL.

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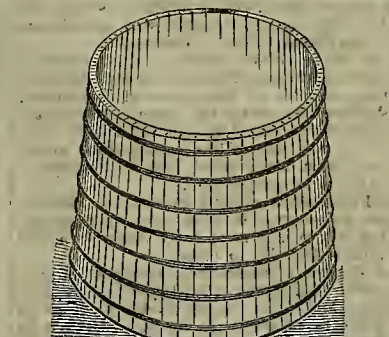
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LIGHT AND HEAVY CASTINGS,

of every description, manufactured. 24v16qr

BUY BARBER'S BIT BRACE.



WATER TANKS of any capacity, made entirely by machinery. Material the best in use; construction not excelled. Attention, dispatch, satisfaction. Cost less than elsewhere. MECHANICS' MILLS, 3v28-3m-sa Cor. Mission & Fremont Streets.

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OFFICE, ROOM 10, No. 608 CLAY STREET.

Correct information from the Mines of the Company can always be obtained by application at the office.

LAST ASSAY, \$263 PER TON IN SILVER.

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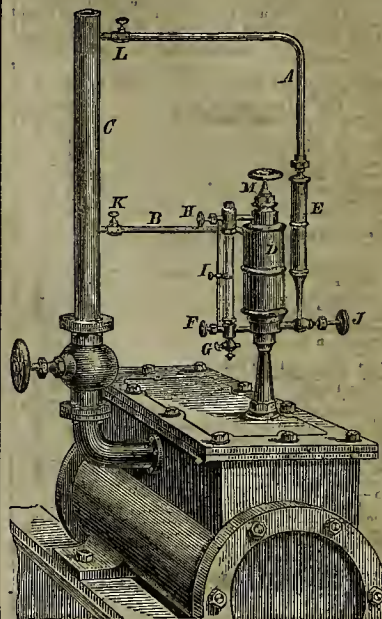
Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Ropes of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes; Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

TUBES & CO., 611 and 613 Front street, San Francisco.

Machinery.

N. Seibert's Eureka Lubricators.



THE HIGHEST PREMIUM

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stops; H, F, valve to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Manufactured by California Brass Works, 125 First street, S. F. 24v23tf

TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party respecting Patent Rights on Hydraulic Machines, whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

All persons infringing on either of these patents WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under Craig's, Rice's, Macy's and Hoskin's patents.

I Guarantee Full Indemnity to all my Customers.

Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an Improved LITTLE GIANT.

For further particulars apply to

R. HOSKIN, Dutch Flat.

Or R. R. & J. CRAIG,

304 Montgomery st., San Francisco. Agents,

WILLIAMSON & CORY, Marysville.)

Dutch Flat, August 10, 1873. 0v27-2m

THEODORE KALLENBERG,

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Repairing done on very Reasonable Terms and in the best manner. No. 32 Fremont street, S. F. 19v23-3m

STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

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Particular attention paid to all kinds of FIRE WORK

such as BOILERS, FURNACES, OVENS

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and Progressive Industry.

BY DEWEY & CO.,
Patent Solicitors.

SAN FRANCISCO, SATURDAY, FEBRUARY 28, 1874.

VOLUME XXVIII
Number 9.

An Improved Mill Pick.

The accompanying engraving represents an improved mill pick, the invention of Jotham Cummings, of West Charleston, Vermont. The improvement relates mainly to such a construction of the pick as will relieve the strain upon the pick blade, and lessen liability of breakage of the same; and also to obtain greater strength in the head of the pick without increasing its weight, and enable it to deliver a more effective and well-directed blow than heretofore. The nature of this improvement consists in dividing the pick head into two parts, one stationary and bearing the handle, and the other detachable, and formed upon its inner face, with a series of teeth to engage the blade and prevent its being driven upward into the head. The parts are so arranged that the sharp end of the blade tends to settle the parts together, and firmly clamp the blade between the two. The great difficulty in getting picks drawn and tempered by blacksmiths, so that they will cut burr-stones, renders this invention valuable; for strong, fine cutting blades can be made without difficulty by experienced steel-workers, which require no blacksmithing, as they are tempered the entire length. The facility with which the blades can be changed is an important feature, as it is often necessary to remove blades for sharpening as many as one or two hundred times in dressing a mill or run of stones. Two sizes of the implement are made, one for furrowing, and the other for cracking.

Fig. 1 represents the entire pick, ready for use. Fig. 2 is a stationary stock bearing the handle, and Fig. 3 is a detachable clamp plate. The latter is a thin metallic plate, having a ratchet on its under surface, a convex rib, A, on its rear side, and a loop or socket, B. The pick or blade is a thin blade of even thickness, with its upper end bent to fit the notches in the clamp plate. In adjusting for use, the blade is placed upon the clamp plate, its sloping end entering one of the notches, when both are applied to the stock, C. The lower wedge-shaped end, D, of the stock, enters the loop or socket, B, of the clamp plate and the wedge-shaped lips of the clamp plate fit into corresponding channels formed in the ears, E, of the stock. It will be seen that a blow upon the cutting edge of the blade will force the clamp plate and blade upwards and cause them to embrace the stock with great power. The more powerful the blow upon the stone, the more firmly is the blade confined in its place. To remove the blade, the tool is reversed and the opposite end of the clamp plate struck on any solid substance, when both clamp plate and blade will be released. As the blades are abraded by use, they can be let down in the ratchet until worn out. They are tempered the entire length and only require grinding to sharpen.

IMPORTANT MINING CASE.—An important mining case is now before the Board of Confirmation in Washington. Commissioner Drummond has submitted to the Board the question of the right of the Secretary of the Cañon Mining Company, of Placer county, California, to obtain a patent for their mineral lands. The Cañon Mining Company failed to perfect their application on account of the suspension of the publication of the newspaper in which their notice was first published. The requisite time required by law was filled out by publication in another newspaper; but the Commissioner has decided that that is not according to law. The Board of Confirmation consists of Secretary Delano, Commissioner Drummond and Attorney-General Williams. They have authority to determine cases of defective applications for public lands, when the equities of the case demand justice for the claimants. It is a question whether their jurisdiction extends to mineral land cases, and this new case will be an important one, if they decide that the mining company is entitled to a patent. Many other cases of like character, where there are no adverse claims, will be submitted for settlement.

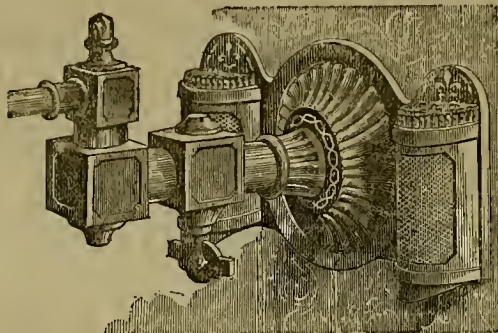
An Act to punish "salters" of mining claims has been passed by the Utah Legislature. Too bad they didn't pass it before, if it will be put in operation.

Gas Bracket Match Safe.

Everybody has experienced the annoyance of searching for matches in a dark room, doubtless to no small detriment of temper as well as such projecting portions of the body as are brought in sudden contact with vagrant rockers or sharp corners of tables and bureaus. Match safes, in fact, have the unpleasant peculiarity of apparently remaining in the spot where last placed, because every one using the

he employed to receive burnt sticks. In material, style, and design, the attachment may correspond to the bracket to which it is screwed.

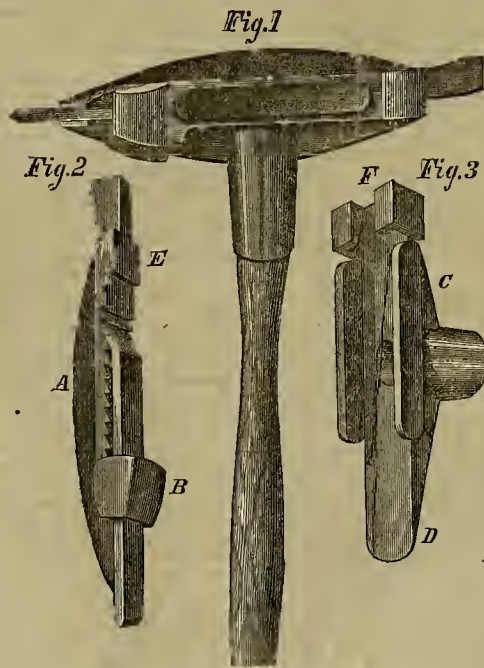
For hotels, where lodgers are apt to carry off the match boxes, the invention is excellently adapted, while its convenient and ornamental form will doubtless commend it as a necessary appendage to the gas fixture of every room. Patented Nov. 4th, 1873. For further particulars address Orum & Mellor, sole manufacturers, 448 North Twelfth st., Philadelphia, Pa.



GAS BRACKET MATCH SAFE.

contents leaves the box wherever about the room he may happen to be, so that the next person is obliged to hunt for it. Moreover, about nine-tenths of the common match receptacles upset on the slightest provocation, strewing the floor with inflammable material, ready to take fire and burn holes in the carpet, and sometimes set dresses on fire, whenever accidentally stepped upon. We illustrate here-

OMAHA, Nebraska, has four smelting furnaces, four for lead and antimony, six separating furnaces, two cupels, two cupola, and twelve re-
sort furnaces. These smelt twenty tons of ore and separate and refine thirty tons of crude metal per day. During 1871, the shipments of silver and gold were \$1,020,639.54, of lead, 4,241 tons. The works did twice as much business in 1873 as in 1872, and more than twice as



CUMMINGS' MILL PICK.

with a new form of safe, the invention of Mr. M. L. Orum, which can neither upset nor wander about a room, because it is fastened immovably to the wall by screwing the gas bracket against it. The fixture is first removed, the hole in the device slipped over the pipe, and the bracket replaced, the whole being the work of a moment. Thus located, the box is always at hand when and where wanted, and, besides, is situated at the point where matches are usually scraped upon the wall, thus preventing injury to the paper or paint. It can be made with either one or two receptacles for matches, two being preferable, as one of the boxes may

much in January, 1874, as in the corresponding month last year.

Those who intend to start for the Stickeen mines, British Columbia, are cautioned not to overload themselves with provisions at Fort Wrangle, as most of the fortune-hunters so far have been compelled to throw a portion of theirs by the roadside, being overweighted for the journey.

Three teams, loaded with some 50,000 pounds of borax, from Teel's Marsh, left Columbus, on February 14th, for Wadsworth.

The Colombian Mines.

In a recent issue we gave an account of the gravel deposits in the different parts of the United States of Colombia and promised further particulars. The interior of the country, though generally well wooded and watered, is sparsely settled, and even the towns are few and far between. Large tracts of land entirely unoccupied lie in all directions over the country, and it is the policy of the Government to encourage immigration to settle up the country as much as possible. For this reason they give every facility possible to miners as well as agriculturists. Knowing or feeling that their land is rich in minerals, they are specially anxious to have practical men explore their country and open up its hidden wealth.

A miner desiring to locate a claim can "denounce" the mine, and the Government gives him half a league, or a mile and a half square for a gravel claim. The only thing required of the miner is to prove that it is mineral land and he must prove that he has capital to work his mine. If the land on which the ground is located belongs to private parties it may be bought from them or the discoverer can associate with them or lease from them.

The consuls of the United States of Colombia have been instructed by the Government to encourage the immigration of miners, as it is principally a mining country. The consuls are instructed to furnish all information available on the subject to would-be immigrants, and also to forward to the Government all information on the subject of mining possible to obtain. They have a stronger sympathy for the Americans than any other people, and are specially anxious to see practical California miners in their countries.

To get to Barbacoas from here, the steamer is taken to Panama. The fare is \$100 first-class and \$40 second-class. A line of English steamers run from Panama to Tomaco; fare, first-class \$50 and \$20 second-class. From thence to the river Palta, and by steamer to Barbacoas, \$15 first-class and \$10 second-class. This town is on the coast and has some 6,000 inhabitants. The whole country contains some 500,000 square miles, and has only 3,900,000 inhabitants, being very sparsely settled. To the mines already opened, roads have been made, but the roads in the interior are not of the best description, and, of course, the unsettled part has no roads. There is no danger of sickness in the mining region, it being elevated and in a pure atmosphere. There are no taxes levied on the mineral lands, and no duty on the export of bullion. Miners can get their bullion coined at Bogota or ship it out of the country, as they desire.

Mr. Follingsby, who has resided there several years, and who has furnished us considerable information about the country, will return in a few weeks with a complete outfit for working a hydraulic mine. He says the country is not one which a poor man should visit as yet. There are few mines being worked and capital is required to work them. The Government requires proof before giving title, that the prospector has capital to work his mine, and in default of this proof he can claim no ground. There is little chance for any one to obtain employment, and he says poor men have no business in the country. By this he means those who have not one or two thousand dollars to fall back on. Several other parties will return with him and he is now having a map of the mining country made to assist him in making locations. There is no doubt but that within the next few years the value of the mines of which we speak will be proved conclusively. The parties already working there, and those preparing to do so, will soon develop the facts. With a large extent of country, and encouragement and protection from the Government, if the mines prove as valuable as represented, there will be plenty of room for enterprising men to stake out their claims or find employment in the country. At present so little definite information is vouchsafed by those who are working the mines there, that it only stimulates curiosity. We shall endeavor to obtain all the reliable information possible concerning the country and lay it before our readers. Mr. Follingsby will on his return write us full particulars as to what is now being done there in mining matters.

CORRESPONDENCE.

Ore Beds—Their Origin and Condition.

[Written for the Press.]

Ore beds may from their nature be divided into two classes—enclosed or stratified beds, and surface deposits or placers. To the first belong ores of iron, hematite, simonite, and spothic iron, also magnetite. Immense beds of hematite occur in various parts of the country, notably in Northern New York, along the Adirondacks, in Michigan, Wisconsin, Missouri, and in the Black Hills of Wyoming. Lead ores occur in beds in American Fork District, Utah, and also in Dugway District. The deposits are generally small in extent, lie conformably with the enclosing rock and thin out in every direction. Copper beds occur in the copper slates of Thuringia, in Finland, as copper pyrites in the hornblende and chloritic schists of Pittkaranda. Many other metals occur in beds, or as bedded impregnations, as silver, mercury and gold. Those deposits are often capable of profitable exploitation. Though in the case of silver and lead profitable beds are the exception, not the rule. The copper beds of the United States have not yet been proved capable of profitable exploitation. Surface ore deposits, as the gold placers of the West, the stream tin of Cornwall, the platinum beds of New Granada, have proved of permanent value, rivaling true veins in their almost inexhaustible capacity for production.

Origin of Ore Beds.

The origin of ore beds is undoubtedly an aqueous one. That they were originally deposited in their present position is not always plain, but that they have been deposited either contemporaneously with the enclosing rock or subsequently to the formation of their footwall and previous to the formation of the strata overlying the mass, cannot be doubted, except in cases where pseudomorphic action has replaced part of the wall rock with the mineral composing the bed.

Now if we assume that all the metals composing the ore beds now existing, once formed a part of the interior mass of the earth and, as the cooling process advanced, the water penetrated the fissures in the rock as far as the heat would permit, flowing back to the surface charged with a part of the constituents of the rock, and the gases, arising from the fluid mass below, the sublimated metals were in this manner carried to the surface and again deposited in positions similar to those they now occupy. That this is probable we infer from the fact that beds of limonite are now being found in places where the waters of iron springs are allowed to settle, notably so in the Black Hills of Wyoming and in the Blue Ridge Mountains of Virginia. Ore beds may also have been formed by concentrations of extensive impregnations, just as impregnations may occur from the lixiviation of an ore bed. Of all enclosed ore beds, those of iron, from its great abundance, are the most numerous and easiest of determination; other metals exist in beds, but whether as true beds or impregnations is not always easy to determine.

Surface Deposits—Placers

Have either been formed by the decomposition of rock originally containing the metals, and the deposition of the metals in the bed or by deposition of the aqueous solutions flowing from mineral veins or springs. Metals may be found in ore beds or placers where no vein of the same kind exists, as is the case with platinum, or they may contain metals in paying quantities even when the vein from which they were probably derived is comparatively barren; this can be explained only by supposing that the products of the vein have been concentrated during the process of deposition in the bed.

Conditions of Beds.

Ore beds, though originally deposited in depressions of the earth's surface, are to be found occupying almost every conceivable position conformable to the dip and strike of the strata in which they are inclosed; hence we speak of the dip and strike of beds taking a horizontal line on the outcrop as the strike and the anticlinal or synclinal slope as the dip of the bed. The wall rock of ore beds is seldom well-defined, owing to the nature of their deposition being only found in the stratified rocks, and often deposited contemporaneously with them; their limits are not well defined, and often pass imperceptibly into the surrounding rock. Beds may be of enormous size, extending for miles, as are many of the hematite iron beds, or they be merely inconsiderable, lenticular bodies of only a few pounds; they may be no thicker than the hand, or hundreds of feet in depth. They may be distinguished from bedded veins by the absence of spure or off-shoots, and from impregnations by the absence of foreign matter. Ore beds furnish by far the largest proportion of the iron of commerce and a large proportion of the copper and gold product of the world.

J. H. MORRIS.

A Happy Time at the Richmond.

EDITORS PRESS:—Never since the stroke of the pick and hammer so vigorously wielded by those *avant couriers* of progress and civilization—the hardy, adventurous prospectors of Nevada—awoke the long silent echoes of our mountains and cañons, and manifested their faith in the richness and permanency of their mineral deposits by the inauguration of Eureka, as a mining center, has there been witnessed anything to equal in spontaneity, good feeling and jollity that which pervaded the immense assemblage that thronged the brilliantly illuminated offices and official headquarters of the Richmond company on last evening to do honor to its worthy, energetic Superintendent, John B. McGee. Rarely indeed has it been the fortune of your correspondent to participate in so hearty and undisguised an outburst of popular feeling and good will as that which greeted the aforesaid gentleman on his appearance last evening. It was an ovation to be remembered and to be proud of—worthy of the occasion, and highly honorable to the hardy sons of toil who bestowed it. In after years too, the handsome and valuable souvenir presented to him will help to recall from the gloom of the past the memories and associations which will forever encircle it, and like the lustrous gems that enrich and adorn it, render it all the more worthy of being preserved and appreciated.

As soon as it became definitely known that Mr. McGee intended to sever his connection with the Richmond and its employees, the latter determined on presenting him with something valuable that would be fittingly testify to him their esteem and demonstrate their appreciation of his acts while presiding over the destinies of the property he has by his rare industry and skill helped to render as valuable as it is to-day. To this end the subscriptions came pouring in in an unbroken stream from miners and furnacemen, and other recipients of his bounty and kindness, in a manner to give hopes of having in time sufficient capital to start a sagebrush bank with, or failing in this to defray the cost of the erection of some suitable monument to be placed over Eureka's jail—that terror to law-breakers—by way of cupola or dome, wherewith to perpetuate the political sagacity, purity and disinterestedness of our first Board of County Commissioners. This, however, need not be seriously thought of now, because the town and county archives will sufficiently attest to future generations their zeal for the public weal and purse. However, the money was readily collected—because all vied with each other in the amount given, and the alacrity displayed in giving it, and was thus unlike other affairs of the kind gotten up here on the high pressure principle, before, to try and confer honor and respect upon one who was known to be deficient of the qualities that should entitle him to either. The projectors, from the start, had in view the purchase of a costly watch—and accordingly an order to New York brought us one of Jergensen's superb time-keepers, valued at \$800, having engraved on the polished surface of the inside of the back case, the following significant inscription: Presented to John B. McGee by the employees of the Richmond Consolidated Silver Mining company, limited, of London, as a testimonial of their esteem and appreciation, Eureka, Nevada, January, 1874.

As already intimated, the presentation came off last evening in an impromptu way, at the company's official residence, where were assembled some two hundred or more, to witness the presentation; which was admirably made by the company's accomplished Secretary, M. D. Howell, who addressed the recipient in the following words:

"In behalf of the employees of the 'Richmond,' I have the pleasure of presenting you with this elegant gold watch and chain, as a mark of our esteem and respect. Your ability, in conducting the affairs of this company successfully, thereby opening a large field for labor, together with the pleasant and considerate manner you have always observed toward us, naturally called for this exhibition of our approval and approbation. As our foreman at the mine, Mr. Rositer, remarked, 'all were eager to contribute—so were the men at the furnaces.' May it beat over a heart as light and happy as youth; and, as old age comes on, may it recall the remembrance of this hour, as one of the delightful episodes that relieve the path of life, like flowers strewn in our path, by the hands of those we love. We ardently wish that good health, long life and prosperity may attend you and yours; and that this present will often be a suitable reminder of those friends who have labored with you in the past year."

Mr. McGee happily responded thus: "Mr. Howell and Gentlemen: To thank you for this unexpected token of your esteem and regard, is but a poor expression of the feelings of my heart. It will be cherished by me, not for its intrinsic value, or its qualities as a time-keeper; but, representing, as it does, one link in the chain that binds together the hearts of men of toil. It has been my constant endeavor to make the Richmond Company a success. That it has been accomplished will be seen by the quantity of ore developed since the 21st of September last; which is unprecedented in the history of the Pacific Slope; and, could the stockholders at London see what we see, shares would not sell for £6½, as they now

do; but would advance to £12, or £15. My place will soon be filled by another; but I hope you will give him that cordial support you have so willingly given me, and preserve the good name of the old Richmond. In conclusion, allow me to wish you a prosperous and happy life; and, I hope, when you are called to account for the deeds done here in the body, your hearts may be as pure and brilliant as this beautiful diamond I see in this locket."

The chief business of the evening being gone through, the large company present adjourned to the dining-hall to partake of the good things so temptingly displayed for their special delectation, and beneath whose superabundance the tables fairly groaned. Speech-making, song, and toasts were next in order; and many a flowing bumper of the delicious, sparkling wine of La Belle France was quaffed by the delighted beneficiary and his friends, in pledging each other's health and happiness. As the tongue-loosening champagne made the circle of the board pretty frequently, many a joke and repartee was gotten off, and many were the references made to the days of "Auld lang Syne," when amidst California's golden sands and placer treasures, they toiled and labored in search of the shining ore, that allured them from peaceful homes, to endure the trials and temptations to which they were so often exposed in the then new Eldorado of the West. For all of these things, I am inclined to the belief that were time to turn back in its flight, thereby reversing nature's irrevocable law, bringing with it a renewal of the flush times of '49 and '50, many of the gentlemen would willingly submit themselves with good grace to the little inconveniences, hard rubs, rough usages and nomadic mode of life which a return of those exciting days would once more bring with them. Such miracles not being wrought in these matter-of-fact days, we will return from the discussion of impossibilities—from the dead past to the existing present—its duties, sayings and doings.

In response to the toast of the Richmond mining company, Counselor Wren, the "Lawyer, miner and expert," began by saying he, too, had been a miner, though, perhaps not much in the way of silver and quartz workings, being what might be called a full fledged '49er, delving in the mines of sunny California until his hands had become as horny as any before him. His eulogium of the happy relation existing between the employer and employees of the Richmond, was well deserved and to the point, and their continuance would, he predicted, be productive of the greatest success to the future of the Richmond company. Judge Bailey next in response to repeated calls was "glad to congratulate" Mr. McGee and friends on the evidences of reciprocal good will and good feeling, that appeared to pervade the minds and hearts of all before him, and doubted not but the present was the proudest moment of the beneficiary's life. Each and every countenance around bore the impress of the kindest wishes and feelings, which hethought was the highest reward that could be paid to duty well and honorably discharged. He too, like the last speaker, became a miner and waded around in placer diggings, with long gum boots on, up to—well, as high as he could well get them, (laughter), and could therefore extend a friendly, sympathizing hand to all who shared in like labor, though then in a different walk of life.

In conclusion, Mr. Bailey expressed the kindest wishes for the health and prosperity of Mr. McGee, whom he hoped would observe the scriptural injunction of "watch and pray."

Attorney A. M. Hillhouse next followed in a few well chosen remarks in laudation of the good feeling existing between employer and employees, citing the fact that the unity, co-operation and labor of all had made the Richmond what it was to day, "the best mine, the pride of Eastern Nevada." Harmony was at all times necessary to success; without it all efforts were vain and futile; disaster would be the result. "The stranger's capital" too, he thought, should be watched over and encouraged, and as conscientiously guarded as any.

In conclusion, Mr. Hillhouse offered the toast of "Ruly Hill, the greatest mining hill in the world," to which J. D. Power responded by saying that he was glad to bear witness to the social, kindly gathering before him, for it demonstrated the warm, personal relations existing between all. He knew too, "from personal knowledge," that it was the spontaneous offering of the hearts of those present, and admitted "of no doubtful construction," but was a sincere and hearty testimonial of the esteem in which he (Mr. McGee) was held, by all under his control. He would, too, gladly bear witness that from letters which he had received direct from Europe, from stockholders largely interested in the welfare of the Richmond, that next to Mr. Clarence King, there was not a man in the country whose word was held in higher estimation in London, or who was considered more reliable in mining matters than John McGee. In conclusion, he would take pleasure in associating with him, in the toast before them, the name of P. Rositer, his worthy foreman at the mine, who was, as he himself declared, "his right bowler."

A toast to the *Sentinel* revealed the fact that Geo. W. Cassidy, its editor and proprietor, was present, and was loudly called on to respond, which he did in the most felicitous language and manner, bearing willing testimony to the fact that when the problem of smelting and reducing the ores of this section was agitating men's minds the mutual friend of those present appeared upon the scene and actually wrought out a success which had contributed

upwards of four millions annually to the wealth of the world, and he therefore thought that the testimonial, which was a magnificent one, was most worthily bestowed. In conclusion, he thanked them for the honor and compliment paid the *Sentinel*.

There were many other happily-conceived speeches made, which cannot be noticed now. It was certainly one of the most noticeable, as it was one of the happiest and most enjoyable, re-unions that ever took place in connection with mining affairs in this section, and one which will be recalled with pleasure in after years by those who participated in it.

The weather has been stormy and severe of late, beyond measure, snow-storm and frost alternating in regular order, with an occasional glimpse of sunshine thrown in, by way of appeasing the wrath of those who would otherwise call in question the weather decrees of Providence. Therefore, turn our weary eyes to whatever quarter of the cardinal points we will, we behold the hills and valleys as well as the most elevated mountain-tops, looking heavenwards, clothed in their "ascension robes," reflecting the purity and innocence with which those who in their turn shake off this mortal coil, must, by their acts, prepare themselves for a visit to that happy bourne whence no traveler has ever returned—the assertions of Manfred, Foster and that other Minchancean explorer among the planets, Andrew Jackson Davis, to the contrary, notwithstanding.

Eureka, Nev., Feb. 11th, 1874. J. D. P.

The Cassiar Mines.

A correspondent of the *Chronicle*, writing under date of Feb. 10th, says: I wish to give a friendly word of caution to all miners who may think of starting for the new mines that were discovered up in British Columbia, last summer. During the last three months about two hundred men left Victoria, bound for the Cassiar mines. The trip up as far as Fort Wrangel is a pleasant one, and this place is right opposite the mouth of the Stikkeen river; distance about fourteen miles across. The climate at Wrangel is quite mild, but when you leave the mouth of the river you will be getting into winter quarters. Every three or four miles that you advance up, the colder it becomes; and God only knows what hardships and sufferings these poor men have had to encounter who have started up during the last six weeks.

The steamer "Otter," Captain Lewis, arrived here last Saturday night, having on board W. Farron, who got up the river about forty miles, and as his glove on his left hand was not long enough to cover or reach his coat sleeve, in a short time his wrist was frozen and immediately began to swell up, and the result was he had to turn back, with his hand in a terrible condition, from which he has lost three of his fingers.

When the thermometer is say 25 degrees above zero up there, it is colder, owing to the bleak, cutting winds that you are sure to meet all the way up that river, than it would be in other places where it stood at four degrees below. There are times when these winds come down with such violence that it is all a man can do to stand up against them, not to speak of packing a pound. The river, as a general rule, is open between the 1st and 13th of May. When it is open men can go all the way by water, except about 90 miles of a trail which they have to travel. As to the extent of those mines but very little as yet is known, but the three creeks already discovered were found very rich wherever they have been prospected. Tibbard's creek is about 25 miles long, and is from 40 to 60 feet in width. The men who discovered this creek told me that with rockers they could average from one to six ounces per day, and having seen a lot of the dust they brought down, I could not think of questioning their veracity.

But you might ask, is it advisable for men who are making from \$3 to \$4 per day in California, Nevada and Idaho, to leave and run the risk of making their pile or losing all they have got, and their summer's work besides. I for one would say "No." Why? Because the mining season there is only four months; that is, from about the 1st of June to the 15th or 20th of September; and if the country is rich this year, why it is natural, I think, that it will be rich next year also; and besides, there are hundreds of miners going to Cassiar, from the Peace river and the Cariboo mines. I am of the opinion that there will be in this neighborhood of 1,000 men there by the 1st of June, but I have grave doubts if half their number will find paying claims.

One very important item, however, to all who may think of going up the river, is—to be sure and take provisions enough to last them until the season opens; for it will be late before merchants can get up stores to amount to anything, and then they will charge to the rate of starvation prices for all they may ship to that market.

PAYING THE LAWYERS.—The San Diego *World* states that the Executive Committee of the Julian miners are getting up a magnificent cabinet of specimens from the various mines in that district, which they will raffle at an early day, in order to raise funds to pay their attorneys. The case in which these lawyers were employed was the Cuyamaca Grant case, involving the title to the mines and the location of a Spanish grant. As before mentioned in our columns, this case was recently decided by the Commissioner of the Land Office in favor of the miners.

MECHANICAL PROGRESS.

English Printing Presses in America.

In the early days of newspaper printing in this country the machinery came chiefly from England; but when the Yankees began to invent, the importation ceased, and for many years the United States supplied novel presses to British and continental publishers. But English ingenuity appears to have taken a new start, and has produced printing machines of such superior capacity that New York newspaper owners are now buying fast presses in London.

We lately witnessed the practical working of two of the celebrated Walter presses, at the New York Times establishment in this city, and must confess to an agreeable surprise at their perfection and extraordinary performances. They were built in London, by Mr. Walter, the inventor, and set up here, under the immediate supervision of Mr. Gilbert Jones, of the Times.

They are known as perfecting presses, that is, both sides of the sheet are printed in passing once through the press. In ordinary presses, the sheets are introduced separately, printed on one side, then passed through again, and printed on the other side. This involves much handling, the employment of cumbersome machines, and many attendants.

In the Walter press, the paper to be printed is arranged in the form of a roll, like the goods in a calico printing machine. This roll of paper, 3 feet in diameter, weighing one-fourth of a ton, and containing paper enough for say six thousand copies of the Times, is placed at one end of the machine; the web passes thence between the printed types, which, in the form of carved stereotype plates, are secured upon the exteriors of a pair of geared cylinders. Rollers carrying ink press against the types, and the rotation of the type cylinders draws the paper along between them and the impression cylinders, thus printing the web on both sides; the web then passes between rotating shears, which divide the paper into separate sheets; and these, guided by a beautiful and ingenious arrangement of delivering tapes, are discharged in two separate piles, at the end of the machine opposite to that where the white paper enters.

The paper travels through the press with a velocity of ten or eleven miles per hour, and delivers at its highest speed some sixteen thousand printed copies of the Times, which, as all our readers know, is a large quarto paper—one of the largest in the country. A single number of the Times contains an amount of type matter equal to 147 ordinary octavo book pages. Perhaps we cannot better illustrate the astonishing rapidity of this machine than by saying that the printed matter it delivers in one hour would cover more than two hundred and thirty-five thousand book pages, or nearly four hundred volumes of six hundred pages each.

These remarkable printing presses are built with steel at all of the gearing parts, are the perfection of mechanism, and run with the steadiness of time pieces. One machine, attended by two men and two boys, is capable of a duty nearly equal to that of two of the old style, separate-sheet, ten-cylindrical presses, operated by twenty-five men. One of these old time monsters now stands idle in the Times press room. It is twenty feet high and forty feet long, full of complications. The new and simple new comer, by which it is replaced, occupies hardly a third the room of the other.

We have not space here to describe the various other mechanical appliances employed in printing the Times, such as double engines, boilers, blowers, steam ink pumps, folding machines, stereotype apparatus, etc., all of which are of admirable character, and have cost the proprietors over one hundred and twenty thousand dollars. This peculiar machinery, taken in connection with the enormous edition of the Times, exemplifies to a certain extent the wonderful progress which the world is constantly making in knowledge and the mechanic arts.—*Scientific American*.

THE MANSURATOR of W. M. Adams, an instrument designed primarily for the instantaneous solution of triangles, but capable, from its construction, of many other uses such as illustrating most of Euclid's theorems with regard to the triangle, of performing addition, subtraction, rule of three, extraction of square roots, of solving quadratics and simple binomial equations, and of reducing to mechanism some parts of analytical geometry. The Celestometer exhibited at the same time is intended to illustrate celestial longitude and latitude, the phenomena of the seasons, the correspondence of the calendar with the solar year, the precession of the equinoxes, the times of sunrise at any place on any day, the position of the principal stars during the night, and the general relations between the conceptions necessary for nautical astronomy.

Wool screws of Bessemer steel are now a regular article of manufacture at the Union works, at Cleveland, Ohio. These screws are said to be remarkably tough, and will bear from two to three times more strain than the heat iron screws in the market. The process of annealing, by which the steel rail ends are made suitable for screws, is at present a secret.

IMPROVED EXPLOSIVE ENGINE.—The object of this invention is to construct an engine which is driven by the explosive force of powder charges. The invention consists in the introduction and explosion of powder charges into chambers, which are alternately discharged to act on pistons, which turn the driving wheels, and are regulated by suitable mechanism. The base frame on which the engine is placed is of oblong shape, and contains two powder chambers arranged parallel to each other in longitudinal direction at both sides. The driving wheels produce, by alternately completing one half of a revolution on each wheel, rotary motion of a shaft from the reciprocating motion of the pistons. Each powder chamber is closed by an adjustable breech piece, which may be detached for cleaning out the chamber. The closely fitting piston moves in the chamber, its piston rod connecting, by a cross pin, with a strong spiral spring, which is also applied by cross head and pitman, to the side of a driving wheel. The required quantity of powder is introduced, in cartridge form, into the chamber by means of a vertical casing, which is arranged on guide rails placed on the top of the chamber. A brush of casing serves to secure the cartridge in recess of the sliding piece, which is carried forward and backward in guide rails. On the forward motion of the slide the cartridge drops into a chamber, to be carried back toward the breech piece by the returning piston, and be discharged by the concussion against the breech block. The piston is, by the explosion, forced forward again, and causes, by its action on the pitman, the rotation of the wheel. The smoke and gases escape through side apertures, admitting the immediate recharging of the chambers.

INNOVATION IN CARPET MANUFACTURE.—An invention has recently received provisional protection which relates to a novel manufacture of carpet, in which jute, or kindred vegetable fiber, is used in place of wool to form the face of the carpet. In order to impart to the jute or equivalent fiber, the character requisite for forming a soft pile face, instead of drawing or spinning the same into strong, close yarn, which is the common practice, the slivers are taken as they come from the carding engine, and just sufficient twist is put into them to convert them into soft, thick yarns. Of such yarns are formed the face-warps which are used in the carpet-loom to produce the novel carpet. In this loom, by the aid of the usual terry wires, a plain terry fabric is produced, the soft jute yarn forming the face of the same. On cutting the terry loops, the fibers composing them will open out, like those of worsted yarn, and will form a surface resembling a surface produced by that material. The jute fabric will admit of being dyed with woolen pile fabrics, a suitable mordant being employed for the purpose. By this novel mode of treating and applying jute to kindred vegetable fibers, a carpet having a rich appearance, and capable of enduring considerable wear, may be made at a cost far below that of the commonest woolen drugget.—*British Trade Journal*.

PROPOSED TUNNEL BETWEEN SCOTLAND AND IRELAND.—For many years there have been projects more or less before the public for uniting Scotland and Ireland by means of a tunnel; and the scheme has recently been again put forward; this time, however, with some reasonable probability of its being carried out. A single line tunnel, 15 feet wide at base, 25 feet wide at the maximum, and 21 feet high, the side walls of which would vary from 4 to 7 feet in thickness, is estimated by the present projectors to cost nearly \$23,000,000, with the approaches. The length of the tunnel would be about twelve miles, and it would extend from a point on the north shore of Ireland, near Belfast, under the Irish sea, to the extremity of the peninsula opposite to Scotland.—*Exchange*.

GLASS-LINEN PIPE.—An iron water-pipe was recently taken up in Boston and found filled with rust. The contamination of water conducted through lead pipes is also well-known. But both of these objectionable features are dispensed with in the recently patented glass-lined pipe, which does not contaminate the liquids passing through it, and is not corroded by them. The glass lining is held in the outer pipe, which is usually of iron, by an intermediate lining of cement, or plaster of Paris. This cement acts as a non-conductor of heat, and protects the glass against injury from unequal expansion of the glass and metal. When at six to fifteen degrees F., the water in these tubes will not freeze for a long time.

VULCANIZED RUBBER COATED IRON TUBES are now manufactured in Philadelphia, which will bear over 300 degrees heat, the rubber being prepared at 400 degrees Fahrenheit. The pipes can therefore be used for either hot or cold water. Gas and water are said to have no effect on them, and the coating resists sulphuric and muriatic acids and caustic potash solution. It is suggested that the process may be used for the preservation of iron ship plates and framing, if the rubber should resist the chemical action in copper in contact with iron in salt water.

A PROCESS for the conversion of plates which prove to be too hard for rollers into hard steel, is adapted for this purpose. It consists simply in heating the plate in contact with oxidizing substances below the point of fusion, precisely as malleable castings are made. The time of exposure to the heat depends on the amount of decarburization to be effected.

SCIENTIFIC PROGRESS.

Latest News from the Sun.

At a recent meeting of the Royal Society, Mr. Lockyer gave the results of his recent studies in relation to the spectrum of the sun.

The previous researches having shown that the former test for the presence or absence of a metal in the sun, namely, the presence or absence of its brightest or strongest lines in the average solar spectrum, was not conclusive, a preliminary search for other metals was determined on; and as a guide, Mr. R. I. Friswell was requested to prepare two lists, showing broadly the chief chemical characteristics of the elements traced and not traced in the sun.

The tables showed that in the main those metals which had been traced formed stable compounds with oxygen.

The author therefore determined to search for the metals which formed strong oxides, but which had not been traced.

The result up to the present time has been that strontium, cadmium, lead, cerium, and uranium, would seem with considerable probability to exist in the solar reversing layer. Should the presence of cerium and uranium be subsequently confirmed, the whole of the iron group of metals will thus have been found in the sun.

Certain metals forming unstable oxides, such as gold, silver, mercury, etc., were sought for and not found. The same was the case when chlorine, bromine, iodine, etc., were sought by means of lines produced in tubes by the jar spark. These elements are distinguishable as a group by forming compounds with hydrogen.

It is observed that certain elementary and compound gases effect their principal absorption in the most refrangible part of the spectrum when they are rare, and that as they become dense the absorption approaches the less refrangible end; that the spectra of compounds are banded or columnar, the bands or columns lying at the red end of the spectrum; that the absorption spectra of chlorine, iodine, bromine, etc., are columnar, and that these are broken up by the jar spark just as the band spectra of compounds are broken up; and that it is probable that no compounds exist in the sun. The following facts, gathered from the work already accomplished by Rutherford and Secchi, are stated:

- There are three classes of stars:
 1. Those like Sirius, the brightest (and therefore hottest?) star in the northern sky, their spectra showing only hydrogen lines very thick, and metallic lines exceedingly thin.
 2. A class of stars with a spectrum differing only in degree from those of the class of Sirius, and to this our sun belongs.
 3. A class of stars with columnar or banded spectra, indicating the formation of compounds.

WHEN CHEMISTS DISAGREE WHO SHALL DECIDE?—A deputation of master bakers, says the *London Medical Times*, waited on the Shore-ditch Vestry to inform the Board that to their personal knowledge they knew instances where alum had been mixed with the flour in baking which on analysis had been certified as being pure, while in other cases the bread which had been made purposely to test the analysis was stated to contain a quantity of alum that would be injurious to human health. These (as it would appear) contradictory certificates had not been obtained from the parochial analyst, but from Dr. Letheby and Professor Gardner, of the Royal Polytechnic Institution. The statement of these facts has induced the Vestry to refer the whole question to a special committee for consideration. It was further resolved to invite parochial analysts and others to attend the committee meetings and assist them in their investigation of the matter.

W. J. LAND proposes the use of carbonate of silver for determining the amount of hydro-sulphuric acid in mineral waters. Pure moist carbonate of silver is prepared by precipitating nitrate of silver with carbonate of soda in a room from which all actinic rays are excluded. This is shaken with a known quantity of the water; the solution is warmed gently, and then allowed to settle; the greater portion of the liquid is decanted, and the precipitate is digested with weak nitric acid, to remove excess of carbonate. The undissolved salts are then thrown upon a filter, and washed first with distilled water and then with dilute ammonia, to remove haloids; when the last traces of these have disappeared, wash with a little alcohol, and then dry at 100° C., and ignite in a porcelain crucible, adding a little sulphur.

MR. JOHN AITKEN has observed, that after the same water had been melted and frozen a number of times, it generally burst the tube in which it was frozen. This he explains on the hypothesis that ice containing air is viscous and adapts itself to the form of the vessel; by repeated freezings the air is removed, and the pure ice being less or but little viscous will not so easily adapt itself to the enclosing walls.

THE purest water acts most powerfully on lead, forming carbonate of a peculiar and uniform composition. All salts impede this action.

COMBUSTION AND ITS PRODUCTS.—It has been satisfactorily determined that the combustion of coal in furnaces is indicated by the ratio that the amount of carbonic acid bears to the amount of the carbonic oxide in the escaping gases. While the former has six parts, by weight, of carbon and sixteen parts, by weight, of oxygen, the latter has six parts, by weight, of carbon, and eight parts, by weight, of oxygen. It is evident, therefore, that the latter is capable of combining with eight parts, by weight, more oxygen than it already possesses. As the combustion of the carbon is simply its combination with oxygen, and as all the oxygen that can combine with the carbon, so far as yet determined by chemical investigation, is the proportion met with in carbonic acid, it is evident that, in complete combustion, no carbonic oxide would be present. When it is found in the products of combustion it is capable of combining with 8-14 of its weight of oxygen, and of developing the heat to fit it for combination.—*Artisan*.

COMPASS DEVIATIONS.—In examining the causes of the deviation of the mariner's compass on shipboard, the influences of the hulls of iron vessels have long been demonstrated. But, in addition to other disturbing causes, it is now said that the varying distribution of heat over an iron hull is also a disturbing influence, and a contemporary gives some curious instances of it. A steamship going up the Red Sea had the blazing rays of the sun striking one side in the morning and the other side in the evening, the result being a marked difference in the deviation. A steamship voyaging from Liverpool to New York, passes through cold polar and warm Gulf Stream currents in alternate bands between Newfoundland and Nantucket, causing a deviation of ten degrees. A ship in port with hot sunshine on one side and the cool shade upon the other, sometimes shows similar compass deviations.

NEW PHOTOGRAPHIC PROCESS.—A recent improvement in dry plate photography consists in using gelatin instead of the ordinary collodion. The nitrate of silver, for sensitizing the gelatin, is mixed with the gelatin solution; the only drawback to this new process was the fact that the gelatin solutions could not be long preserved, especially in warm weather. This difficulty has been lately overcome by Mr. Burgess of England, who prepares the sensitive gelatin solution in any quantity that may be desired, and, after preparation, desiccates or dries the same by spreading the solution on glass plates. The dried film is then broken up into small bits and packed away in dried condition for use. Thus prepared, it will always keep good and only requires to be dissolved in water, to form an excellent sensitized solution.—*Scientific American*.

EXPERIMENTS made by Von Pettenkofer on the amount of water evaporated from an oak tree, show that atmospheric humidity, in so far as it depends upon the presence of forests, is promoted rather by the roots of trees drawing moisture from the earth, than by attraction exercised on rain clouds by the leaves. The latter serve rather as outlets through which the moisture drawn from the soil passes into the air. The oak tree observed by Pettenkofer was estimated to have seven and eight hundred thousand leaves, and the total amount of evaporation in a year was computed to be eight and one-third times more than that of the rainfall on an area equal to that covered by the tree, the moisture exhaled by the leaves being equal to some 211 inches, while that from the rainfall was but twenty-five inches.

THE USE OF DYNAMITE.—The superior advantages of dynamite over gunpowder were very remarkably illustrated recently at the Aire-dale works. A number of steam-hammer blocks or anvils, weighing from 8 cwt. to 10 cwt. each, and which have usually to be sent away to be broken, were experimented upon, each with a two-ounce dynamite cartridge. Dynamite exploded from the surface of the blocks would have broken them, it is said, but in this instance the cartridge was placed in a small drill-hole. In each case the cartridge on exploding had the effect of rending the blocks into three or four pretty equal parts. It is likely after these experiments that dynamite will be largely used in the breaking up of large pieces of old metal.—*Ironmonger*.

RED AND WHITE MUSCLES.—On application of the electric current, the white muscles are found to contract almost instantly, and respond even to rapid and continuous shocks. The red muscles, however, require a certain time to feel the excitement, and when quick, interrupted discharges of electricity are administered, they assume permanent contraction. Hence it is concluded that the latter are involuntary, and of the nature of the muscles of the heart, while the former are controlled by the will.

MATCHES, tipped with potassic chloride, ignited by dipping into a bottle of concentrated sulphuric acid, were first manufactured and used in 1838. Friction matches were first made in 1832, with potassic chlorate and antimony sulphide. Soon after phosphorus was used in the tips.

POISONING BY SILK.—M. Chevalier mentions a practice of some manufacturers, of weighting their silks with a solution of lead acetate, by which means poisonous properties are imparted to the silks, as well as an increase in weight.

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in February \$380,500. In 1873, the Belcher, Cederburg, Consolidated Amador, Crown Point, Eureka, Monitor-Belmont and Raymond & Ely were paying dividends.

A bill has been introduced in the Legislature by Duffy, which is of interest to stock brokers. It is intended to prevent brokers from selling out stocks bought for persons on margins, without giving five days notice by advertisement. It is as follows:

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq't.	Sale.	Secretary.	Place of Business.
Alps S M Co	Ely District	6	25	Feb 2	Mar 13	April 6	G F Balcorn	426 Montgomery st
American Tunnel M Co	Gold Hill	2	50	Feb 11	Mar 16	April 6	G W R King	431 California st
Amador Flannel & M Co	Ely District	2	1 1/2	Feb 10	Mar 12	April 2	L Kaplan	Norcross's Ex
Baltimore Cons M Co	Nevada	5	150	Jan 31	Mar 20	April 2	H B Wagon	302 Montgomery st
Belcher M Co	Cal	9	200	Jn 24	Mar 3	Mar 24	D F Verndal	409 California st
Caledonia S M Co	Gold Hill	7	3	Jan 30	Mar 5	Mar 6	R Wegener	414 California st
Cal-oline M. Co.	Ely District	4	1 00	Jan 20	Feb 27	Mar 2	J E Durborn	402 Montgomery st
Chas S M Co	Ely District	2	25	Jan 27	Mar 7	Mar 28	G T Grimes	240 Montgomery st
Danev G & S M Co	Washoe	8	75	Jan 6	Feb 10	Mar 3	G B Spinney	320 California st
Exchequer M Co	Gold Hill	10	3 00	Feb 9	Mar 13	April 4	D T Bagley	401 California st
Gould & Curry S M Co	Washoe	21	1 00	Feb 14	Mar 20	Mar 28	H C Holmes	Merchants' Ex
Hale & Norcross M Co	Washoe	42	5 00	Jan 20	Feb 24	Mar 17	J F Lightner	438 California st
Huhn & Hunt S. M Co	Ely District	8	50	Dec 32	Jan 29	Mar 2	T L Kimball	409 California st
Ida Elmore M O	Idaho	12	1 00	Feb 12	Mar 18	April 11	L Willis	419 California st
Independant M Co	Nevada	12	50	Feb 14	Mar 12	April 4	C T Grimes	240 Montgomery st
Jin M Co	Washoe	17	1 00	Feb 10	Mar 16	April 4	A Noel	415 California st
Kentucky G. S. & M. Co.	Ely District	7	25	Jan 3	Mar 2	Mar 23	R Goldsmith	513 California st
Knickerbocker M Co	Gold Hill	2	10	Feb 14	Mar 20	Mar 28	J T Milliken	Stevens' Building
L. & S M Co	Cal	8	10	Feb 5	M 13	April 2	D A Jennings	401 California st
Newark S M Co	Ely District	6	1 00	Feb 13	Mar 25	April 18	D T Bagley	401 California st
New York Cons M Co	Gold Hill	8	1 01	Feb 17	Mar 20	April 7	H K Kibbe	419 California st
Ophir S M Co	Washoe	28	1 00	Feb 19	Mar 24	April 14	Joseph Marks	419 California st
Page & S M Co	Ely District	5	50	Jan 19	Feb 24	Mar 16	L Kaplan	Merchant's Ex
Pioche S. M. Co.	Ely District	6	1 00	Jan 19	Mar 5	Mar 26	O E Elliott	419 California st
Portland S M Co	Ely District	3	2	Jan 10	Feb 2	April 7	I T Milliken	438 California st
Ray Patch Con M & M Co	Ely District	2	1 00	Feb 25	Mar 7	April 2	D F Verndal	419 California st
Silver Star M Co	Ely District	4	75	Jan 23	Mar 7	Mar 28	G T Grimes	240 Montgomery st
Sp'g M T Tunnel Co	Ely District	8	15	Jan 24	Mar 20	Mar 20	J M Buffington	Merchants' Ex
St. Lawrence M & M Co	Placer Co Cal	10	50	Feb 25	Mar 19	April 11	H C Holmes	415 California st
Union & S M Co	Idaho	4	1 00	Jan 20	Mar 5	April 6	R H Brown	402 Montgomery st
War Eagle M Co	Idaho	4	1 00	Jan 17	Feb 23	Mar 14	L Kaplan	Merchants' Ex
Ward Beecher Con M Co	White Pine	1	150	Dec 13	Jan 19	Mar 11	D A Jennings	401 California st
Washington & Crele M Co	Ely District	10	1 00	Feb 14	Mar 18	April 11	H Kibbe	419 California st
Yellow Jacket M Co	Utah	4	25	Feb 17	Mar 24	April 14	R Wegener	414 California st
Woodville G. & S. M. Co.	Nev	5	1 25	Jan 3	Feb 11	Mar 3	A Noel	419 California st
Yellow Jacket M Co	Washoe	17	50	Feb 10	Mar 14	April 15	G W Hopkins	Gold Hill

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Atlantic & Pacific Cone M Co	Cal	7	6	Jan 24	Feb 26	Mar 16	A Noel	419 California st
Auburn G M Co	California	6	50	Nov 17	Feb 24	Mar 17	R Wegener	414 California st
Buena Vista Petroleum Co	Cal	22	2 00	Jan 28	Mar 9	Mar 19	L Aguayo	420 Jackson st
Cerbat Cons G & S M Co	Arizona	1	50	Dec 25	Feb 23	Mar 26	J M Buffington	507 Montgomery st
Chas S M Co	Cal	1	50	Dec 25	Feb 23	Mar 26	J M Buffington	Merchants' Ex
Charter Oak M Co	Ely District	1	50	Jan 9	Feb 16	Mar 9	G W R King	431 California st
Cherokee Flat Blue Gravel M Co.	Cal	5	50	Jan 9	Feb 16	Mar 9	H Kibbe	403 Washington st
Chief Gas Extension M Co.	Ely District	10	50	Jan 9	Feb 16	Mar 9	R Wegener	414 California st
Chico & S M Co	Utah	1	50	Jan 29	Mar 10	April 14	Walter Turnbull	448 California st
Germania M Co	Nevada	1	50	Feb 3	Mar 14	April 16	J W Frisop	409 California st
Geneva Cons M Co	California	1	25	Jan 15	Feb 16	Mar 17	I T Milliken	302 Montgomery st
Glasgow G M Co	California	5	15	Jan 15	Feb 17	Mar 14	C S Curdiss	419 California st
Gold Elm M Co	Cal	5	10	Feb 12	Mar 19	April 7	G C Palmer	cor Market & Spear st
Great Blue Gravel Range Co	Cal	5	10	Feb 12	Mar 19	April 7	W H Watson	302 Montgomery st
Green Horn G M Co	Cal	1	10	Feb 12	Mar 19	April 7	J P Holmes	419 California st
Hale & Norcross M Co	Nevada	3	30	Feb 9	Mar 12	April 7	R G Spinney	320 California st
Javeas Cons M Co	Nevada	1	25	Feb 2	Mar 13	April 11	R H Brown	402 Montgomery st
Keystone No. 1 & 2 G. & S. M. Co.	Cal	9	2 00	Feb 25	Mar 16	April 23	G S Grouce	395 Sansome st
North Bloomfield Gravel M Co	Nevada	1	50	Feb 9	Mar 9	Mar 10	T E Jewell	507 Montgomery st
North Star T. & G. Co.	Cal	20	1 00	Feb 16	Mar 23	April 10	F Swift	419 California st
Phoenix Tunnel Co	Idaho	1	10	Jan 13	Feb 18	Mar 10	T Derby	319 Sansome st
Pyro- & Rock M Co	Utah	4	20	Feb 9	Mar 7	Mar 24	C O Reilly	511 Washington st
Pacific Borax Co	Nevada	7	75	Jan 26	Mar 7	Mar 29	C S Healy	412 California st
Sander-on G M Co	Calaveras Co Cal	9	25	Feb 11	Mar 7	Mar 29	S Patee	210 Battery st
Santa Rosa Coal M Co	Nevada	4	5	Jan 5	Mar 10	Mar 10	Wm Stewart	113 Leidesdorff st
Sierra S M Co	California	49	6	Jan 29	Mar 2	Mar 23	J Kaplan	Merchants' Ex
St. John's M Co	Idaho	3	75	Feb 14	Mar 25	April 21	J W Clark	53 Wash Market
Table Mt. Alpha M Co	California	4	5	Dec 23	Mar 5	Mar 10	J F Holmes	419 California st
Te-uh-jun G M Co	California	2	30	Jan 7	Feb 9	Mar 2	T F Cronise	438 California st
Thomas & G S & Copper M Co	Cal	4	50	Jan 2	Feb 3	Mar 4	F J Berrmann	418 Kearny st
Tobama ons M Co	White Pine	4	5 00	Jan 30	Mar 12	April 3	Joseph Marks	419 California st
State of Maine M. & M. Co.	California	5	10	Jan 6	Feb 16	Mar 10	J M Buffington	Merchants' Ex
Union & S M Co	Idaho	4	20	Feb 9	Mar 7	Mar 24	I T Milliken	302 Montgomery st
Victoria and Imperial T & M Co	Utah	2	15	Jan 31	Mar 7	April 2	T B Watson	302 Montgomery st
Washington M Co	Cal	1	1 00	Jan 9	Feb 17	Mar 10	W H Wingard	318 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Alps S M Co	Ely District	C F Balcorn	426 Montgomery st	Annual.	Mar 1
Belcher M Co	Cal	Called by Trustees	409 California st	Special.	Mar 1
Confidences M Co	Cal	Called by Trustees	217 Sansome st	Special.	Mar 1
Golden Chariot M Co	Idaho	L Kaplan	Merchants' Ex	Annual.	Mar 1
Chapman M & M Co	Idaho	Frank Swift	419 California st	Annual.	Mar 1
El Dorado North M Co	Nevada	Called by Trustees	215 Sansome st	Special.	Mar 1
Hale & Norcross	Washoe	J F Lightner	438 California st	Special.	Mar 1
Hale & Norcross	Nev	David Wilder	414 California st	Annual.	Mar 1
Iowa M Co	Idaho	Called by Trustees	555 Clay st	Special.	Mar 1
War Eagle M Co	Idaho	Called by Trustees	Merchants' Ex	Special.	Mar 1
Webfoot Consolidated	Idaho	Called by Trustees	414 Davis st	Special.	Mar 1

LATEST DIVIDENDS (within three months).—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz M Co.	Cal	W. L. Oliver,	316 California st.	25	Feb 28
Belcher M Co.	Washoe.	H. C. Kibbe,	414 California st.	5 00	Feb 28
Cederberg G. M. Co.	California.	J. B. Boker,	420 Montgomery st.	50	Feb 28
Chas. Amador M Co.	Cal.	F. B. Latham,	402 Montgomery st.	50	Feb 28
Crown Point M Co	Washoe	O E Elliott	401 California st	3 00	Feb 28
Derby M Co.	Idaho	R. C. Cunningham,	304 Montgomery st.	1 00	Feb 28
Diana M Co.	Idaho	N. C. Fasset,	226 Clay st.	50	Jan 1
Eureka M Co.	Grass Valley, Cal.	R. Wegener,	414 California st.	1 00	Dec 28
Keystone Quartz M Co.	Cal	L Vesaria	411 1/2 California st.	50	Dec 28
Monitor-Behmont M Co.	Nevada.	A. B. Minor,	Merchants' Ex.	1 00	Dec 28
Providence G. & S. M. Co.	Cal	J. M. Buffington.	Merchants' Ex.	1 00	Nov. 1

Weekly Stock Review.

THURSDAY, Feb. 26, 1874.

There has been some little excitement in the stock market this week, but at close a decline in prices is apparent. Monday being Washington's birthday, there was no session of the Board. The fluctuations in prices for the week are of no great moment, and few large advances will be noticed. In Washoe stocks, Alpha Consolidated has run between \$15½ and \$12¼; Baltimore Consolidated, between \$5½ and \$6¼; Best and Belcher, between \$2½ and \$23; Caledonia, \$27½ and \$30; Chollar, \$73½ and \$71; Consolidated Virginia, \$67 and \$70; Crown Point, \$91½ and \$103; Exchequer, \$22½ and \$27½; Gould and Curry, \$21½ and \$24; Belcher, \$89 and \$100; Hale and Norcross, \$59 and \$65; Justice, \$8½ and \$9½; Kentuck, \$22½ and \$25½; Ophir, \$36 and \$39½; Overman, \$61 and \$76½; Savage, \$104 and \$118; Seg. Belcher, \$89 and \$106; Sierra Nevada, \$17 and \$22¼; Yellow Jacket, \$69 and \$72½; Raymond & El fluctuated between \$31½ and \$38½; Empire, 87½ and \$83½; Golden Chariot, \$20 and \$21½; South Chollar, \$19 and \$26.

On Friday prices severally showed an advance. Belcher rose \$2; Crown Point, \$7; Chollar, \$1; California, \$1; Ophir, \$1; Savage, \$5; Seg. Belcher, \$10; and Overman \$5.

On Saturday the market was quite strong and firm. Belcher rose 50 cents; Cons. Virginia, \$1; California, \$1; Crown Point, \$4; Gould & Curry, \$1; Hale & Norcross, \$1; Seg. Belcher, \$4; and Savage \$2.

On Tuesday the market was strong and lively, with generally better prices at close. Belcher rose \$4; Best & Belcher, \$1; Crown Point, \$5; Yellow Jacket, \$1; Savage, \$2; Ophir, \$2; Kentuck, \$1; Alpha, \$3; and Cons. Virginia \$2.

On Wednesday the market broke, and prices declined. At close Crown Point showed a fall of \$10 from prices on previous day; Belcher, \$11; Ophir, \$1; Overman, \$12; Savage, \$8; Cons. Virginia, \$3; and Hale & Norcross, \$3.

A Crown Point dispatch of the 23rd says: I 1,500 drift we have about one-third of the face still in rich ore; the other two-thirds is porphyry, resembling east wall. Average assays from north winze, yesterday, went \$119; average from middle winze, 1,400, \$293; average from main drift, 1,500, \$242.

The Golden Chariot mine shipped on the 15th, \$11,321.98, making thus far in February a total of \$44,797, the proceeds of one mill.

The Belcher letter of the 21st for the week ending that date says: "Ore extracted, 300 tons ore forwarded to mills, 257 tons, 300 pound. Average assay value of ore mined, \$31 per ton. The impossibility of getting ore hauled compelled the suspension of extracting, owing to lack of dump room. The drift south at the 4th station has been driven through hard rock 30 feet have been added to the length. This morning the material at the face is much softer—all porphyry. At the 5th station 100 feet have been added to the length of the drift. A few small bunches of ore have been met with as the drift has advanced. Up to this writing prospects for ore making in large quantities are not as favorable as could be wished for. The face of the drift has little else but porphyry."

Dividends this month from mining companies have been as follows:

NAME.	PER SHARE.	AMOUNT.
Belcher.....	.....\$5	\$520 00
Belcher.....	.....25	7 1/2
Crown Point.....	.....3 00	300 00
Keystone Quartz.....	.....60	60 00

In the same month last year the mining companies paid \$839,000; in 1872, they paid \$832,000.

It is intended to prevent brokers from selling out stocks bought for persons on margins, without giving five days notice by advertisement. It is as follows:

SECTION 1. All contracts for the sale of mining stocks pledged to secure advances, or for the purchase or sale of stocks on margin, which permit a sale of the same without a notice of at least five days to the pledgee or borrower or purchaser or seller, as the case may be, are hereby declared null and void.

SEC. 2. All stocks sold on account of advances made thereon, or on account of the failure of the purchaser to keep a margin thereon good, shall be made at public auction, after a notice of at least five days has been given and published in a daily newspaper in the State of California.

SEC. 3. All Acts and parts of Acts in conflict with this Act are hereby repealed.

SEC. 4. This Act shall take effect immediately.

The Bellevue Mining Company have called a meeting for the 14th of March, to take into consideration the proposition to increase the capital stock of the Company from \$500,000, 8,000 shares, to \$2,000,000 in 20,000 shares.

1) The War Eagle Company propose to increase their capital stock from \$1,000,000 in 10,000 shares, to \$2,000,000 in 20,000 shares.

The El Dorado North Company propose to increase their capital stock from \$2,500,000 in 25,000 shares, to \$5,000,000 in 50,000 shares.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE COUNTY.

SILVER GLANCE.—*Miner*, 21: The shaft in this mine was found to be 135½ ft. in depth—35½ feet below the 100 ft. level—by actual measurement last Monday morning; 5½ ft. having been sunk during the previous week. Every car load brought to the surface showed more or less quartz, with fine looking sulphurets.

The M. & N. W. mill is undergoing changes by which it is to be converted into a wet crushing and raw amalgamating establishment.

From Silver Mountain, we learn that the reports of a rich strike by the men in the Exchequer mines are confirmed. Manager Chalmers is about to start his mill (the Exchequer) and will make a short run on some ore now on hand. Mr. White, of the M. & N. W. mill, has engaged to make the run.

AMADOR COUNTY.

THE KENNEDY.—*Ledger*, Feb. 21: On Monday last we paid a second visit to the above named mine, and made a careful examination of the level running south from the foot of the new shaft. Since our first visit the level has been driven further south about 25 feet, in which distance an immense amount of rock has been taken, and all of excellent quality. The width of the ledge is unknown. A break of 20 ft. wide on the ledge is being taken down, but does not extend to either wall. The foot wall has been reached north of the present work; and, in driving south from that point at least 10 ft. of rock on the foot wall has been left; the hanging wall has not yet been reached. The ledge has now a known width of 30 ft. The entire mass of rock is of good milling quality, and known as ribbon rock. There is ore enough now in sight to employ the present crushing power of the company's mill for years to come. The crushing capacity of the mill connected with the mine, is wholly insufficient for the profitable working of the mine.

ONEIDA.—The Oneida mine is looking remarkably well. The ore taken from the 900-ft. level shows a considerable increase in value over that taken from any of the levels above it, and the ledge fully as wide and well defined as at any other point. Besides, the chute or chimney is rapidly increasing in extent as greater depths are reached.

CASCO.—Work on this mine has been temporarily suspended, on account of the recent severe storms. The last work developed a ledge ten feet in width, with well defined foot and hanging walls, accompanied by a "gouge" equal to that of any mine on the mother lode; the walls possess the same pitch as those of the Amador mine at Sutter creek.

ANOTHER RICH STRIKE.—*Dispatch*, Feb. 21: We understand that a large quantity of exceedingly rich rock has recently been struck in the old "Skunk" mine, near Pine Grove. Some of the rock, it is thought, will pay about \$500 per ton. This mine was worked on a small scale several years ago, but it appeared that the proprietors "weakened" or became discouraged before they reached "pay rock." We are of the opinion that there are quite a number of other half-worked, abandoned quartz mines in this county that would prove equally as rich, if some person or company would take hold of them, who had sufficient means and energy to give them a fair test.

THE VOLCANO GRAVEL TUNNEL.—The gravel tunnel now being run into the gravel hills near Volcano is progressing finely and with every prospect of being completed at an early day. It is already in about 250 feet, and a contract has just been let to the Provis Bros. for running it in one hundred feet further. The company expect to strike good pay gravel at about 1,200 feet.

SINKING A SHAFT IN JOAQUIN'S CAVE.—(Continued from page 10.)

learn that some parties have recently commenced sinking a shaft in the celebrated Joaquin's cave, about two miles from town, for the purpose of prospecting a quartz lead which runs through the hill and under the cave, and which is thought to be rich.

BUTTE COUNTY.

ANOTHER CLEAN UP.—*Record*, Feb. 21: The Spring Valley Company at Cherokee have made another clean up, and have sent below three bricks valued at something over \$73,000. This is a very comfortable clean up for a month's run; and the beauty of it is, it is liable to continue, as the company has secured a monopoly of the waters of the West branch, in addition to their former rights to Butte creek waters and those of Concow valley, which will give the company a constant supply of fluid when Jupiter Pluvius ceases to govern the clouds. They also own, by purchase, a good portion of the valley lying along the line of Dry creek which is being used for a dump. The Cherokee mines are among the best in the State, and we are glad to note that those who have labored so long are in the enjoyment of their harvest.

EL DORADO COUNTY

AMADOR CANNABAR MINE.—*Amador Dispatch*, Feb. 21: The last reports from the above named mine, lately discovered in El Dorado county, and owned by citizens in Jackson, represent the discovery as presenting very favorable indications of permanence and value. Ore enough is now upon the ground to pay all expenses so far incurred, and to run the tunnel now being driven, well in upon the ledge, without calling upon the company for assessments. Ore brought over to-day looks remarkably rich.

YET IMPROVING.—*Republican*, Feb. 21: The Oregon Hill Mining Company, of whom mention was made by us last week as having struck the ledge at a depth of 300 feet and found it rich, are developing a large ledge of splendid ore. This is the same ledge that was discovered by Mr. L. Sheppard some five years ago, and which was worked by himself and Witten for some time with fine success, they having taken out some \$35,000 from a body of ore found near the surface.

STILL SINKING.—The owners of the "Rose" ledge are still driving down their shaft, and are now down between 35 and 40 feet below the tunnel, at which depth we are informed the ledge is solid, about two feet in width, and of splendid character. The Oregon Hill Mill has been at work on rock from this ledge all the week, and they have every reason to expect a fine clean up.

FIVE-CENT HILL MINE.—We hear highly favorable reports from the claim of Bilty & Co., on Five-cent hill, near Greenwood, which is one of the most extensive undeveloped gravel deposits on the north side of our county. Recently they have prospected the surface with a common rooker, and in six days one man rocked out eighty-seven dollars. This was from surface dirt. In one place, on the bed rock, they found one piece of gold which weighs twenty-six dollars. Mr. Bilty has gone below to forward a lot of material and supplies for fitting up in first-class order for extensive operations. Iron to the amount of over sixteen tons has been ordered, of which to make something over four thousand lineal feet of eleven-inch pipe. The company expect to have all arrangements completed and to be under full headway by the first of March, when it is confidently believed that a thousand dollars per day will be realized.

The new ditch company will commence operations on the big ditch project the last of next month.

The Taylor mine, near Greenwood, has struck a streak of rock as rich as any ever taken out of the Cederberg.

The Company which has purchased the Crusen claim, immediately north of and adjoining the Granite Tunnel Co., have let a contract to sink an incline, and the work is now being vigorously pushed forward. They have also let a contract to erect a ten-stamp mill, which they intend to have in operation within sixty days. At this rate this section will be able to speak for itself.

ITEMS FROM GEORGETOWN.—*Democrat*, Feb. 21st: A nugget of gold weighing about ten ounces, was found in the Cooley claim, near Volcanville, last Friday.

The Taylor mine is proving immensely rich. At the lower level they have struck a vein two inches wide that is rich beyond description, almost solid gold. The Taylor mine is situated about three miles south-east of Georgetown.

KERN COUNTY.

GOLD PER TON OF ROCK.—*Miner*, Feb. 21: Following is an exhibit of the highest amounts, that surface rock of some of the mines in Kern county have paid to the ton: Dolphi, \$700; Relief, \$244; Bamboo, \$103; Uncle Abe, \$83; Lynchburg, \$100; Relshford, \$106; Cape Horn, \$79; Venns, \$99; Venus, No. 2, \$78; Jenny Lind, \$149.50; Howe Leads, \$70 to \$92; Joe Walker, \$55; Big Blue, \$53; Sumner, \$107; Keysville Lead, \$300; Mammoth, \$74; Bright Star, \$80; Pamp Williams, \$109; Bella Union, \$194; Grant \$74.50; Mountain Boulder, \$65; St. John, \$60; Burning Mountain, \$65; Belmont, \$104; Young America, \$100; Hope, \$403; Long Tom, \$80.

HOW ENCASER.—The Honduras, Bolivia, Venezuela and Carribean mines, which are located on the same lode, are encased by black granite and slate walls. Back of the Marsh & Kennedy mill the ledge runs into a slate formation, and can be traced right along over the summit to Hot Spring Valley, from thence to Kernville and to the Big Blue.

FROM KERNVILLE.—The Big Blue is producing its regular amount of quartz, and the vein is enlarging.

KLAMATH COUNTY.

OCA MINES.—*Cor. Lake County Bee*, Feb. 19th: Chief amongst them the Black Bear is conspicuous, not only for its richness, but for its system of labor and consummate skill of management. The Sup., W. A. Farrish, has been busy for the past three months in perfecting his arrangements for sinking on the vein. The main tunnel had to be widened 1,000 ft. to enable them to run a larger car; a "raise" made to the surface as an exhaust for the engine; a larger chamber excavated for the engine and boiler, the whole well secured by immense timbers; the boiler built on the outside, brought and placed in position, the engine set up and got in running order; in short, every precaution which knowledge could suggest, or skill accomplish, has been energetically followed and thoroughly completed, to render the raising of the precious ore easy and rapid. The mill—of 28 stamps—is constantly running, night and day, and the teams are as steadily hauling every day.

The Klamath quartz mine is running a tunnel for their ledge, and are in about 460 ft. They have already started one "raise," and will soon commence another to cut the ledge overhead. One month will be required to perfect all arrangements before they commence to crush. A good summer's work is looked for with certainty.

Morning Star is crushing good paying rock. Although they have not cleaned up, judging from the amalgam on the plates it will pay handsomely.

Evening Star is crushing away vigorously.

NEVADA COUNTY.

WASHINGTON BAYS' MINE.—*Grass Valley Union*, Feb. 20: This mine is located on Bays' ranch, near the North Star. The owners are Michael Colbert, Martin Ford and others. The shaft is down something like 50 ft., and from the bottom drifts have been run both ways on the ledge. One drift is in the distance of 100 ft., and the other is in about 80 ft. Along the whole distance the rock shows well in gold and sulphure. Some of the quartz is decayed, and in that the gold is easily washed out with the common pan. A few days ago less than a handful of the decomposed rock was tried and it yielded free gold to the amount of \$10 or over. The Bays Company have out about 100 loads of quartz already, and are adding to the dump pile every day.

SAN BENITO COUNTY.

THE CATERINA COAL MINE.—*San José Mercury*, Feb. 19: Mr. John Anzeris, of the firm of Anzeris & Brother, returned yesterday from a brief visit to the Caterina coal mines, in San Benito county. He brought back with him some fine specimens of coal, taken out by himself, which burn well. Mr. Anzeris informed us that work is progressing satisfactorily in the mines, and that the indications are most favorable. Fifteen ft. from the entrance of the main tunnel, a branch tunnel commences running at right angles 12 feet; at the terminus, the finest quality of coal has been discovered. In the main tunnel the prospects are not near so good as in the branch.

SIERRA COUNTY.

OVEA NORTH.—*Cor. Messenger*, Feb. 14: I hear they have plenty of water at the Monto Christo and Union for washing their spare dirt. I was told at Whisky Diggings (now "Widowville") that the North American Co. had lost their main lead, it having taken a notion to jump off to unknown depths toward Pilate Peak No. 1. This company's tunnel is about 80 ft. lower than that of the North American, and will, no doubt, tap the lost lead in the great basin they are running for, their tunnel being nearly in.

Nevada.

ELY DISTRICT.

RAYMONN & ELY.—*Pioche Record*, Feb. 14: Main shaft down 1,150 ft., and sinking at the rate of 16 ft. a week. At the depth of 1,200 ft. another (the eleventh) station will be opened. On the 10th station, going south, the drift is in 230 ft. Expect to cut the ledge in this drift at a distance of about 280 ft. from the shaft. Sinking a winze from the 9th station, in the vein, which is now down about 70 ft. The ore in this winze is low grade, but the vein is strong and well defined.

MEADOW VALLEY.—No 3 shaft is 30 ft. below the 1,100-ft. level, and continues going down rapidly. Drift north from the 1,100-ft. level, running to cut the vein, is in 39 ft., and expect at every blast to break into the vein.

NEWARK.—No hoisting of ore is done at present, owing to the restraining order of the District Court. On the 26th the arguments of counsel in the injunction matter will be commenced, and the decision of the Court will of course have its effect upon the future movements of the Newark company. Appearances throughout the mine continue as favorable as ever before.

AMERICAN FLAG.—The drifts are being extended rapidly with the usual force of men, and the drifts are looking encouraging. Hoisting about six tons daily from the lower levels. No stopping has been done yet. The mills are kept running night and day, working about 23 tons every 24 hours, with satisfactory results.

PIOCHE.—Sinking is still going on, and within a very short time the first level in the new shaft, at a depth of 660 ft., will be opened. In the old works, prospecting continues throughout with promising results.

BOWEAY.—The drift on the 500-ft. level is being pushed as fast as possible, with the best kind of indications of soon cutting the ledge.

PORTLAND.—The drift is being run as fast as possible in the lower level. The mine looks well throughout.

PIOCHE WEST.—The ledge has again come into the winze—having for a time been thrown out by a header—and is now showing an improved quality of ore.

PRAYNE.—Work on south drift continues with unabated energy. An improvement in the general appearance of the mine is observable.

PAOR AND PANACA.—Three drifts are still being run with the usual number of men.

HURN AND HUNT.—Drift in 950 ft., and from the appearance of the rock it is very evident that the ledge will soon be cut.

ALPS.—East drift improving. Now in 312 ft., and work continues with the usual force.

WASHOE DISTRICT.

CALDONIA.—*Gold Hill News*, Feb. 21: Forty-five feet has been added during the week to the west drift, at the 600-ft. station, making the total length from the shaft 200 ft. The shaft has been put in perfect repair to the 600-ft. station, and in a few days more the pump columns can be taken out down to the 250-ft. level or the mouth of the drain tunnel.

NEW YORK CONSOLIDATED.—The main shaft is down 492 ft. Some of the streaks of quartz already passed through by the shaft, have given very good assays.

OPHIE.—The face of the main south drift on the 1,700 ft. level is still in hard blasting porphyry. The bottom of the south winze on the 1,465-ft. level is still in fine ore, and has some 30 feet to sink before reaching the west well. The south winze on the 1,300-ft. level reached the west wall at a depth of 83 ft., at which point a cross-cut was started east to prospect the ore vein, the face of which is still in good ore. The up-raise from the 1,465-ft. level is still in good ore. The face of cross-cut No. 2, on the 1,300-ft. level is in clay and quartz mixed, indicating a near approach to the main ledge. It is expected that the extraction of ore will be commenced in about two weeks' time.

SAVAGE.—The main south drift on the 1,900-ft. level, yesterday morning, at a distance of 73 ft. from the main incline, cut the clay well of the ore vein, finding some small bunches of quartz of a very favorable looking character.

BELCHER.—Daily yield, 600 tons. The ore stops on the 1,200 and 1,300-ft. levels are looking splendidly. The 1,000-ft. level also gives promise of a fine yield of ore for many months to come. The company have a vast quantity of low grade ore on the 1,100-ft. level, that will pay well for working, and which they are preparing to extract. The mills on the Carson river are running up to their full working capacity. The main incline is down 91 ft. below the 1,400-ft. level, in hard blasting ground. The north drift from the 1,400-ft. level is in 73 ft. in hard, tough ground.

CAWON POINT.—The main south drift, on the 1,500-ft. level, is making good progress, the face still in ore. The north winze on the 1,400-ft. level is down 50 ft.—the entire distance in rich ore. Another winze has just been started, 140 ft. north of the Belcher line, which is down eight feet, also in rich ore. The winze, in what is termed the "east development," is down 29 ft.—the entire distance in rich ore. Daily yield, 450 tons of ore, which is mostly being extracted from the 1,300, 1,200, and 1,000-foot levels. The ore stops and breasts are looking finely at all points, and the future of the mine looks bright and prosperous.

GOULD AND CURRY.—The east drift on the 1,700-ft. level is in 258 ft.—the face in hard blasting porphyry. The north drift on this level is in 93 ft. The face of the main north-east drift on the 1,500-ft. level, is in a mixture of quartz and porphyry. There is also quite a strong flow of hot water from the face of this drift, and the air is so extremely hot that but slow headway can be made.

IMPERIAL-EMPIRE.—Sinking both the north and south winzes on the 1,700-ft. level is making fair headway, the bottom of both being in quartz of a very fine character.

SCORPION.—The old tunnel is cleaned out its entire length—800 ft.—and thoroughly repaired and re-timbered.

CONSOLIDATED VIRGINIA.—Daily yield, 160 tons. The decrease in the amount of ore extracted is owing solely to the impossibility of getting the ore transported to the mills, on account of the severe and stormy weather experienced during the week.

LADY WASHINGTON.—Sinking the shaft has progressed very well until last Monday noon, when a heavy body of water was tapped, supposed to come from the old workings of the company, in 1859-60.

GLOBE CONSOLIDATED.—The face of the main west drift at the 400-ft. station is in ground of a much more favorable nature, showing some quartz, and good indications of soon reaching the main ledge.

OVERMAN.—The main west drift at the 1,200-ft. level, is being carried forward at the rate of 4½ feet per day, the rock in face continuing to blast hard and work badly. The air engine and other machinery for driving the header in the face of the drift at the 1,200-ft. level and hoisting from the winze on the 1,000-ft. level, is all in place ready to start up as soon as the air-compressor shall arrive.

CHOLLA-PORTO.—Daily yield for the past week, fifty tons, the assay value of which is \$29 per ton. This was all the ore that could be extracted, on account of the great difficul-

ties encountered in getting the ore to the mills.

ROCK ISLAND.—A heavy flow of water was tapped in the bottom of the winze from the north drift during the week, driving the workmen out and stopping the sinking for the present. At the time of striking the water the winze was in good ore, which bade fair to develop into a fine body. A large three-compartment shaft has just been started, 1,500-ft. east of the ledge.

DAYTON.—The ore breasts on both the second and third levels are looking splendidly. About 40 tons of ore is being sent daily to the Woodworth mill for reduction.

LEO.—Main tunnel still being driven ahead at a good rate of progress into the hill, following the ore vein, which shows somewhat narrower than last week, but of fully as good quality.

NEVADA.—The south cross-cut at a distance of 204 ft. from the main west tunnel has cut through the chimney of ore, showing it to be 57 ft. in width and of an excellent quality. Assays of the ore range from \$20 to \$223 per ton.

UTAH.—A heavy flow of water from the face of the west drift, at the 1st station, accompanied by bad air, has driven the workmen out, and stopped all further progress until the water is drained.

BALTIMORE CONSOLIDATED.—Everything will soon be in readiness to commence the prosecution of the prospecting drifts at both the fourth and fifth stations.

HALE & NORCROSS.—Daily yield of ore, 40 tons; mostly from the old upper levels of the mine.

KNICKERBOCKER.—The water is being drained from the shaft.

SUCCESS.—Sinking the new shaft east of the hill is making rapid progress.

MINT.—The erection of the new hoisting works building, and hoisting machinery, is making as rapid progress as the weather would allow.

SOUTH COMSTOCK.—New shaft to-day down 48 ft. below the tunnel.

WOODVILLE.—Sinking the incline is making good headway. The usual amount of ore is being extracted from both the up-raise and north drift on the 300-ft. level.

CROWN POINT EXTENSION.—Sinking the shaft for the development of this mine will be resumed as soon as the hoisting works are completed.

JACON LITTLE.—The ore development in the lower tunnel still continues its good showing and the best of it is saved up on the dump for milling.

SEGREGATED ROCK ISLAND.—The north drift along the east clay wall of the ledge is still being driven vigorously ahead toward the north line of the claim.

SIERRA NEVADA.—Daily yield, 65 tons, keeping the mill steadily running. The ore breasts are looking well, and the quality of ore extracted during the week shows somewhat of an improvement. A streak of good ore 3 ft. in thickness was developed yesterday, in the face of the west cross-cut from the up-raise in the old Sacramento ground, which seems a good indication of a near approach to the main ledge.

TYLER.—The south cross-cut from the main west drift, at the first station, has been advanced at the rate of 3 ft. per day, running through quartz carrying considerable metal.

SILVER HILL.—The heavy flow of water from the south drift at the second station, is gradually decreasing. The ore body in the north winze has shown a decided improvement during the week.

SUTRO.—The north drift is in 100 ft. During the past week some very fine bunches of ore have been encountered in this drift, assaying as high as \$70 per ton.

INDEPENDENT AND OMOGA.—The new shaft has not yet tapped water, as was expected, and the work progresses well.

BUCKEYE.—The main incline is down to the 450-ft. level, at which point a heavy flow of water was tapped, all that the pumps can handle. The sinking has been stopped, and a new station is being opened at that level for the purpose of drifting to and prospecting the ledge.

JULIA.—The prospecting cross-cuts on the 1,000-ft. level have developed a fine body of good ore, the full extent of which has not yet been determined.

KOSUTH.—The main west drift at the 1st station is still pushed steadily ahead through the ledge, which so far as penetrated prospects finely, giving good promise of the development of a good paying mine.

EUROPA.—The ore passed through during the week shows great improvement in both quantity and value.

JUSTICE.—A splendid new station has just been opened at the 300-ft. level, and another at the 400-foot station. Sinking the main incline below the 400-foot station, for a new level, is making rapid progress.

OCCIDENTAL.—The principal work being done in this mine at present is the repairing and re-timbering of the main adit tunnel.

CALIFORNIA.—The main north drift, on the 1,300-ft. level of the Virginia Consolidated, is still pushed vigorously ahead without change of interest, as is also the south drift on the same level from the Ophir.

ALPHA.—The north drift on that 1,500-ft. level from the Imperial shaft, on Sunday last, cut a body of milling ore the extent of which has not yet been determined, but which gives promise of a fair development.

CHAPIN AND EAST COMSTOCK.—The new hoisting works are nearly completed, and sinking at the bottom of the main shaft will be resumed in a few days.

The Pacific Coast in 1873.

That we have a right to be proud of our coast, none can deny, when they examine our record for 1873. No portion of God's universe has developed greater results. As a city, we have grown in population from 180,000 to 200,000—an advance of eleven per cent. in one year. This advance represents an annual increase of \$15,000,000; and to accommodate this increase, fifteen hundred new houses have been built, which have cost nearly \$6,000,000, and there are all ready projected buildings which will cost \$7,000,000 for this current year. Financially, our city has been wonderfully successful. Money has been plentiful, and trade, commerce and all kinds of business have been profitable. The dividends disbursed by our local and mining corporations foot up, in round figures, about \$16,500,000, and by our Savings Banks, something over \$3,000,000, making an aggregate of about \$20,000,000, or a sum largely in excess of any other city in the United States of anything near our size.

As a State, we have increased in population about 40,000, including a surplus of arrivals over departures of 30,000, and of births over deaths of 10,000. Our specie exports have materially decreased, while our other exports have largely increased. Our exports seaward have increased about \$7,000,000 over 1872, and now aggregate about \$30,000,000; while our exports by rail for the past year foot up, in value, about \$25,000,000—a material increase over the previous year. To improve matters still more, our imports show a slight decrease. Our trade with Great Britain has nearly doubled during the past year, reaching now about \$20,000,000, largely made up in a direct trade in case goods, silks, flour, wines, wood and many other articles of Pacific Coast production, other than wheat. This is truly encouraging to us as a State, and speaks in eloquent tones of material progress.

By taking in our entire coast, we have still greater reasons to feel proud. During the year 1873, our gold and silver mines have produced, as shown elsewhere in this issue, over \$72,000,000—an increase of over \$10,000,000 over the production of 1872; and \$14,000,000 over 1871. Our gold and silver production alone is equal to about \$100 for each inhabitant on our coast.

As the result of all these things, the taxable wealth of our coast has largely increased, and every branch of industry has been strengthened, and the field of operations materially enlarged. Millions of dollars have been added to our commercial, manufacturing and mining enterprises during the year, that will enlarge our future production and greatly enhance our future income. Confidence in our financial system has been strengthened, energy has been infused into our people, enterprise has been awakened, and all have become convinced of our future prosperity and our importance as a great producing country. Our coast is an empire within itself—wealthy, powerful and progressive. We stand almost without a parallel in the world; and still we are only the beginning now of what we will be a few years hence, when our vast plains of rich farming lands are settled up, and our vast mineral resources become more extensively developed—when our cities and towns fill up with large enterprises, as they must at no very distant day.

Then let our people feel encouraged that the old year brought us so much to be proud of, and strive to make the new year more prosperous than the old.—*Real Estate Reporter*.

STORY GRAVEL CLAIM.—From the letter of a correspondent of the *Calaveras Chronicle* we extract the following item in reference to the Story gravel claim in that county: I visited the celebrated Story gravel claim on the Mokelumne river, below Poverty Bar, which is in full blast and paying handsomely. Operations are carried on more extensively in this than any other claim in this portion of the county. The untiring energy and great practical experience in mining operations have placed the owners in possession of a claim of lifelong duration and great wealth. About twenty Chinamen are engaged in extracting the gravel and removing it, by means of a car drawn up an incline by a whim, to a "dump box" where it is washed. Everything moves with the precision and regularity of clock-work. While the bottom gravel is being taken out, averaging about twenty feet in thickness, a hydraulic pipe, throwing several hundred inches of water, is constantly demolishing the upper bank or surface, which we are informed by Mr. Story, who kindly piloted us over the works and explained them to us, pays something above expenses. In facilitate operations a tunnel, 1,200 feet in length, penetrates a hill, tapping the gravel bed about three hundred yards above the old diggings, in which is laid a course of sluices through which the "tailings" are run into the river. There are several other claims in this vicinity, all paying handsomely.

HUMBURG CAMP.—We learn that the miners on Humburg are now all engaged in ground sluicing. They have plenty of water, and an immense quantity of bedrock will be laid bare before cleaning-up time comes round. Water has not been so abundant for the last seven years as it is this winter; and, if the miners in that camp do not get out lots of the "glittering ore" this season, it will not be for want of water.—*Yreka Union*.

OAK BAR.—The high water in the Klamath river has had the effect of temporarily stopping all mining operations in the river claims at Oak Bar, Siskiyou county.

Oroville Mines.

The *Butte Record* says: We feel assured that the people of the county will rejoice in the prospect of lively and prosperous times for Oroville, promised by the discovery of extensive and rich placer diggings on the second bluff south of Oroville, mentioned last week. We learn that the deposit is much more extensive than was at first supposed, and is capable of affording paying diggings for a more numerous population of white miners than the Lava Beds now do for the Chinese miners. The latter diggings are on the flat below the bluff upon which the newly discovered diggings are situated, and cannot be worked by hydraulic pressure. This was the excuse for selling to Chinamen. The discoveries on the bluff beyond the Lava Beds are capable of being worked by hydraulic and sluice, and thus afford ample field for remunerating scientific white labor, and we hope and trust that the field may be occupied by such to the exclusion of the Chinese, who are no particular benefit to the county, and the product of whose labor finds its way within the limits of the great Chinese Wall, instead of being turned into the channels of commerce, and keeping alive the business of the world. We learn that parties have been busy staking off and locating claims during the past week, and that the country for eight or ten miles square, bears evidence of industry in this respect, and the work is still going on.

This section has for years been furnished with a ditch of water for mining purposes, but mostly worked by Chinese in simply rocking over the surface. An abundant supply of water may be had from the South Fork of Feather, (the source of the present ditch), and more fall may be obtained for working the deposit than is afforded by the Oroville bluff, which has been so long and successfully worked. We are inclined to believe that these diggings promise a better yield, more population, and better times for Oroville than the "Gem of the Foothills" experienced in the rainy days of '56 and '57, when the Oroville bluff literally swarmed with miners. The pay deposit lies higher than that of the bluff near Oroville, affords greater fall, and commands equal water privileges, while it is said to be much more expensive. The amount of money that may be taken from these new diggings, is incalculable, and we trust that the advantages afforded by the location for successfully working the mines will be taken advantage of by the laboring white population of the State, and not be turned over to Chinamen, as the Lava Bed diggings were.

PROSPECTING TO THE NORTHWARD.—The *Virginia Enterprise* says: For years there has been a vast deal of prospecting to the southward on the supposed course of the great Comstock lode, but in all this time little worthy of the name of prospecting has been done to the northward on the Comstock range. All that has thus far been done beyond the Utah has been mere surface scratching. Now, however, there seems to be a disposition to set to work in earnest in that region, and several companies will begin operations in good shape this spring. Among these is the North Comstock—not the old North Comstock of former days wherein Mark Twain saw great chunks of pure silver, but a mine lying in an altogether different direction. The North Comstock, whereof we now speak, was in the early days known as the "Indian Queen." It lies to the northeast of the Utah, and there are on it some old works. Among these is a shaft 95 feet in depth, and an old tunnel about 40 feet in length. The present owners have four men at work grading off the ground preparatory to sinking a large three-compartment shaft, which will be put down as speedily as possible. This shaft will be sunk about 30 feet east of the lead, which it will cut at the depth of 200 or 300 feet, where it is expected to find good ore. The ore in the bottom of the old shaft assays from \$10 to \$13 per ton. The work now being done is under the superintendence of G. Williams.

THE K K MINE.—We have received the following information in regard to the above named mine. A fine body of ore is being worked in the Marceline location, extending in the old ground of the company from the first to the second levels, over one hundred feet, all paying ore, and a drift started in the main shaft from the third level 311 feet from the surface, for the purpose of striking the south ore body. The Skylark shaft, situated six hundred feet north of the main shaft, is being rapidly developed, and from appearances one of the best bodies of ore yet discovered in the mine will be opened. There are about forty men at present working in the different portions of the mine engaged in the further development of the different bodies of ore. The hoisting works of the company are as fine as any in Eastern Nevada, having been erected at a cost of \$30,000. The cages of the two shafts are provided with patent safety clutches and are run with flat English wire cables. The engine is sixty-horse power, and is from the house of Booth & Co., San Francisco. As soon as the spring fairly opens the company intends putting on a large force of men in the mine.—*Eureka Sentinel*.

SINGLE TRACK RAILROAD.—We have received from Mr. Crawford, of the Grand Hotel, a photograph of a singlerail railroad locomotive, spoken of last week. A model of this railroad, which is now being operated in Philadelphia, is also exhibited by Mr. Crawford.

CHERRY CREEK.—Johnny Emsnell, just in from cherry creek, states that, although drill times now prevail, no doubt is entertained of great activity in the spring. Many mines are being worked to as great an extent as the recent miserable weather will permit, and miners generally are jubilant over the future of their respective claims. We saw that the Chance mine has been incorporated, a notice of which appears in another column, and the owners have purchased a mill-site and water-right, near the town, and will soon move the splendid mill of the Tehama Company, erected at Shalburn to the spot. The Geueva and Teacup properties are being developed rapidly with good results, and ores from them are being packed to the mill at Egan Cañon, under lease to John R. Murphy and associates. Building is progressing, and new houses are constantly being added to the present large town. Many of our Hamilton friends and townsmen have established themselves in business at Cherry, and are all satisfied with their prospects. We anticipate that this new camp will prove a valuable auxiliary to the county seat, and assist very materially in bringing White Pine once more favorably into notice. There can be no doubt that the coming summer will demonstrate the fact that we are not all dead yet, and that our mineral resources are equal, if not superior, to any in Nevada. All should rejoice in the prosperity of every section of the county, even though its direct effects are not immediately apparent to people remote from the exact locality, as everything of a successful nature helps to forward all our interests indirectly.—*White Pine News*.

SANTA CRUZ COAL MINES.—A writer in the *Oakland Transcript* says of the coal beds of Santa Cruz county: There are five mines located and in process of development: The Forest Coal Mining Company, on Soquel creek, which runs into Monterey Bay; the Clifton, east of the Forest; the Commercial, northeast of the Clifton; the Black Mountain, west of the Commercial; the Thompson Company, the works lying west of the Black Mountain. These are the localities. The Forest mine crops out on a slide, and has been prospected by means of a tunnel, some 600 feet into the mountain. The Commercial mine is on what is technically called a "break," from the main Black Mountain; here explorations have been extended some 300 feet, through sandstone and slate, developing the finest quality of bituminous coal. These mines are located on Soquel creek, only eight miles from Soquel Landing, on Monterey Bay, with an easy grade for a railway. The companies own some 3,000 acres of the best timber lands, which are thickly overgrown with redwood, fir, tan-bark oak, and other valuable woods. This land is now worth \$100 per acre, and includes several water-powers, suitable for mills or factories. These several companies are under the general superintendence of Wm. Strader, who is thoroughly acquainted with the business of mining for coal.

WHITE PINE BULLION.—The *White Pine News* says: Through the politeness of W. P. Willard, cashier of the White Pine County Bank, we learn that from June 1st, 1873, to the present date, there has been shipped through his hands \$160,000 in silver bullion. The Eherhardt & Aurora company alone have shipped \$80,000 in bullion since starting their new mill on Dec. 12th. This is not so bad a showing for a "played out" district. It is well to remember that up to the first of last June not a pound of bullion was shipped for a period of nearly ten months. Undoubtedly this showing will be sensibly increased during the coming year, and we may well predict much larger figures when the Hidden Treasure and Ward Beecher companies resume active operations. Should the Trench mine owners form a consolidation with the Monte Cristo mill, they will be enabled not only to crush their own ores but do considerable custom work now sent to Eureka, thus largely increasing our bullion product. The Newark mill is also in White Pine county, a fact which seems to be forgotten by our Eureka friends, and their hullion must be added to the general production of the county. Altogether, we can see no reason to complain of the outlook in the future, although the present times appear dull enough.

PINE FLAT MINES.—Yesterday, says the *Healdsburg Flag*, we met M. J. Wilkinson, who is interested in the Pine Flat mines. He informs us that there are about two hundred men working and prospecting in the mines of that region. Pine Flat is growing to be quite a town. The Thompson brothers have a store established there, as already mentioned in our paper, and a gentleman from Sacramento is about to build a hotel there. The owners of the mines have great confidence in their discoveries. Mr. Wilkinson also says that all the people residing in the quicksilver country are desirous of having a good road built immediately, to connect their place with Healdsburg, for purposes of trade. They have no faith in the twenty-two mile road to Calistoga, because they know that they can get to Healdsburg by a more direct and natural route of only sixteen miles. Let the people of Healdsburg, then, see that this road is built immediately.

As a means of avoiding explosions in the use of hydrogen apparatus, Fresenius says the gas may be passed through a tube containing a number of small discs of fine wire placed between cotton.

The Burleigh Drill.

The Cedar Creek company over at Dutch Flat are running a tunnel from Bear river under the celebrated gravel deposit at or near Dutch Flat, to reach that deposit deeper down than heretofore and extract the millions of gold known to exist along the bed-rock of that ancient river-bed. The tunnel is to be 3,000 feet long, and as extensive duties will be required of it, the size will be large—8 by 8 in the clear. By the common hand-drill process, nine men averaged 13 feet per week, working three shifts, a little over two feet in twenty-four hours. With the Burleigh drill and a force of five men they are now averaging eight feet in twenty-four hours and the cost per foot is reduced fully 50 per cent. One of our reporters was over there the other day and was surprised and delighted with the performance of this drill. It is run by compressed air and the beauty of this power is that it can be used several miles away from the point of compression and serve as the very best ventilator for underground operations known. While there, our reporter timed the drilling of two holes with the following result: No. 1, 23 inches in four minutes; No. 2, 19 inches in three minutes. The drill strikes from 200 to 300 blows per minute.

This tunnel is now in 315 feet and at 600 they expect to commence taking out gravel through a shaft and making it pay.

There are immense gravel ranges all along that scope of country, including You Bet, Little York, Steep Hollow and the head of Greenhorn, as well as in many other portions of the county, and the only thing in the way of their being worked and large fortunes made therefrom, is the depth at which the bed-rock lies and the great cost of running tunnels to tap them below the gold deposits. By the formation of large companies and the use of these machine drills great numbers of these rich and extensive ancient placers will soon be opened up, and the world's supply of the wherewith to bring all nations together as one people, by encouraging progress in arts, science and invention, be greatly augmented.—*Foothill Tidings*.

PEAVINE DISTRICT.—A private letter now before us from Poe City, Peavine mining district, speaks very hopefully of some of the principal leads in that region. The writer says that work has again been resumed in the Paymaster mine, this time under the superintendence of Billy Bourne, who seems to thoroughly understand his business. The Golden Fleece company are sinking a shaft in their tunnel. This shaft is now down twenty-five feet, all the way in soft rock. They are about letting a contract for sinking the shaft a further distance of twenty-five feet. From present appearances, they expect to find paying ore at the depth of one hundred feet, and a wide ledge. They are now saving ore from the shaft with the intention of having it crushed as soon as they can get it hauled to a mill. Good quartz is also being encountered in the Bull's Head lead, a gold-bearing vein. A contract has been let and work will soon be commenced on the Hopkin's mine, under the superintendence of W. D. Darnell, of this city. The writer appears to think that they have mines in Peavine, from which they can take more pay rock than is being taken from the Consolidated Virginia, Ophir, Justice, Caledonia, or almost any of our Comstock mines except, perhaps, the Belcher and Crown Point. The opinion of such of our mining men as have examined the Peavine mines have not been quite so favorable as this.—*Enterprise*.

VALUE OF SILVER.—At one time it was feared by the owners of mines on this coast that silver would decline in value in European markets to such an extent as to affect injuriously the mining interest. The aspect of affairs has now changed, for not only is there a disposition to use more silver coin by several European Governments, but an increased demand for silver is springing up in India, which has caused a rise in the price of the commodity. A London circular of a recent date contains the following: The great rise in the exchanges reported from India has caused a large increase in the orders for silver for that country, and a consequent advance in the price. Purchases were made up to the 17th instant at 59d. per oz. standard; but on that day large orders were executed at 59½d. per oz. standard; and this may be considered as the present rate. A large part of the recent supplies has come from Germany, but the stock of silver in that country is very firmly held, and there is no apparent intention to sell any very important amounts. Austrian florins have been sold at 57½d. per oz., their intrinsic value as compared with bar silver; they have been taken for coinage purposes in India.

STICKEEN RIVER.—A Portland, Or., despatch has the following: The steamer *California* arrived from Sitka Sunday. She brings but little intelligence regarding the Stickeen mines. One hundred and sixty men left Fort Wrangle on the 3d and 4th inst. for the mines. The ice was in splendid condition for traveling, and every one left in excellent spirits. The excitement is daily increasing. The *California* sails on Wednesday, and will take a large number of passengers and a large amount of freight for Fort Wrangle.

USEFUL INFORMATION.

OILS FROM SEED.—The vegetable oils that may be produced in the United States are those from cotton seed, linseed, olive, hemp seed, rosin, sunflower, castor bean, rapeseed, peanut, poppy seed, and colza. All these seed oils are prepared from seed first crushed between heavy rollers, and then ground between two pairs of granite stones five to seven feet in diameter, which are made to turn upon their axes while traversing a circular path. The soft pulp thus supplied is inclosed within a woolen sack, and this again within an outer horsehair sack, and then exposed to immense pressure by means of heavy wedges, each about 600 pounds weight, which are forced into cases just fitting the sacks by the action of cams upon a horizontal shaft. The oil thus expressed is known as "cold drawn." Afterward the cake is pressed between heated plates, and an inferior quality of oil is expressed from them. The olive is successfully grown on the island of St. Simons, near the coast of Georgia, and five gallons of oil have been produced the past season from each 250 trees. The fruit is subjected to pressure sufficient to crush the seed, and the oil expressed falls into cisterns upon water, from which it is skimmed. This finest quality is called virgin oil. Second and third qualities are procured by the aid of hot water and heavier pressure. Poppy oil greatly resembles olive oil of the finest quality, and is used to adulterate it. Thirty per cent. of oil may be extracted from poppy seed, which, when boiled, is equal to linseed. Cotton seed oil is largely used to adulterate olive oil; in fact, it is bottled in a pure state, and labelled with the foreign title of *huile vierge* (virgin oil), and sold as the best salad oil from olives. Cotton seed oil is again adulterated with rosin oil. The manufacture of seed oils is one that might be made to contribute to the variation of our farm crops, and also to return to the soil in the refuse cake, either directly as manure or indirectly as feed for cattle, a large amount of fertilizing material.—*Tribune*.

GILDING GLASS.—Gilding glass can not be patented—every one may do it; but the manner how is subject to a patent. Such is Schwarzenebach's method. He dissolves pure gold in aqua regia, and evaporates till crystallized, in order to free it from the acid. Then it is dissolved in pure water and filtered. The solution must contain 2 grains of metallic gold to the pint of water; add soda till alkaline. Then prepare the reducing solution by saturating alcohol with sulfid gas, and adding an equal volume of pure water. Take two glass plates, and clean them as carefully as a photographer does for a picture; place the cleaned surfaces together at a distance of one-eighth of an inch in horizontal position, with the largest plate below; mix the two liquids and bring them between the plates, which is readily accomplished by their capillary action; leave them two or three hours, and when they are removed, the gold will be found reduced and deposited on the glass, washed and varnished. Such is the method patented, but we would suggest to take a single plate well cleaned, placed perfectly horizontal, the edges greased so as to prevent the solution from running off, and then covered with the freshly mixed liquids to the height of about one-eighth of an inch, in the same way as plated glass mirrors are now silvered by means of a reducing silver solution.—*Manufacturer and Builder*.

CARE OF VARNISH BRUSHES.—Brushes used for applying finishing varnishes should be cared for with the utmost pains, as good work depends much upon the good condition of the brushes. A good way to keep them is to suspend them by the handles in a covered can, keeping the points at least half an inch from the bottom, and apart from each other. The can should be filled with slow drying varnish up to a line about a sixteenth of an inch above the bristles or hair. The can should then be kept in a close cupboard, or in a box fitted for the purpose. As wiping a brush on a sharp edge of tin will gradually split the bristles, cause them to curl backward, and eventually ruin the brush, the top of the can should have a wire soldered along the edge of the tin turned over, in order to prevent injury. Finishing brushes should not be cleaned in turpentine, except in extreme cases. When taken from the can, prepare them for use by working them out in varnish, and before replacing them cleanse the handles and binding with turpentine.—*Am. Homestead*.

CLEANING BARRELS.—The rancid grease wherewith ancient barrels are saturated is very frequently the cause of the tainting of the meat. This may be removed by scalding the barrels with boiling water and a few handfuls of wood ashes, or one handful of concentrated lye. A brisk scrubbing with a stiff corn broom and a rinsing with hot water, followed by another with fresh cold water, will render these barrels sweet. But on no account should a meat barrel be defiled by using to scald hogs in. There is in such an act a departure from that virtue which comes next to godliness.

A NEW APPLICATION OF GYPSUM.—Gypsum mixed with 4 per cent. of powdered marsh-mallow root will harden in about one hour, and can then be sawn or turned, and made into dominoes, dice, etc. With 8 per cent. of marsh-mallow, the hardness of the mass is increased, and it can be rolled out into thin plates, and painted or polished.

PREVENTION OF BOILER EXPLOSION.—The daily papers contain all kinds of suggestions in regard to this subject, as that certificates of inspectors should accompany bills of sale, that the seller should be made liable for all damages resulting, that the maker should be punishable if damage was the result of defective construction or design, etc. This is all nonsense. Simply let all those who use a steam boiler employ an engineer who knows as much, or more about it than a boiler inspector; and this indeed is not requiring a great deal. If it is objected that such men require too high salaries, it is simply caused by the fact that there are not enough of them. Increase the supply by proper and more universal instruction in the right kind of subjects, and the price will come down to a reasonable standard, say \$5 or \$6 a day; and it is worth all that, if it guarantees us against such losses in life, limb, and property as we have had to deplore during the last few years by unpardonable boiler explosions.—*Manufacturer and Builder*.

CLEANING SILVER-WARE.—A freshly made solution of hyposulphite of soda will often wash off at once any thin dark film which silver is apt to be covered with when exposed to the air. If the coating is thick, the silver must be left immersed for half an hour in this solution, to which some ammonia may be added. When taken out, wash in water, dry, and rub with leather and Paris white. For spoons, forks, and small plate, boil them for 20 minutes in water containing some carbonate of potash and Paris white; let them cool in the liquid, take each piece out, and rub it with soft leather. For the embossed and engraved parts use a soft brush.—*Journal of Chemistry*.

PARISIAN WOOD VARNISH.—To prepare this varnish, which has been long celebrated, Graeger dissolves 1 part of good shellac in 3 or 4 parts of alcohol, of 92 per cent. (by volume) on the water bath, and cautiously adds distilled water, until a curdy mass separates out, which is collected and pressed between linen; the liquid is filtered through paper, all the alcohol removed by distillation from the water bath, and the resin removed and dried at 100° until it ceases to lose weight; it is then dissolved in double its weight of alcohol, of at least 96 or 98 per cent., and the solution perfumed with lavender oil.

HYPOCHLOROUS ACID FOR BLEACHING.—De-mailly has invented a method for manufacturing hypochlorous acid gas for bleaching purposes. The apparatus consists of a vessel for the generation of chlorine, connected with a vertical tube, which may be heated, which is filled with balls of terra-cotta impregnated with some sulphate, as potassic, sodic, magnesian, etc. Under the influence of the heat and the presence of the chlorine, an acid sulphate forms, half the chlorine is fixed as a chloride, and the oxygen of the base unites with the other half of the chlorine, forming hypochlorous acid; at least such is the reaction as described.

ETHER GLUE.—An excellent liquid glue is made by dissolving glue in nitric acid. The ether will only dissolve a certain amount of glue, consequently the solution cannot be made too thick. The glue thus made is about the consistency of molasses, and is doubly as tenacious as that made with hot water. If a few bits of india-rubber, cut into scraps the size of buck-shot, be added, and the solution be allowed to stand a few days, being stirred frequently, it will be all the better, and will resist the dampness twice as well as glue made with water.

SCREWS IN PLASTER.—It often becomes desirable to insert screws in plaster walls without attaching them to any woodwork; but when we turn them in the plaster gives way, and our effort is vain. And yet a screw may be inserted in plaster so as to hold light pictures, etc., very firmly. The best plan is to enlarge the hole about twice the diameter of the screw, fill it with plaster-of-Paris, such as is used for fastening the tops of lamps, etc., and bed the screw in the soft plaster. When the plaster has set, the screw will be held very strongly.

An improved packing for steam-engines, pumps, etc., is composed of fibrous strands into which melted paraffine, stearine, or other lubricant, with a suitable powdered substance, is introduced during the plating of the strands, in order that the fibers be thoroughly impregnated. The fibrous material is hemp. The braid at or near the point where the different strands are interlocked passes through an opening in a plate, when the strands are condensed and the braid rendered uniform in thickness.

HARD PLASTER.—To a thin milk of lime or lime-water add ten or fifteen drops of liquid silicate of soda for every pint of fluid used; this is then thickened with plaster to a thick cream. Plaster thus prepared, will set in five minutes or thereabouts, according to the thickness of the cream. If too much silicate is used, the soda will effervesce on the surface, and spoil the sharpness of the impression.

BLACK BRANDINO INK.—Triturate together 1 part of pine soot and 2 parts of Prussian blue with a little glycerine; then add 3 parts of gum-arabic and sufficient glycerine to form a suitable paste.—*Jour. of Chem.*

COMMON CAST IRON.—or iron in any form, may be plated with tin by cleaving with acid, dipping in zinc chloride, and then in a bath of melted tin.

GOOD HEALTH.

Eat Slowly, Please!

Now do not suppose we are going to drag you back two or three centuries and parade the virtues of our great, great-grandfathers, who were wont to spend two or three hours over their meals, before your eyes, for we are not; simply because the doctors and life insurance tables prove that, with all our dyspepsia and indigestion, we live longer and suffer less from the gout than they did. Only apply the same common sense to your eating and drinking, that you do to the ordinary business affairs of life, and do not require of a thin, muscular sack the work for which nature has provided a complete apparatus of the very hardest material in the whole human frame. Masticate your food thoroughly; thereby securing the advantages of fully appreciating the savory odors and taste of your food, completely triturating and mixing it with the saliva, and of furnishing it to the stomach in such quality and at such a rate that this organ shall be able to appreciate the proper quantity, and tell you when you are "done."

Hunger is a purely reflex action; the want of material to properly conduct its labors is felt all over the whole system, but referred by means of the great sympathetic system to the point from which supplies are usually furnished—the digestive tract; which includes the stomach and upper portion of the small intestines. Now, when the stomach has received a sufficient supply for the wants of the system, the fact is announced by means of this same sympathetic system to the millions of millions of little chemical laboratories which make up the whole of the "human form divine," and the demand ceases, and "we have had quite enough, thank you." But, when we tumble food in the stomach almost at the rate at which a Mississippi river elevator conveys wheat into its spacious reservoirs, how can we expect our stomachs to be able to take cognizance of the amount, and proclaim "enough" at the proper time? Besides if we try to swallow a doughnut, gulp half a cop of tea, masticate a good-sized piece of beef-steak and tell the cook to "hurry up with those potatoes" all in the same breath, the chances are greatly in favor of our getting seriously choked; and having to submit to the partial dislocation of our spinal column at the hands—don't mind us, too—of our frightened better half before getting relief. And choking does not always end so favorably; it sometimes kills. We recall a case now that occurred in our student life, which is exactly in point.

The body of a brawny, muscular man, who had died quite suddenly, by one of those dexterous manipulations known only to medical students, found its way to the dissecting room of a well-known college. The doctors had puzzled their brains in vain trying to determine the cause of death, and had turned the "subject" over to the class for dissection. Being a remarkably well-developed, muscular man, it was voted to appropriate him to illustrate the various operations in surgery. Accordingly, scalpel and amputating knife were soon busily at work; and limbs were amputated, arteries ligated, joints resected and disarticulated until nothing was left that seemed to afford any chance for any further operations; when one of our number suggested "tracheotomy." No sooner said than done. The delicate rings of the trachea were quickly divided by the "direct thrust," when, lo! the cause of the mysterious death was at once apparent. Filling almost the entire cavity of the larynx, completely occluding the chink of the *rima glottidis*, and extending some distance down the trachea itself, was a roll of half-chewed food; emitting off his supply of "wind" far more effectually than ever did hangman's rope. The struggle for life had been a terrible one; the powerful muscles of inspiration having forced the obstructing food into the trachea so firmly that it seemed as though it had been "tamped" there.

Now, don't get alarmed and refuse to eat at all because of this little incident, for that is not the object of this article; but put your trust in providence, eat slowly, stop when you feel satisfied, and enjoy the luxury of an undisturbed digestion.

TO REMOVE BOILS.—Dr. Simon, a physician of Lorraine, gives a new cure for boils, by treating them with camphorated alcohol. As soon as the culmination point of a boil makes its appearance, he puts a little of the liquid in a saucer, and dipping the ends of his little fingers in it, rubs the inflamed surface, especially the central part, repeating the operation eight or ten times for about half a minute. He then allows the surface to dry, placing over it a slight coating of camphorated olive oil. He says that four such applications will, in almost all cases, cause boils to dry up and disappear. The application should be made at morning, noon and evening.

TREATMENT OF CHILBLAINS.—Sulphurous acid should be applied with a camel-hair brush, or by means of a spray-producer. One application of this usually effects a cure. The acid should be used pure. A good wash for hands or feet affected with chilblains is sulphurous acid, three parts; glycerine, one part; water, one part. The acid will be found particularly useful in the irritating, tormenting state of chilblains.

FISH AND TEA AS FOOD.—The London *Times* sharply controverts the assertion made by Dr. Edward Smith to the British Association, that fish is rather a relish than food, and contains little more nutriment than water. As opposed to this statement the investigations of M. Payden are cited, who proves that the flesh of fish on the average does not contain more water than fresh beef, and has as much solid substance as the latter. For instance, the flesh of salmon contains 75.50 per cent. water and 24.296 per cent. solid substance, while beef (muscle) contains 75.89 per cent. water and 54.12 per cent. solid substances. The flesh of herring contains still less water than that of salmon, and evoe flat-fish are as rich in nitrogenous substances as the best wheat flour, weight for weight. Another statement made by Dr. Smith, that the amount of nutriment contained in an ounce of tea is infinitesimal, is met with the assertion that, while tea is no "nutriment" in the ordinary sense, the individual who takes tea after his meals feels, without being able to define it, that tea has a favorable effect upon certain highly important functions in his body, that digestion is accelerated, and facilitated, and his brain work benefited thereby. Though not nutriment, tea is thus alleged to possess a really higher value, in medical properties of a peculiar kind.

DIFFERENCE IN HUMAN EXHALATIONS.—It is a well-known fact that the human body contains in itself various humors and acids similar in action and having the same tendency toward the baser metals, as nitric and sulphuric acids; namely, to tarnish them, these acids varying in quality in different persons. No better proof need be given in support of this than in noticing the effect which different persons have on the jewelry which they wear. There are thousands who—for fancy or economy's sake—wear continually the cheaper kind, known under the name of "fancy jewelry," having brass ear-wires to the drops, without any ill effect, while many others, after wearing them a few days, are troubled with sore ears; in other words, the acids contained in the perspiration of some persons are sufficient to act upon the brass. There are persons by whom jewelry of any grade below 18 karats fine would be tarnished in a few days, and if such persons were to condemn all jewelry they thus tarnish as brass, they would do great injustice to the jeweler. These are extreme cases, it is true, but there are many persons who cannot even wear iron or steel about them without causing it to rust by the acidity of their perspiration.—*Exchange*.

OUR FLANNELS.—The value of flannel next the skin can not be overrated. It is invaluable to persons of both sexes, and all ages, in all countries, in all climates, at every season of the year, for the sick and the well. In brief, I can not conceive of any circumstances in which flannel next the skin is not a comfort and a source of health. It should not be changed from thick to thin before the settled hot weather of the summer; which, in our Northern States, is not much before the middle of June, and often not before the first of July. And the flannels for the summer must not be three-quarters cotton, but they must be all woolen, if you would have the best protection.

In the British army and navy, they make the wearing of flannel a point of discipline. During the hot season the ship's doctor makes a daily examination of the men at unexpected hours, to make sure that they have not left off their flannels.—*To-day*.

HOW FAR CHEMICAL WORKS POISON THE AIR.—Sulphuric acid does not remain, any perceptible time as a gas when it comes into the open air. Muriatic acid will go several miles, and sulphurous acid goes farther, but is diluted more rapidly, and therefore is less perceived. Chlorine will go four miles and be quite distinct to the smell, if the ground be smooth, but if it be roughened by trees or vegetation the trees obstruct the motion of the air and gases, and the absorbable portion is removed; but not without damage to vegetation. Chemical works generally are greatly on the increase, and the power to repress escapes of gas does not increase with them. When new manufactories are proposed, the air should be examined, and if the air be injured to a certain extent, no more of the same manufactories should be allowed at the same place.—*Ex.*

HOT SAND BATHS.—One of the most attractive therapeutical novelties for some time past in London—recently introduced from the continent—consists in the erection of establishments for administering hot sand baths as a remedy for rheumatism, recent cases of nervous disorders, affections of the kidneys, and all cases where heat is needed as the chief remedial agent. The advantages claimed in behalf of this method of treatment are, that it does not repress respiration, like the hot water bath, but rather increases it, and does not interfere with respiration after the manner of the steam bath or the Turkish bath. It is found that the body can endure the influence of this kind of bath for a much longer time, and a much higher temperature can be applied.

ALLEGED CURE OF LEPROSY.—The *Friend of India* reports that the Madras surgeon in medical charge of the penal settlement at Fort Blair believes he has made a valuable discovery in the cure of leprosy. He is of opinion that leprosy can be cured by the oil of the gurjun tree. Every leper in the settlement is, it is stated, being cured fast of this loathsome disease. In no case has there been the slightest failure, and the disease has been arrested at every stage.



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Copper.

We make the following extracts from James
Lewis & Sons' monthly report on ores and
metals (Liverpool), for the benefit of our read-
ers interested in the copper market. The re-
port is dated the 31st ult., and gives a discour-
aging view of the market for the month, values
having declined from the 1st of the month in
the face of a reduction in the bank rate to 3½
per cent. Two large failures in the lead trade
have tended to increase the dull feeling which
already existed among the purchasers of cop-
per. The sale of bars amounted for the month
to about 3,400 bars, at £84, down to £81 cash
for good. Ordinary brands (including Lota
and Urmenta) from £86 down to £83 for picked
brands. At the close values were about 10s per
ton better from the lowest point with an im-
proved demand.

The sale of furnace material for the month,
consisted of the Swansea Ticketing of the 6th
and 7th ult. The average price at the former
being 15s 0¼d per unit for an average produce
of 14 per cent., and at the latter 15s 2d for 18
per cent. The Cape ore realized 16s 5¼d and
16s 2d at the respective Ticketings; 250 tons
of Chili ore sold on the 10 of January at Swan-
sea, at 16s 7d per unit, and 200 bars Regulus
on the 22d, at 16s 6d. On the 30th, 1,250 tons
of Regulus brought 16s per unit. Latest quo-
tations are: Ore and Regulus 16s per unit;
Bars, good ordinary brands, £81.10s to £82;
picked brands, £82.10s to £83.10s; special
brands, £84 to £85 per ton.

Chili exports to 30th of November, including
that loading on that date and that chartered to
1st of January, were 46,812 tons, as against
51,354 in 1872, 46,751 in 1871, and 53,569 in
1870. Stocks of West Coast produce were es-
timated at 20,063 tons fine, against 20,604 tons
on the 1st of December.

THE drain tunnel in the Caledonia mine,
1,050 feet long, was completed in 92 days, or
at the rate of nearly 11½ feet per day; an ex-
tent of work which considering the length of
time occupied has never been excelled on the
Comstock.

Mining Legislation.

At almost every session of Congress it is con-
sidered the proper thing to have some little
legislation with respect to mining. Likewise
at every session of the State Legislatures laws
are framed which have an influence more or
less on the mining interests. Unfortunately,
however, the men who introduce these laws
do not know anything about the subject; and,
still more unfortunately, they think they do.
The miners themselves want to be left alone;
they have an abhorrence of lawyers, very natu-
rally, we may say, and do not wish any mea-
sures taken which will bring them in business
relations with the disciples of Blackstone. It
is well known that lawyers who enter upon
mining suits expect, and usually get, an un-
usually large fee. If we were to add together
all the sums paid annually for "legal ex-
penses" by our prominent miners, this amount
would astonish even the legal fraternity itself.

As long, however, as the expensive luxury of
employing lawyers is only incumbent on the
owners of rich mines, the common miner has
little to complain of. But when, as is proposed
by one bill now pending in Congress, every
miner in the land must patent his claim,
whether he wants to or not, the miners begin
to "get their backs up," and "want to know,
you know." It costs from \$250 to \$1,000 to
patent an ordinary claim. Very few claims
can be patented for \$250. The assistance of a
lawyer is required to accomplish the feat of
procuring a patent, and of course he will not
work for nothing. The law of May 10th, 1872,
specifies the details of making a location cor-
rectly, but only few take the trouble to comply
with all the requirements. This may seem
like a "thin" statement, but a lawyer of this
city, who has taken out a number of patents
under the law of 1872, informs us that not
more than one in twenty have complied with
the law sufficiently in detail to procure a
patent for their ground with facility. In many
cases the claims have had to be formally re-
located.

Now suppose this bill we refer to were to
pass, and everybody had to patent his claims.
It would take away a large proportion of the
money on the Pacific slope, to pay these bills
at the expiration of the year. Prospecting would
cease entirely, as very few could expend \$500
on a claim and patent it within one year. Wait
until a mine has proved that it is worth patent-
ing, before compelling its owner to patent it.
This is not the first attempt to enact a "com-
pulsory patent" law, and it is to be hoped that
it will be choked off, as were its predecessors.

In our own State the most absurd bill in-
troduced is that known as the "quicksilver bill," to
which we have several times alluded. It pro-
poses to regulate the price of quicksilver in
California at 35 cents per pound. The passage
of this bill would establish a dangerous prece-
dent, for the price of other articles of domes-
tic produce could also be regulated. It is con-
tended, however, that this bill is justified on
special grounds, because a few men have con-
trol of the quicksilver market. In that case,
however, it is based on false premises, for such
is not the fact. There was a quicksilver mono-
poly controlling the three producing mines
of the State; but these three mines are no longer
isolated in position. Many others have been
discovered and developed, and are now produc-
ing mines. They are not as yet equal to the
Almaden, Redington and New Idria mines,
but a few of them bid fair to be so. They are
owned by different parties, who sell their pro-
duct to whom they wish, and the present high
price is simply to be charged to increased con-
sumption and decreased production. If the
legislature can regulate the laws of supply
and demand to satisfy all parties, they may be
able to settle this quicksilver business, but bet-
ter means must be adopted than those propos-
ed. We notice with surprise that this bill has
been reported on favorably, by the committee
on Federal Relations. If passed, however, it
would soon be repealed as either unconstitutional
or inoperative.

Various bills are now pending at the legisla-
ture on the subject of stock gambling and tend-
ing to suppress it, but we very much doubt
whether any of them will ever amount to any-
thing. Those to prevent the salting of mines
would be of benefit if they were enforced, but
there are laws in existence against fraud, which
would cover these cases, yet they are seldom
brought to bear upon them. We give in an-
other column the bill introduced by Senator
Sargent, which will be of interest to our readers.

OAKLAND HARBOR.—It will be seen by refer-
ring to our list of "New Incorporations" in
another column, that a company has been or-
ganized for the purpose of improving the har-
bor of Oakland. It is probable that this com-
pany are taking up the matter only in case the
Government fails to grant the appropriation
asked for to improve the harbor. If the plans
of the Government engineers are carried out,
the appropriation of \$250,000 which is asked
for will not do more than half the work. The
new company will hardly commence operation
before the appropriation question is settled by
Congress.

HEAVY YIELD.—In two years and seven
months the Crown Point and Belcher mines,
on the Comstock lode, have produced 624,302
tons of ore, yielding \$35,041,823; or an average
of \$56.12 per ton. The Belcher yield was \$18-
272,965 from 284,327 tons—an average of \$65
per ton.

Chrome Steel.

This steel is an alloy of iron and chromium.
The latter metal has hitherto been used almost
exclusively in its chemical combinations for
paints, enamels, etc. Recent discoveries
enable the metallurgist to reduce it to its
metallic state and place at his command a
metal having most wonderful properties. It is
very hard, brittle, non-oxidizable and of a
silvery whiteness. When alloyed with iron, it
produces a homogeneous steel of a degree of
hardness depending upon the proportions of
ingredients and having very peculiar prop-
erties. This steel is made by the Chroms Steel
Company, of Brooklyn, N. Y.

This claims made for this steel by the man-
ufacturers are novel, and as the experience of
those who have used it would seem to confirm
all that is claimed for it, it certainly is a very
valuable substance and one particularly adapt-
ed to the wants of this coast, where so much
mining is carried on. The makers claim that
this steel can be used for any and all purposes
to which any other steel is applied; whether as
a machine shop tool, a rock drill or pick,
a heavy locomotive spring or a fine
edge tool; it will do at least 50 per cent. more
work in that capacity than the best brands of
carbon steel. The next advantage is that it is
perfectly uniform in quality in each grade.
This property has been the desideratum among
steel manufacturers, ever since steel was first
made. It is easy of accomplishment in this
case, as the substance is simply an alloy of
metals, the quality being regulated as nicely
as in the making of bronze, or bell metal, or
any other alloy. This fact enables the man-
ufacturers to make a variety of uniform grades
adapted to all purposes.

One grade called "Adamantine" when forged
into a tool and allowed to cool gradually is too
hard to be marked with a file and a tool can be
made with it, which when hardened can be
made made to drill through the hardest file.
Another grade called "Gun Steel" cannot be
hardened, but can be worked almost as easily
cold as wrought iron can when hot and has
great tenacity. There are other grades running
all the way between these two extremes. The
No. 3 (or "Universal grade" as it is called) is
for all kinds of machine shop tools, rock drills,
picks, etc. This grade possesses many prop-
erties distinctly and peculiarly belonging to
Chrome steel. The following is from a report
made upon this steel by the Navy Department
at Washington. "It can be worked at a white
heat, and cannot be injured by overheating;
that is, it can be welded on itself or to wrought
iron and worked in the same manner and at
the same degree of heat that wrought iron can,
and in every way the welds are as perfect and as
strong; no flux is needed in welding."

The steel used in the great St. Louis bridge
is Chrome steel, as no other could be found
which would stand the required strains. The
Chicago and Northwestern, Chicago, Rock
Island and Pacific, Burlington and Quincy and
Baltimore and Ohio Railroads use this steel
largely in their shops and their principal shops
in New York and Pennsylvania also use it. In
San Francisco it has been used in the principal
machine shops, including the Risdon Iron
Works, Union Iron Works, Fulton Foundry,
and Pacific Iron Works, and they express
themselves as well satisfied with the results.
It has also been tested at the C. P. R. R. shops
in Sacramento, where it gave equal satisfac-
tion.

It requires to be hardened and tempered at
a lower degree of heat than ordinary steel.
We saw this week a cold chisel heated to a
welding heat, then split or spread apart and
plunged into water and cooled. Then heated
to a welding heat again, hammered together
without a flux and brought to an edge in the
weld, ground and made a first-class cold chisel.
It shows the mark of having been sliced half
way up the handle. Dynamic tests of this
steel have been made at the West Point foundry
the highest strength of the 12 specimens
being 193,910 pounds; lowest strength 163,760;
average of all the specimens 179,980, or about
180,000 pounds to the square inch, which is
one-third more than Percy, in his "Metallurgy
of Iron and Steel," gives as the highest tensile
strength attained by steel.

It is said that its greatest excellence appears
when applied to rock work, such as drills,
picks, etc., and we have been shown many tes-
timonials substantiating these claims. The
agent is now about to introduce this steel into
the prominent mines on the coast.

COLD.—On the night of the 23d inst., the
thermometer at Eureka, Nevada, indicated 19
degrees below zero. The furnaces of the
Richmond Consolidated Company have all
shut down for want of charcoal. The storms
have impeded travel, so that coal-haulers have
found it impossible to deliver coal.

THE PAUL PROCESS.—The Electric mining
company, a San Francisco Incorporation, are
now building a mill at Enterprise, Butte
county, California, to work their ores by Paul's
process of dry reduction and dry amalgama-
tion.

ALMADEN.—At the Almaden quicksilver
mine prospecting is being actively pushed
ahead to discover new traces of ore. Over 22
miles of tunnelling and shafting have been run
down and through the hill on which the mine
is situated.

Artificial Rain.

The desirability of having supplies of rain
at command has of late years attracted the at-
tention of scientific men and inventors. We
say, and inventors, because the terms are by no
means interchangeable and should not be con-
founded. As an example of the former class
may be cited an aspiring genius, who, not sat-
isfied with succeeding in producing artificial
clouds by means of smokes from brush or straw
fires, was led by certain delicate meteorological
relations existing between smoke and real
clouds to attempt the production of the latter,
indirectly, through this former. Of course he
succeeded—in the newspaper item.

Ever since the application of explosives to
the art of war it has been noticed that, in
nearly every instance, a great battle is succeed-
ed by copious rain showers; this the poets call
Heaven's weeping over earth's carnage. Not
very long ago an observing person, upon whom
the fact, already demonstrated, had evidently
made an impression, applied to the War De-
partment to grant him this use of a park of
artillery for complete and satisfactory trial on
a large scale, the experiment to be made some-
where on the plains. We have not yet learned
the result of the application, but presume that
the government is content with the amount of
powder now burnt in missing Indians. Where
there is sufficient moisture in the air, the con-
cussion of heavy firing would certainly suffice
to bring it down. There it might be expected
to rain, "free gratis, for nothing." But where
there are no clouds, any amount of artillery
practice would fail to make them, and the plan
would fail in the only case in which it could
possibly be of the slightest use.

If the scheme were practicable, what an en-
joyable state of things would ensue. Imagine
a grand picnic of the farmers of a certain
county, or rain district, to decide whether or
no they wanted rain; and if so, how much.
We should have suits for damages from excit-
able tea-drinkers and nervous chickens without
end. The price of ordnance would rise so
high that no one could afford to go to war.
Glass and glaziers' materials would be in re-
quest, and the piano and flute at a ruinous dis-
count. Finally, there would be no danger of
misunderstanding the epithet "loud," as ap-
plied to American society.

But it often happens that where a supply of
water is at hand, from rivers, wells or reservoirs,
a judicious sprinkling will be much more effec-
tive than irregular soaking. In England, where
land is cultivated so carefully and minutely,
that first expense is not of so much conse-
quence, the plan of Mr. Isaac Brown is being
adopted in many localities. His process con-
sists in forcing water through small perforations
in lead pipes, by means of a powerful force
pump. The lead pipes are laid down 16 yards
apart. A 12-horse power engine works a force
pump; with a pressure of 60 or 70 lbs. per
square inch, or a head of 120 or more feet, the
engine maintains a shower upon a plot of about
an acre and a half, applying 10 tons of water
in 15 minutes. Plot after plot is watered in
rotation, the work taking place principally in
the night. There is no probability that this
system will be found of practical use in farm-
ing on a large scale; but in private grounds or
city parks having a good head of water—the
engine is unnecessary—the plan might be
found of use.

Ventilating Mines.

We witnessed this week the working of a newly
invented machine for the ventilation and cool-
ing of hot and deep mines. It is the invention
of Capt. W. Williams M. E. of this city and is
worthy of notice by the mining community.
It can be placed at any required depth in a
mine and at the same time receive its supply
of fresh air from the surface. Its principal
feature is that the air is cooled by passing
through the machine, furnishing fresh moist air
instead of dry as is the case with most ma-
chines of the kind. No grease or oil is used
about the machine, thus preserving the air in
its pure state. Without going into details of
construction, it may be stated that the machine
is simply an elongated box, inside of which a
large piston works, taking in and forcing out air
at both its up and down stroke. The bottom
of the box is filled with water, and the air on
entering circulates about the water, and is
moved down on it in such a way as to cool the
air before it passes out into the mine. The
power required to run the machine is very lit-
tle, and the mechanism is simple. The box is
of wood, as is the piston, and no lubrication is
required. The smallest machine with a six-
foot stroke will deliver 3,732,480 cubic inches
of cool condensed air into the interior of the
mine in one minute. In consequence of the
machine swimming in water, a small amount
of power will work it. The inventor is a prac-
tical mining engineer, and understands the
injury to health and strength of miners, re-
sulting from hot and impure air, as well as the
great economy of thorough ventilation in
mines. A single-acting machine of this charac-
ter has been long used in the mines in England.
Mr. Williams' improvement makes it double-
acting. The whole machine is of wood, with
the exception of the piston rod. The valves are
made of Isather and iron, and quite large. It
can be attached to the pump rod in a mine, and
worked very economically. One of these ma-
chines can be seen in operation at No. 13
Drumm street, in this city.

Fish Culture.

Within the past few years considerable attention has been paid to the culture of fish; and to the credit of California, be it said, that a number of persons are now engaged in raising trout and other fish in this State. The efforts of the California Acclimatizing Society in this direction are much to be commended, since they have not only set a good example, but have attained excellent practical results, and have been enabled to furnish eggs for hatching to individuals. There are thousands of places in California where trout could be raised with very little trouble, if a few dollars and a little labor were expended in fitting up ponds, etc. In this connection it may be remarked, that it is rather surprising that the facilities for raising fish in many places are so entirely disregarded. Many farmers who live on bacon and beans, and occasionally a little fresh meat, and from their distance from the seaboard, denied the use of fresh fish—a good and wholesome food. By the expenditure of a small amount of money and a little time, they could have an abundant supply of trout on their tables.

The writer remembers, on the occasion of an extended horseback trip, as far south as Santa Barbara from this city, stopping at a sheep ranch, on the borders of San Luis Obispo and Santa Barbara counties, where there was a fine stream of water within thirty yards of the house. He asked the people on the ranch whether there were any fish there. One man, who had lived there for two years, remembered

bottom. The ends are 5 inches high. The water is made to flow in under the upper end and out over the lower end, as the arrow indicate. By this means all the eggs are thoroughly covered by constantly changing water, and less sediment is deposited on the eggs. The end of each box near the head of the trough is made higher than the lower end to cause the water to flow in the manner indicated. The trough is 16 feet long, 8 inches deep, and 18 inches wide. The longitudinal section is made on a scale of $\frac{1}{2}$ inch to the foot.

Seth Green, the great fish culturist, used a trough somewhat similar, but he led the water in and out of each box by means of a pipe which caused a steady flow only near the mouth of the pipe. In Mr. Williamson's box the flow is equal on all parts, and the eggs have plenty of fresh water. The upper current runs up through all the eggs; and the eggs being on top the sediment does not collect on them. There being so much more surface to place eggs in the same relative space, considerable room is saved in the hatching house. The California Acclimatizing Society are beginning to use these boxes at their hatching house at Point Pedro, in San Mateo County. The device is not patented.

The University of California.

On Washington's Birthday the Regents of the University and invited guests made a visit to the State University at Berkeley and inspected the grounds and buildings. Lunch was served, and speeches were made by several

Agricultural Chemistry.

What is agricultural chemistry, and what is its practical use? These are questions naturally suggested to the minds of thoughtful men, and frequently uttered. To describe the nature of agricultural chemistry with any degree of accuracy would necessitate writing a book which should include all of its salient points, a course which would appear hardly necessary, in view of the mass of printed matter already issued upon the subject.

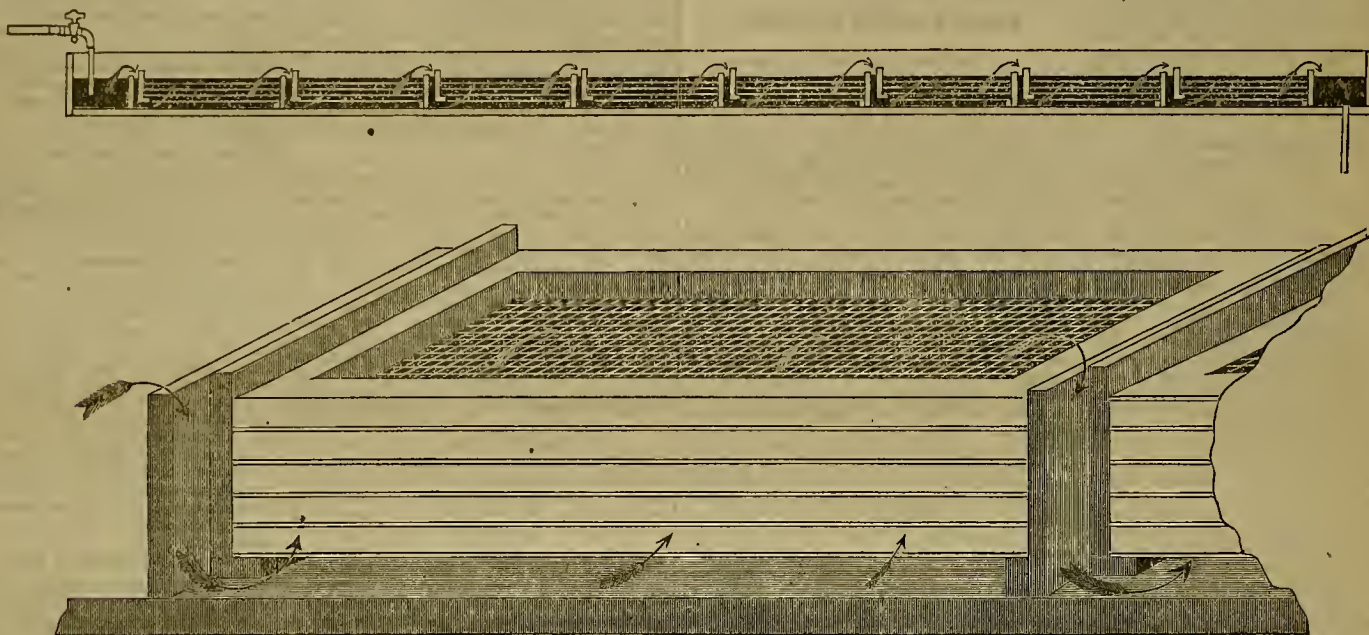
It is certainly true that we have had altogether too much of the vague, unsatisfactory, sensational kind of talk which is prevalent. Agricultural chemistry is made a quasi figure-head by many writers, who confound verbiage with eloquence, and ranting with progressiveness. And it is noticeable that those who are loudest in praise of what is called scientific farming, are usually those who least appreciate the meaning of the term.

While we admit the impossibility of giving a comprehensive description, it may be well to consider briefly the more prominent features of the science. Agricultural chemistry is one of the very youngest of the sciences. Theoretical or abstract chemistry is comparatively new, as it is now understood, and is making such rapid strides forward that the text books of one year must be discarded the next, if one would keep up with the steady march. Some thirty or forty years ago, only, the distinction was accepted between theoretical and technical chemistry. The latter expression was intended to cover all cases where the general science

a single instance, to show that science here is truly practical.

Not many years ago, observers engaged in the geological surveys of the different States, noticed that all along the Atlantic seaboard, from New Jersey to Florida, there existed a great belt of phosphatic deposits. These were petrified, silicified and fossil remains of vast beds of bones and shells, of animals extinct and now existing; the deposits were certainly very curious and interesting to scientific men, but of no particular use, that any one could see. The fossils were entirely distinct from marl, which is phosphatic remains partially decomposed and mellow, and which had previously been applied with good results to exhausted lands. But the raw, stony looking masses of sharks' teeth, whales' vertebrae, mollusks' shells, what were they good for, except to be put away in geological cabinets? And a small portion would fill all the museums of the world. It was owing to the recommendation of the State Geologist of New Jersey, Professor Cook, that a fair trial of the unpromising material was made. Without the suggestion the treasure might have been spurned by the feet of men for centuries.

And now for the result. The lands of older States when first settled were in a virgin condition, and yielded to the hardy immigrants wonderful returns, of which we have traditions. After centuries of constant cropping, these fields, just as rich originally as the black prairie loam of the Mississippi Valley or the wheat lands of our own California, become worn out, and could produce only a tithe of their pristine crops. The particular substance most needed and most wanting, was a soluble



IMPROVED DOUBLE RIFFLE HATCHING BOX.

having seen a fish caught in the hrush dam during a freshet in the winter, but nobody had ever tried to catch any others. These men lived entirely on sheep meat, bread and onions, with occasionally potatoes. Beef, perhaps, once a month, as they were thirty-five or forty miles from a butcher shop. Being supplied with tackle brought from the city, on the evening of his arrival, the writer went down to the creek; and, before making a cast, saw several fine salmon trout in the pond. It took but a few moments to land a fine mess—enough for the whole party—two of them weighing nearly three pounds. With this delicious food close at hand, the rancheros had lived on mutton from one year's end to the other, without taking the trouble to even see whether the creek contained any fish or not. This, perhaps, is an isolated case, but facilities equally as good, are neglected in other localities. After once starting ponds, they are of little trouble, and produce an abundant return for the time and money expended.

To those persons engaged in fish culture on a large scale, an improvement in hatching boxes, recently perfected by Mr. John Williamson, Secretary of the California Acclimatizing Society, will be of interest. We give an engraving of this box which possesses some peculiar features. Mr. Williamson calls it the Improved double riffle hatching box. Its special features can easily be seen by reference to the cuts. The upper figure shows a trough with light hatching boxes, and the lower figure is a section of the box, one-quarter of full size.

The usual way of arranging these hatching boxes, is to place the eggs on the bottom and allow the water to flow over them. A box the same size as the one represented, will then hold 20,000 eggs. Mr. Williamson puts in the box, five trays, 19 $\frac{1}{2}$ inches long and 18 inches wide with a frame $\frac{1}{4}$ of an inch thick and one inch wide, with a wire bottom, having eight squares to the inch. By this means he has space to hatch 120,000 eggs, where he only had before, in the same box, space to hatch 20,000 eggs. This is of great importance in hatching houses where room is desirable. The hatching box holding the trays, is made of $\frac{1}{2}$ inch ends, and one inch

gentlemen, after which the guests went over the buildings and grounds while the Regente and the Joint Legislative Committee held a conference with respect to the affairs of the University. The committee consists of Senators Leine, Keyes and Evans and Assemblymen Ammerman, Canfield, Turner, Friederich and Myers. They have requested full written information from the officers of the University on the following points in conformance with the resolution of the Legislature:

First—What instruction has been given in agriculture and the mechanic arts, in the University of California; whether the same has been defective or not, and if defective, wherein such defects consist, and what is the cause, as well as the remedy for such defect. Second—What has been the management by the Regents of the University of California of the 150,000 acres of agricultural lands donated by the Congress of the United States to the State of California, and by the State to the University; whether the same has been defective or not, and if defective, wherein such defect has consisted, and what is the cause, as well as the remedy, for such defect. Third—Whether or not the Regents have properly administered the funds of the University which have been entrusted to them, and if not, in what particulars. Fourth—Also upon any other matters relating to the University upon which, in the opinion of the Committee, information may be of use to the Legislature or the public.

The Committee have made an examination of the buildings and have expressed their determination to look thoroughly into the subjects referred to above. By this means the public ought to be able to know all about the University and its management, a subject in which they are just now much interested. The farming community in particular are anxious to learn what facilities are to be afforded to learn the science of agriculture and what steps are to be taken to give the students instruction in its practical departments. As stated in a former issue, this hitherto apparently neglected Department of the University should be placed on its proper footing. Its importance should give it all the special legislation necessary to secure this result.

is applied to common things. But as the field broadened and evenness opened out, a still more minute subdivision became necessary. One of the new branches was termed agricultural chemistry, and its real founder and chief exemplar was Baron Liebig. In his studies on the nature and composition of organic bodies, he became interested in the influence of soil upon growth, in a chemical sense, and was led to trace roughly, at first, their minute relations.

It was found that the constituents of vegetable compounds varied much more widely than had been supposed. The proportions of water, fibrin, gluten, alkaline salts, phosphates, etc., were discovered to be entirely different in various plants, and sometimes in the same plant when subjected to dissimilar conditions. Thus the reason why certain plants grew best on certain soils became evident on comparing the analyses of each. True, there are other influences besides chemical combination, which must be considered, such as the capability of retaining moisture and heat, or the contrary, which may be called the mechanical agencies. But, other things being equal, a given plant would require a soil made up of peculiar elements, existing within a fixed limit of quantity; and after long experience it was found practicable for a scientist, who might be really ignorant of actual farming, to pronounce judgment upon soils submitted to him for examination. If the science had stopped here, its benefits would have been large and apparent.

But the next great step was the successful attempt to reproduce good land in poor, by substituting one element for another, by adding or neutralizing, until the composition of a normal soil for the growth of any plant should be approximated. This is done by using fertilizers. These fertilizers are either direct in their action, that is, they enter immediately into the growth of the plant, or they are indirect agents, being employed to counteract or remove injurious elements. Thus many new fertilizers have been added to the list; and many artificial ones, which are now in common use, were invented. Well, the reader may ask, wouldn't we use manures without agricultural chemistry; what has it to do with the question? Much. And to prove the assertion we will cite

alkaline phosphate. And this is just what can be taken from the bone fossils.

So to-day, especially in South Carolina, the whole region within the great belt is being systematically mined for the valuable matter. Cropping out at the surface in spots, and lying beneath the surface only a few feet, in most places, the extraction is simple enough. Trenches are dug, and as soon as cleared are moved sideways, the fresh refuse being thrown into the useless hole. Movable wooden railways connect the diggings with central depots, where, by ingenious machines and processes, the raw material is sorted and prepared for market. Even along the shores of the famed Sea-land cotton strips, and in the beds of rivers, the search and extraction is constantly going on. Thus far the application of this new fertilizer to the old lands has proved highly beneficial, and without it, or some equivalent substitute, many farms would now be considered worthless.

We have given but a single example; the choice is almost unlimited.

RAIN.—The rainfall in this State thus far this season has been very large. Even in San Diego county, where the average rainfall is very small, they have already had the almost unprecedented quantity of 14 $\frac{1}{2}$ inches. Santa Barbara has had 13.11 inches this season and the total fall of last year was only 10.45. In this city the Signal Service office reports the rainfall at 18.97 inches, and Mr. Tennant reports it at 20.25. Over in Contra Costa they have had about 15 $\frac{1}{2}$ inches. San José has had about half as much as we have had in this city. Monterey and Santa Cruz counties have had about as much as San Francisco. The average rainfall of 22 seasons has been, as measured at Sacramento, 28.5 inches.

GLINES' SLATE-ROOFING, PAINT AND CEMENT.—Every person designing using this paint, or wishing further information about it, should see the advertisement in the PRESS. One hundred and twenty-five packages are now on the way to this coast; so we are informed by the patentees.

Trinity County Mines.

We collate the following items from the columns of the *Trinity Journal*:

"Red Hill."

This mining locality, just below Junction City, on the opposite side of the river, has long been known as one of the richest sections of Trinity county; and has always yielded largely for the amount of work done. For several years past, however, Red Hill has suffered with the rest of the county from a scarcity of water. We are told that the present season the mines located there are better rigged than ever before, and that water is plenty. During all of last winter, the miners on Red Hill did not get a whole day's run at any one time, whereas they are running continually the present season. With the new mining apparatus, they are also in condition to do more than double the work, under the same circumstances, and at less expense than in previous years. When we consider that the claims there have always been very profitable, we may reasonably expect that the yield this season will be enormous.

"Woodbury's Operations."

The mining investments and ditching projects of Mr. Isaac Woodbury, on Hay Fork, form the largest undertaking ever entered upon by a single individual in the mining history of Trinity county. In the near future, as soon as a sufficient statement of particulars can be obtained, we intend to furnish our readers with a full account of this enterprise. Charles Whitlock, who works for Mr. Woodbury, was in town this week. From him we learn that both Little Giants are at work there, and that two claims are being worked; one in Bridge gulch, the other in the flat below, where Jake Vodge formerly worked. A deep channel has been found in the back part of the flat, and the prospects are that the enterprise will be crowned with success. Mr. Woodbury has undertaken a great work, and certainly deserves a handsome reward.

To be a Model Claim.

Atkins & Lowden have taken possession of the Frey mine, on Grass Valley creek, under an arrangement lately entered into with the Frey Brothers. The new proprietors are now engaged in fitting this claim up with all the latest and best known machinery and rigging for hydraulic mining, including iron-pipe, under-currents, patent nozzles, etc. This claim has heretofore been known as a paying one, notwithstanding it had been worked under disadvantages and ground-sluiced in the simplest manner. There is every opportunity here for hydraulic mining as carried on in the mines of Nevada, Placer and other more advanced gravel-mining counties—plenty of chance for hydraulic pressure and ample dumping ground, with a bank that can be easily out and washed, and which prospects rich from the surface to the bed-rock. Capt. Geo. H. Atkins tells us that it is the intention of the new proprietors to make this a model hydraulic mine. He has had great experience in this class of mining, is thoroughly practical, and above all means business. The iron for the hydraulic pipe will be on the ground this week and the work of fitting up will be pushed with the utmost speed to completion. When thoroughly rigged this will, as Capt. Atkins says, be a model mine, and one which our miners, who are not yet thoroughly acquainted with the new methods, will do well to visit and examine. It will be the mining center of attraction when in running order.

New Mining Section.

Last Fall, we copied an item from the Lake county *Bee* regarding a party of prospectors who had come from that county and discovered good mines some place in the mountains near the line between Trinity and Mendocino counties. We now learn that there has been some thirty men engaged in mining on the South Fork, in this county, near where the Hettenshaw trail crosses that stream, and that they had found good prospects. Rich mining ground was known to exist in that region in early days, but the fear of Indian troubles until recently kept miners from going there. Now that the Indians are no longer troublesome and prospecting can be done without danger from that source, it is probable that that portion of Trinity will be tested, and it is likely to prove as rich as any of the older settled mining camps. The South Fork is a large stream, and can be relied on for a full supply of water the entire year. It is probable that further discoveries will be made in that section during the coming summer.

Weaver Basin.

We plead guilty to the charge of not having paid as much attention to the mines here at home, in Weaver Basin, as their extent and richness merit. Short days, in which to do a large amount of work, have not giving us time enough to go about among our miners as much as we would like to. We promise, however, to take a day or two, and that before long, in which to visit the principal claims in the Basin, and write them up, so that all who wish to know what is being done here may be furnished with the desired information. The well-known spirit of accommodation existing among our miners will undoubtedly place us in possession of a number of interesting facts regarding the claims here, and a column or two on the mines in Weaver Basin, we are certain, will not fail to interest the general reader.

An Important Investment.

Messrs. D. W. George and O. M. Loveridge

returned from San Francisco on Monday last, where they had been to make preliminary arrangements for an extensive mining investment in this county. They brought the coin with them, and the purchase of the property they desire has been concluded. On Thursday they paid to John Arn the handsome sum of \$13,260 for his Rush Creek water-right and other property—having previously paid him \$1,000; making a total for this property of \$14,260. These parties then sold the ranches, houses, etc., to Jacob Paulsen for the sum of \$4,500, they having no use for any but the mining property and water.

Arrangements have also been made by Loveridge & George for the purchase of the Dr. Ware property, everything being satisfactorily agreed, the papers made out and intended to be signed to-day, (Friday.) It is the intention of the purchasers to commence operations immediately. The West Weaver water will be taken on Oregon Gulch Mountain, without any necessary delay, and in time to do some work before the present season ends. We were informed of the concluding arrangements of this enterprise too late for an extended article this week, but will endeavor to gather additional information as to the future intentions of the projectors and give them to our readers as early a day as possible.

Nozzles.

Trotter & Smiley, at Douglass City, have been experimenting to some extent with the different sized nozzles on their Giant. They have an 18-inch pipe, with 115 feet pressure. Running through a 5-inch nozzle the reservoir is emptied in 2 hours; 6-inch nozzle, in 1 hour and 20 minutes; 7-inch, in 33 minutes; and 8-inch, in less than 20 minutes.

Sargent's Mineral Land Bills.

As there has been considerable comment on the various mining bills now pending in Congress we have endeavored to keep track of them all and publish them in full. We have given Ward's obnoxious bill in full in a former issue. The Senate, on the 6th inst., took up and passed the bill introduced by Mr. Sargent on the first day of the session, and reported from the Mining Committee, with amendments, a few weeks ago as follows:

A Bill, supplemental to the act entitled "An act to promote the development of the mining resources of the United States," approved May 10, 1872.

Be it enacted, etc., That, where applications for patents for mining claims have been filed in the proper district land office, and legal notice thereof given, without the appearance of an adverse claimant, and in which cases no further proceedings have been had for the purpose of perfecting title, each applicant shall make final proof and payment on said claims within one year from the date of the passage of this act; and, in case of like applications for patents hereafter filed, the applicants shall, in the absence of an adverse claim during the notice, make said final proof and payment within one year from the date of filing such application, in default of which the proceedings for patents so had by such applicants shall be considered void and without effect.

Section 2. That all affidavits required to be made under this act, the act to which this is supplemental, or the act to which said act is amendatory, may be verified before any officer authorized to administer oaths, and all testimony and proofs may be taken before any such officer, and, when duly certified by the officer taking the same, shall have the same force and effect as if taken before the Register and Receiver of the district land office; provided, that when such affidavits or proofs are taken at any place other than within the land district, it shall be by the clerk of any court of record in the United States.

The other bill introduced by Mr. Sargent has been materially modified, and the original bill was to get it out of the way, indefinitely postponed on Mr. Sargent's motion. The following is the full text of the

Bill as Amended.

A bill relating to placer mining lands in the State of California: Be it enacted by the Senate and House of Representatives of the United States in Congress assembled, That public lands in the State of California, other than those containing veins or lodes of quartz or other rock in place, bearing gold, silver, cinnabar, lead, tin, copper, or other valuable mineral, or lands containing coal, shall not be excluded as mineral from preemption or homestead entry unless it shall be shown that bona fide mining claim exist thereon, or that the land is necessary for outlet or other mining easements; and the price of both agricultural and placer mineral lands, outside of the limits of railroad grants, shall be one dollar and twenty-five cents per acre: Provided, That nothing herein contained shall be construed to change any presumption now existing, either by law or Department regulations, that lands within railroad-grants are mineral in character.

Sec. 2. That where two or more settlers have improvements on the same legal subdivision, whether agricultural or placer mining, or both, it shall be lawful for such settlers to make joint entry of their lands at the local land office, or for either of said settlers to enter into a contract with his co-settlers to convey to them their portion of said land after a patent is issued to him, and, after making such contract, to file an application for such land, and prove up and pay for such land, in the same manner and to the same effect as is provided by law for agricultural settlers upon the same

legal subdivision: Provided, That proof of occupation and improvement under mining rules of the portion of said land claimed as a mining claim may be made in said proceeding by the applicant as now provided by law; and notice of said application, where a patent of a mining claim is sought, shall be given and have the same effect as is now provided in cases of application for mining claims.

Sec. 3. That in cases where placer mining claims are duly located under mining laws, it shall be lawful for the parties applying for a patent for the same to make their application to purchase lands to the extent of the smallest legal subdivisions containing the said claims when such application does not conflict with the rights of other parties, and patent shall issue accordingly: Provided, That nothing herein contained shall authorize any person or company to locate more than one hundred and sixty acres as a mining claim.

Sec. 4. That all affidavits and proofs required by law to be made before the local land-officers in mining or pre-emption cases, may be taken before any officer authorized to administer oaths, and, when filed with the Register and the Receiver, shall have the same effect as if taken before those officers. Effect shall be given to this Act by regulations to be prescribed by the Commissioner of the General Land Office: Provided, That where such affidavit or proofs are taken at any place other than within the land district, it shall be by the Clerk of any Court of Record in the United States.

The special correspondent of the *Bulletin* at Washington, who always writes sensible letters, in speaking of the House Committee on Mines, says that the committee seems to think that the mining laws need some general revision (though most of its members know no more of mining than they do of astronomy) and it is hard to bring any single practical question before them to a vote upon its individual merits. Such is the gossip that floats through the closed doors of the committee room, and it undoubtedly has a large basis of truth. This opinion is generally concurred in by the miners of the Pacific coast, and there is probably more truth than poetry in it.

THE NEW ALMADEN MINE.—A correspondent of the *Alta* writing from San José gives the following as the product of the Almaden mine for 1873: January, 1,325 flasks; February, 1,232 flasks; March, 875 flasks; April, 1,000 flasks; May, 1,100 flasks; June, 910 flasks; July, 800 flasks; August, 735 flasks; September, 615 flasks; October, 700 flasks; November, 750 flasks; December, 1,000 flasks. Total, 11,042 flasks. Percentage yield, 4.87. This statement differs considerably from those previously published. In writing something on the subject several weeks since, we took occasion to call at the office of the Almaden mine to ask the yield for the year. They stated that they had given the correct figures to the *Commercial Herald* and that that paper had that week published them correctly. The yield for the year was given in the *Herald* at 12,000 flasks and the statement given above only places it at 11,042 flasks. As this in detail it appears to be more correct, though it seems strange that the people at the office of the mine in this city should make a mistake of 1,000 flasks in a total yield of only 11,000 or 12,000 flasks. The mine makes even a worse showing for the year than appeared at first. The smallest amount ever before produced in one year since 1850 was 14,000 flasks, which occurred in 1870.

MINING ACCIDENT.—About two o'clock on the afternoon of the 17th inst., at the 1,200-foot level of the Belcher mine, three men were badly injured by the explosion of a blast. It happened as follows: It is the usual practice in the mine to drill a half dozen holes at a time, in which cartridges of Giant powder are inserted without tamping; they are then exploded by means of wires from an electrical battery. The morning shift touched off a blast before they were relieved, but did not notice that one of the cartridges had not been exploded. The 11 o'clock shift, thinking that the drill hole had not been finished, started to sink it deeper, when the cartridge exploded. Frank Allen was badly hurt, cut and punctured all over the front portion of his body with small fragments of rock; Harry Lindey had his nose broken, eyes closed up and chest bruised; Jerry McCarty was cut with a piece of rock in the pit of his stomach. No one is blamed for the occurrence.

THE SOUTHERN MINES.—Private letters from the southern coast mines tell a sad state of exciting affairs. The mines in Lower California and Holcome Valley are panning out very poorly, and hundreds who expected to realize handsome fortunes have been doomed to disappointment, and are now in very destitute circumstances. Wages are very low, not averaging more than \$1 per day, and work is scarce at that. Rain is very prevalent at this season, and consequently adds to the distress. All parties desirous to emigrate for mining pursuits, are cautioned against seeking gold in Lower California, at least until better prospects are offered.—*Evening Post*.

THE KIMBALL MANUFACTURING CO., which has made such an enviable reputation in the manufacture of carriages, has taken up the business of furniture manufacture also. They will make all the furniture for Sharon's new hotel—some 800 sets—of which will be made of our native and coast woods. The company will probably employ some 300 hands this season.

Klamath County Mines.

A correspondent of the *Call*, writing from Jacksonville, Oregon, says: Owing to my anxiety to have my letter from Sawyer's Bar mailed in time, I was compelled to omit many important items which were furnished me through the kindness of W. A. Frissh, Superintendent of the Black Bear Quartz Mining Company, as well as the very interesting process of separating the gold from the sulphurets. It is a new plan which originated at Grass Valley, and is called the chlorine system. The works are in charge of Mr. James Goold. The Forks of the Salmon is another place of interest, where a Mr. Bennet is engaged in bringing water on the large bars, which are numerous in that locality, and proved to be rich; the enterprise will cost \$25,000. Another, which will cost as much, if not more, is occupying the attention of Mr. McBrown, at Orleans Bar, so that the miners on Salmon river, as well as the Klamath, look forward to lively times this Spring. The Klamath river is a considerable stream, running from Klamath lake, in the Modoc country, to the sea. It is fed by the Salmon and Scott rivers, with many others, all rich in gold. I have followed its course about 200 miles, and found mining camps wherever it is possible to work—some on the side of the mountain, others on the edge of the river, working as best they could with a wing dam, but failing to get at the bottom of the river, where all persons who are acquainted with the river believe there are immense riches. In order to properly understand the

Difficulty of Working

The mines along the river, it is necessary to bear in mind that the hills rise almost perpendicularly from the river, sometimes to the height of a mountain; and so steep as to make travel along the trail very dangerous. The leading enterprise is "The Happy Camp" claim, owned by San Francisco capitalists. Then there is the "Bunker Hill," which was organized by Samuel Ambrose, and the "Muck-a-Muck," both belonging to the Northern Hydraulic Company, composed principally of San Francisco men. Twenty-five thousand dollars have been expended on the "Bunker Hill," which is now fairly opened, and working in the channel with splendid pay. The claims are all held by patent from the United States under the new law, and are from 150 to 200 acres "in extent." Another claim, owned by Peirce Bros., San Francisco, is paying well. The hydraulic pipe used by all the claims is eleven-inch, known as the "Little Giant," and is working night and day. The most extraordinary kind of mining that I have witnessed since the days I mined myself, is on what they call the Klamath quartz claims, two of the richest being on Indian creek—one thirteen miles and the other four miles north of this place. The former is owned by James Camp & Co., and consists of forty-four acres; is immensely rich, and awaits on a late occasion, in one clean-up obtained a

Full Peck of Gold.

This is called Cassick Hill claim, and is composed of bed-rock and quartz so decomposed as to be worked by hydraulic pipe on a face 70 feet high. Shafts have been sunk in different parts of the survey with equally satisfactory results. Another claim, owned by the same company, but known as the Peterson claim, has been working several years and continues rich. There is no doubt but that the decomposed quartz is what the gold is in, and particles are carried away containing gold sufficient to build a first-class crushing mill. Many other claims in this locality are spoken of as being rich, but they are gravel and worked to advantage by the great water power used. Quartz mining seems not to be understood in this particular locality, as the most primitive means are adopted for obtaining the gold; but it is hoped that the successful investment of capital in this place will be the means of attracting some of our mining capitalists to the advantages of developing the ledge showing such rich prospects in our northern mountains. The town of Happy Camp has been named "Henly," and contains a first-class hotel, kept by M. Cudihy; also many stores.

Scott's Bar

Is situated on Scott's river, a few miles above Klamath. The town itself is undetermined and standing entirely on timber. Many of the houses look as if a "shake" would be dangerous. Nevertheless the people are happy and contented, and nearly all have families. The school boasts of sixty-five children, whose behavior and advancement would compare favorably with those in other part of the State. Quartz mining is in the same primitive state as in Happy Camp, but the rock is harder, although yet equally as rich, one proprietor having averaged for the last few years \$4,000 per year clear—out of one bunch of quartz 500 pounds weight, obtaining \$8,000—with no other way of working than ground-sluicing by a pipe, and, where quartz would show gold, to pound it out with hammers. I have myself, without trouble, picked up specimens that have been washed into the river. There are many other places whose prospects are bright, and where water is only required to develop them; and, to judge by the amount of snow at present covering the mountains, the chances are in favor of the miners obtaining all they need.

A NEW MAP of the Oomstock Lode is being made by T. D. Parkinson, of Virginia City.

Belmont.

Since our return from Belmont we have been frequently asked our opinion of Belmont and its future prospects.

We can only say that, individually, it is our firm and conscientious belief that the mines of Belmont are second to none in Eastern Nevada for richness and extent; and that the people of the district are perfectly satisfied with the outlook. We have not space for a detailed account of mining matters at Belmont; and must content ourselves with stating that all the principal mines which are being worked, viz.: those of the Belmont, El Dorado South, and Monitor Companies are all looking well, and give promise of a bright future, and that a larger amount of ore is being extracted from the two first named than ever before in their history. The last named has finished the most complete hoisting works in Eastern Nevada, and will shortly be giving a good account of itself by its production of bullion.

In addition to these mines, there are the El Dorado North, Belmont North, and Quintero; all three of which are being energetically and earnestly prospected, and which all give promise of developing good mines, being situated directly on the main lode, and being old locations, possessing almost "virgin ground."

The Quintero is in the hands of a number of prominent San Francisco capitalists; and has a paid-up working capital of \$10,000, which is a sufficient evidence that it is no catch-penny wildcat.—*Reville.*

MINERS BLINDED.—The miners who have been working the Utah mine are all nearly blind, and have been obliged to stop work on account of a poisonous gas or steam now coming in at the end of the west drift. We are not informed as to the nature of the poison, but presume it is either arsenic or copper. Two miners say that it is in the water and reaches them through the steam rising from the water. It seems to affect their heads. Their faces are swollen to such a degree as to almost close their eyes, and at the same time their vision is rendered dim. It is said the water spurts into the drifts in scores of places with the force of streams thrown from the nozzle of a hydraulic pipe. All that can now be done is to wait till this water is drained off. We are informed that the miners were poisoned in the same manner a few years ago in a tunnel in the Savage mine, and also that the same thing occurred in the Yellow Jacket. Although the miners say that the poison is in the water, it may be that it is in a gas which is forced out of the rock with the water.—*Territorial Enterprise.*

MINES ON GOAT ISLAND.—A Washington special says: "A very singular petition has been presented in the Senate by M. C. Sprague, and referred. It was signed by E. C. Curtis, Mrs. Behrs, A. Lockwood, and Hattis J. French. They pray for permission to excavate to the depth of twenty feet, more or less, on Goat Island, in San Francisco bay, belonging to the Government, for the purpose of making mineralogical and geological investigations, and—to use the language of memorialists—to remove therefrom some minerals supposed to be there deposited, of which we possess a description, to do this without molestation or outside influence, on condition that the earth therefrom removed shall all be again replaced. The island will be left as found, and no damage be really committed. Mr. Lockwood is an attorney at law in this city, but the names of the other two petitioners do not appear in the Washington Directory."

In extracting the saccharine juice from the beets, the Germans use centrifugals, cold maceration and diffusion, the latter most largely, while in France few of these improved processes are employed. Various other points may be noticed in which the Germans use better methods, the result being a larger yield of sugar of first run. The three per cent. of superiority of the German sugar manufacturers over the French is summed up as follows:—Superior quality of German beets, 1.50 per cent.; preservation of beets, 0.40 per cent.; extraction of juice, 0.25; washing the soums, 0.10; black washwaters, care on various points, 0.25; superiority of German sugar in quality, 0.50; total 3.00 per cent.

EUREKA BULLION.—During the month of January, 1,750,000 pounds of bullion were shipped from Eureka, Nevada, and 940,000 pounds remained on hand on the 1st instant. The *Sentinel* says the Richmond shipped 760,000 pounds of bullion, and have about 400,000 pounds on hand. The K. K. shipped 166,673; on hand, 200,000 pounds. Eureka Consolidated shipped 724,000 pounds; on hand, 220,000 pounds. Ruby Con. (17 days) shipped 100,000 pounds; on hand, 120,000 pounds.

SHIPPING BARLEY EAST.—Over one hundred car-loads of barley have been shipped overland for the Milwaukee, Wis., Brewery. This purchase is an experiment, but it is believed that the barley can be transported to Milwaukee at less cost than it could be obtained there of the same quality. The people of this State are hopeful that the experiment will prove successful.

The last two weeks' working at the Bald Mountain mine, Sierra county, yielded \$15,000.

CHARCOAL AND TAR AS A SURGICAL DRESSING.—The *London Lancet* strongly recommends the use of a mixture of charcoal and coal tar, containing 33 per cent. of the latter, in pulverized form, as a dressing for wounds. The powder exercises no irritative action, and is easily removed by lotions of water. The charcoal absorbs gases due to fermentation, coagulates the albumen, and prevents decomposition; in this respect materially aiding the action of the carbolic acid contained in the coal tar. For wounds which can not bear the contact of the powder, 100 parts of pulverized coal tar are macerated for some hours in 400 parts of rather weak alcohol. The solution is said to be very efficacious.

THE STICKKEN MINES.—One of our correspondents, writing from Victoria, B. C., says that there are several hundred men in that town waiting to go to the Stickeen mines. He tells us of one man he met there who had returned from the mines, and who took out \$1,500 in one day, in coarse gold. A number of men left in the latter part of January for Fort Wrangle, from which place they intended going overland in sleighs. He writes that there is anticipation of trouble with Indians near the Stickeen.

THE DUTCH HILL MINING COMPANY, Plumas county, are making arrangements to bring the waters of Deer creek to their claims, a distance of forty miles. They propose to construct it of a capacity, at the head, of 2,000 inches of water. This will insure them 1,000 inches at the claims. They already have a lot of iron pipe on the way, and will commence work as soon as spring opens.

CINNABAR.—The discovery of this valuable ore not far from Carson, says the *Tribune*, has created considerable excitement among the parties who know the facts. The specimen of float rock brought to town by the lucky discoverer assay more in quicksilver than that taken from the famous Almaden mine.

MINING SUIT.—The case of Cole & Bridge vs. H. Strout et al., is attracting considerable interest in mining circles. The matter at issue involves possession of one-third interest in the Hoosac mine, which is one of the most promising mines in the Eureka District.

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Mines and Mining—No. 1.

(By our Special Correspondent.)

In writing the series of articles I propose on mines and mining, they will be chiefly confined to Plumas and Sierra counties, through which, for three years past, I have been traveling. I shall strive to give your readers nothing but facts, as near as possible.

Early Mining.

Mining in its infancy consisted in use of the rocker or cradle, and long-tom. In those days we thought this an excellent method of obtaining the golden treasure from the rivers and numberless smaller streams and ravines that abound along the western slope of the Sierras. But this sort of mining soon became too slow; and sluicing took its place. Soon, those places which required but little capital to enable the toiling miner to reap rich returns for his labor, became exhausted, thus compelling him to seek other fields of labor to recuperate his more than probably wasted fortune.

"If the rivers and ravines were teeming with gold, there must be a fountain head," was the conclusion the reasoning miner came to. Shafts were sunk in the hills—some to enormous depths—in search of the precious metal, and resulted in the discovery of hidden treasures of golden ore, more fabulous than the storied wealth of "Aladdin's wonderful cave." To obtain this, tunnels were run at great expense, and were found to pay richly in many cases. Some were doomed to disappointment, as all could not be successful. Up to the present day, this system of mining has been carried on at a great expense to the miner, often resulting in bankruptcy for want of capital to work the mine properly. The miner has

Many Things to Contend With,

Unknown to share-holders, who, perhaps, never saw the interior of a tunnel mine, such as bad air, water, boulders of immense size, losing the lead and having to hunt for it by running what are termed "blind tunnels," and many other inconveniences, unnecessary to mention in this letter, all of which consume time and money. The reader will, no doubt, see the necessity of large deposits of gold being found in the paying gravel, next the bed-rock, in order to insure success. To the inexperienced, it seems strange that gravel, which will yield ten dollars per car load, does not remunerate the "lucky" owners with a colossal fortune at once. But, if it requires nine car loads of waste dirt to be removed in order to obtain the tenth one, containing the ten dollars, we have an average yield of one dollar per car load. Thus, it will be seen "that all is not gold that glitters." Yet

Large Fortunes are Realized

From this system of mining, but it is almost exclusively owing to the introduction of capital. It costs no more to run an engine and pump—where they are required—for 100 men employed, than it does for ten men. Of course the amount of labor is greater, and the cost to the company proportionately increased—but the amount of bullion produced is ten times greater than that of the ten men, while the wear and tear of machinery amounts to the same.

I am well aware that some will disagree with me on this point, but in the main, old tunnel miners will support my theory, that mines of this class cannot be successfully worked without the employment of a large amount of capital. I may as well remark here, that many companies engaged in mining, both in silver and gold, have been duped and outrageously swindled by the managers; and let me ask the intelligent reader why this state of affairs exists? Having been in former days connected with mining companies in San Francisco, sufficiently to enable me to give, at the present time, an impartial opinion of their inward workings—that have worked so much injury, both at home and abroad, to our mining interests—I will do so, hoping the reader will pardon my short digression.

Forming Companies.

It has been, and still is, a well known fact that men have been sent out to prospect for mineral deposits in different sections of the country by legitimate corporations, and if they were successful in making discoveries, the result was sure to be a great rush to the new mining district. Claims are located without regard to locality or quality. Specimens from claims—perhaps hundreds of miles away—are taken to the city of San Francisco; assays of great value are made from the ore.

From three to five men are bought, by giving them an interest in the mine, who call a meeting and elect themselves directors; choosing from their number a President, Secretary, and Treasurer. The bogus company is incorporated; its stock thrown upon the market, which is eagerly sought for by all classes, and a well filled treasury is supplied for the speculating thriving officials—who ride in their carriage, while the poor shareholders, who furnish the money to pay for it, are compelled to walk—that they may still swindle them, and the public to a great extent.

A Superintendent is chosen, who is in the confidence of the directors; and the honest shareholder commences to erect his "air castle." But soon the bubble bursts, the honest (God save the mark!) Superintendent telegraphs, in cypher, to the honest (?) President,

that they have struck ore in the shaft, or tunnel, that in richness has no parallel. "Buy all the stock up you can get, as it is a dead thing," and as "dead things sometimes crawl," these honest (?) managers succeed in making the stock crawl up to a high figure—after having purchased all they can obtain, for a mere song, of the stock from the deluded shareholders—the managers' stock is placed in the hands of honest (?) brokers for sale, and none but friends, (of course), are initiated into the secret (by the board of directors) that a rich strike has been made in the shaft, or tunnel, whichever it may be, and now is their time to buy. They are on the inside and know all about it. The bait takes and the managers are enriched by the late-biting gudgeons. The Superintendent receives his share of the plunder, wrung from honest toil, and the people believe that he was honestly deceived, and he returns to his post to assist his co-workers in ruining more of their unsuspecting victims, and not until the shareholders discover that they have been the victims of misplaced confidence; that the mine never had any existence of value, (only on paper), do they realize the fact that they have been basely swindled by their pretended friends, who, "would not wrong them out of a dollar for the world." It is such unprincipled men as these, who have brought discredit and distrust from the capitalist, both at home, and abroad, into the cabin of the honest toiling miner. All miners are not honest, yet the greatest thief among them, in point of honor, is the peer of such men as they.

This system of swindling was only in the past, and the stock was termed "wildcat." But at the present day very little, if any, of this style of thievery exists. Yet it has had a market effect on foreign capitalists, who ponder long and well before they invest in American mines.

I will now return to where I digressed from my subject on tunnel mining.

Quartz Mining

About this time became almost the ruling passion, and hundreds of men were beggared in the, almost universal, hopeless struggle to develop this branch of our gold producing resources. The failure to make quartz mining pay, in most instances, can be summed up in the three following reasons: First, want of experience in quartz mining. Second, want of proper machinery for crushing rock. Third, lack of means for saving the fine gold. With the aid of inventive genius, and scientific research, hundreds of these old abandoned quartz mines are being worked, at the present time, successfully, and with profit to the owners. I will here mention the celebrated Reie quartz mine, in Sierra county, now known as the Sierra Butte mine, which yielded in its early days from \$20,000 to \$40,000 per month, with the imperfect means they had at their command for working at that time. But the miners were men of experience, which, combined with system, overcame many obstacles that would otherwise have been insurmountable. The mine is now owned, I believe, exclusively by English capitalists, and is worked on scientific principles, unsurpassed by any other mine on the Pacific coast. The mode of quartz mining is well understood to be on the same principal as that of silver mining.

The system of hydraulic mining with its advantages over other systems, will form the subject for my next letter, with a general description of the different mines of Plumas and Sierra. I cannot close this letter without speaking a good word for our

Water Prospect

For the season. There never has been so propitious a water season for miners in the past fifteen years, as the present one. There is, on the northern slopes of those mountains which furnish the spring and summer supply of water, from 20 to 100 feet of solid snow, in fact, it is solid enough to be termed ice. I am informed by Charles W. Hendel, Esq., United States Deputy Mineral Surveyor, and Civil Engineer, that one cubic yard of this winter's snow, contains one-half a cubic yard of water. So incredulous as to think he had deceived himself in his estimate, I tested its truth, by filling a vessel with snow and melting it; the result was one-half as much in water. In this town, the snow, in some places, lies piled up to a depth of 30 feet, and will average on the level 10 feet. So be on the look-out for a plenty of yellow dross from Plumas and Sierra, this season. We are in the midst of one of those fearful storms, that defy the skill of our best prophets, in prophesying when it will cease.

MAXIMILIAN.

Laporte, Feb. 18, 1874.

THE Borax Miner says the Pacific Borax Works have started up again, and they are running light, but with satisfactory results.

THE Iowa Hill Canal Company have now about forty men at work along the line of their ditch, finishing up their work, making connections and putting waste-gates in some of the reservoirs.

THE Spring Valley Canal Mining Company, of Cherokee Flat, have just cleaned up from one month's running three bars, valued at \$73,000.

THE GUANALOUPE Ranch in San Luis Obispo county, will require 1,000 men to harvest its crop this year. This sounds rather steep, but we make the statement on the authority of one of our exchanges.

Miners Blinded.

In another column we republish an article from the Virginia Enterprise to the effect that the miners who have been working in the Utah mine have become nearly blind. Since that item was published, the same paper gives another saying that the blindness is of another description, and is caused by swelling of the eyelids and a closing up of the eyes. The poison does not seem to affect the vision, except in this external manner. Two of the workmen are so far recovered as to be able to go to work in a day or two. The question arises, will the eyes of these men again be closed up, or will they, by this first attack, become inured to the poison, whatever it may be? It would seem by the fierce manner in which the water everywhere spurts out of the rock, that the main drift running east and west is now near the lead, or, at least, that it is on the point of tapping a large subterranean reservoir of water.

That the water should be so strongly impregnated with minerals as to prove poisonous to the workmen is considered a good sign, as it is said that the same poisonous vapor or water was encountered in the Savage and Yellow Jacket mines some years ago previous to the striking of large bodies of rich ore.

A very heavy rush of water has occurred in the mine in the main west drift. It amounted to 30 or 40 inches. Much of the water doubtless comes from the old Utah works, in which is what is called the old Bidleman shaft, extending down to within 140 feet of the level of the drift. Since tapping the water in the drift it has been observed that there is a gradual lowering of that in the old shaft named. It will not be advisable to push the drift ahead until the pressure of water now upon the ground shall have been removed, as there would be danger of losing it by a cave; also, there would be danger of losing men.

MINES AND MINING.—We publish in this issue the first number of a series of articles from our special correspondent, "Maximilian," on "Mines and Mining" in Plumas and Sierra counties. We would recommend the attention of our readers to these letters, as they are well and ably handled, and the writer understands his subject.

THE BURLEIGH DRILL is now being used for running two tunnels in this State, one at Gold run and the other at the Cedar creek mines. Rock tunnelling by machinery is a very advantageous and cheap method of mining, as experience has proved. A card appears in our advertising columns this week from one who has had considerable experience in this class of work.

STEEL SHOES AND DIES are now being introduced on this coast by an Eastern firm, as will be seen by referring to our advertising columns. They are claimed to be superior to the ordinary shoes and dies in durability and economy. The same parties who are introducing these shoes and dies are also builders of other mining machinery.

THE Florida mine, comprising the north-half or 1,300 feet of the old "Pony Express" on the Comstock, has recently been purchased by capitalists who have started up work on it. J. J. Nagle is Superintendent.

ALL the mills of the Raymond and Ely Co., at Bullionville, are kept running night and day on ore from the mines and tailings; the mine is turning out 40 tons of ore per day.

THEY have stopped prospecting for cinnabar in Sonoma county for the present, on account of bad weather.

THE future yield of the Belcher mine promises even better than the most sanguine have expected.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

(FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.)

By Special Dispatch, Dated Washington, D. C., Feb. 24, 1874.

FOR WEEK ENDING Feb. 10, 1874.

BOX FOR TRANSPORTING EGGS.—Hiram A. Knight, San Bruno, Cal.

DUMPING CAR.—Carl C. P. Meyer, Yankton, Dakota.

HORSE SHOE FOR MARSHY GROUND.—Samuel Milbury and George A. King, Oakland, Cal.

PERMUTATION LOCK.—Joseph G. O'Neil, Grass Valley, Cal.

TRADE-MARKS.

MALT LIQUORS.—Merrifield and Rosener.

LINIMENT.—Frank F. Porter, Soquel, Cal.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. NOTE.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest time possible.

New Incorporations.

The following Companies have filed certificates of incorporation in the County Clerk's office, San Francisco: WEAVERVILLE DITCH AND HYDRAULIC M. Co.—Feb. 24.—Location: Trinity Co. Capital stock, \$600,000. Directors:—A. W. Gates, J. R. Carrick and C. Oregio, of San Francisco; Dr. J. M. Selbridge, of Oakland; Geo. H. Atkins and O. M. Loveridge, of Weaverlyville and G. T. Bartlett, of Gold Run, Placer county.

MARTIN & WALLING M. Co.—Feb. 25.—Location: Mariposa Co., Cal. Capital stock, \$1,000,000. Directors:—Rohr. T. Williams, J. D. Hudkins, J. S. Morgan, J. W. Tripp and A. P. Cox.

ENTERPRISE CONSOLIDATED M. Co.—Feb. 24.—Location: West Point District, Calaveras Co., Cal. Capital stock, \$3,000,000. Directors:—Frederick Morris, John R. Fischbeck, H. L. Lidstrom, H. H. Suhling, J. P. Bering, J. D. Mahsted and R. Cleary.

The following certificate of incorporation has been filed with the County Clerk of Alameda county:

OAKLAND HARBOR IMPROVEMENT Co.—Object: To dredge and open a ship channel across the bar of San Antonio creek, and protect the same; to make the creek navigable, and to connect by canal the creek with the Bay of San Leandro; to construct wharves and warehouses; to construct across the mouth of San Leandro a dam with floodgates, sufficient to turn the water through San Antonio creek, and to purchase property and acquire franchises. Capital stock, \$2,000,000. Directors:—G. W. Bowie, Wm. Graham, F. Chappell, G. M. Fisher, W. H. Gorrill, Elijah G. Z. Montgomery, E. W. Woodward, John Doherty, R. C. Gaskill, C. H. Trombley, all of Oakland.

HIGHLAND.—Some fifty miners will be put to work in the mines of the Highland Consolidated M. & M. Co., in Highland District, Nevada, this week. This resumption of work in the district affords employment to a number of men who have been for some time idle.

THE growth of freighting on the Willamette may be estimated from the fact that Lincoln, in Polk county, in 1870 stored at its warehouses 8,000 bushels, and in 1873, 123,000 bushels were stored.

THEY want a railroad in Inyo county to take bullion from the mines, many of which cannot be worked on account of lack of transportation facilities.

THE Rattlesnake quicksilver mine, at Pine Flat, is reported as having been sold last week for \$50,000.

THE Vallejo Barrel Factory has just completed an order for 20,000 sugar barrels for Honolulu.

OVER 100 car loads of ore are being daily sent to the mills on Carson river, all of which are at present running to their full capacity.

THE last two week's work at the Bald Mountain, Sierra county, yielded \$15,000.

1840. 1874.

PAIN-KILLER,

THE GREAT

FAMILY MEDICINE OF THE AGE.

TAKEN INTERNALLY, IT CURES

Dysentery, Cholera, Diarrhea, Cramp and Pain in the Stomach, Bowel Complaints, Painters' Colic, Liver Complaint, Dyspepsia, Indigestion, Sore Throat, Sudden Colic, Coughs, &c., &c.

Used Externally, it Cures

Boils, Felons, Cuts, Bruises, Burns, Scalds, Old Sores, Sprains, Toothache, Pain in the Face, Neuralgia, Rheumatism, Frosted Feet, &c., &c., &c.

PAIN-KILLER,

After a thorough trial by innumerable witnesses, has proved itself THE MEDICINE OF THE AGE. It is an internal and external remedy. One positive proof of its efficacy is that its sales have constantly increased and wholly upon its own merits. The effect of the

Pain-Killer

Upon the patient when taken internally, in case of Cold, Cough, Bowel Complaint, Cholera, Dysentery and other affections of the system, has been truly wonderful, and has won for it a name among medical preparations that can never be forgotten. Its success in removing pain, as an external remedy, in cases of Burns, Bruises, Sores, Sprains, Cuts, Stings of Insects, and other causes of suffering, has secured for it such a host of testimony, as an infallible remedy, that it will be handed down to posterity as one of the greatest medical discoveries of the nineteenth century.

The Pain-Killer

Derives much of its popularity from the simplicity attending its use, which gives it a peculiar value in a family. The various diseases which may be reached by it, and in their incipient stages eradicated, are among those which are peculiarly fatal if suffered to run; but the curative magic of this preparation at once disarms them of their terrors. In all respects it fulfills the conditions of a popular medicine. Be sure you call for and get the genuine Pain-Killer, as many worthless nostrums are attempted to be sold on the great reputation of this valuable medicine. Directions accompany each bottle.

Price 25 cts., 50 cts., and \$1 per Bottle.

Sold by all Medicine Dealers.

THE NEW U. S. MINING LAWS.

The new Laws of 1872, governing the location and purchase of Placer and Quartz Mines and Agricultural Lands in Mining Districts of the U. S., printed in circular sheet, for sale at this office. Single copies, 25 cts.

A QUESTION OF TIME.—The recent cough or cold, that without proper treatment may become chronic and last for months, can be radically cured by a few doses of that valuable medicinal elixir, *Hale's Honey of Marshmallows and Tur.* Crittenton's, No. 7 6th Avenue. Sold by all Druggists. Pike's Toothache Drops cure in 1 minute.

Machine Builders.

ESTABLISHED 1851.

PACIFIC IRON WORKS,

First and Fremont streets,

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IRA P. RANKIN, A. P. BRAYTON,
GEO. W. FOGG, Superintendent.

Steam Engines and Boilers,

MARINE AND STATIONARY,

IRON AND BRASS CASTINGS

Mining Machinery of Every Description,

And all other classes of work generally done at first-class establishments, manufactured by us at the lowest prices, and of the best quality.

Particular attention paid to Jobbing Work and Repairs.
N. E.—Sole Agents for sale of HUNTON'S OLEBRATED PATENT GOVERNOR. GODDARD & CO.
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FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

TEAM ENGINES,

Quartz, Flour and Saw Mills,
Hayes' Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard street, San Francisco. 3-qy

THE RISDON

Iron and Locomotive Works.

INCORPORATED.....APRIL 30, 1863.
CAPITAL.....\$1,000,000.

LOCATION OF WORKS:
Corner of Beale and Howard Streets,
SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Oams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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Wm. Norris, James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
24v17-07

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Rolling Mill Company,

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Established for the Manufacture of
RAILROAD AND OTHER IRON

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Embracing ALL SIZES of
Steamshaft Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames

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The highest price paid for Scrap Iron.

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N. E. corner N and Front streets,.....SACRAMENTO,

Steam Engines—all kinds of Mining Machinery.

SHIP, AGRICULTURAL, STOVE, RANGE AND HOUSE CASTINGS.

Iron Railings and Ornamental Work of every description

At the Lowest Rates.

13v27-1y WM. GUTENBERGER.

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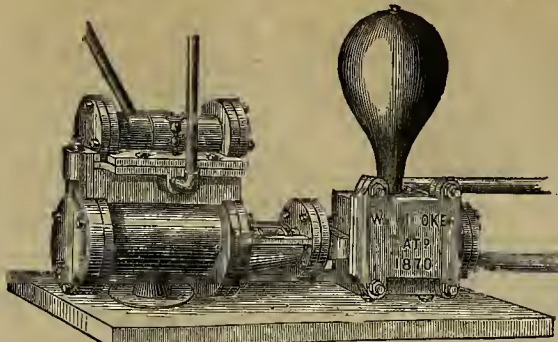
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129 and 131 Beale street, between Mission and Howard, San Francisco.

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of every description, manufactured. 24v16qr

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N. B.—Also manufacturer of Hooker's Deep Well and Double-Acting Force Pump. Received the Silver Medal awarded at the last Mechanics' Fair in San Francisco.

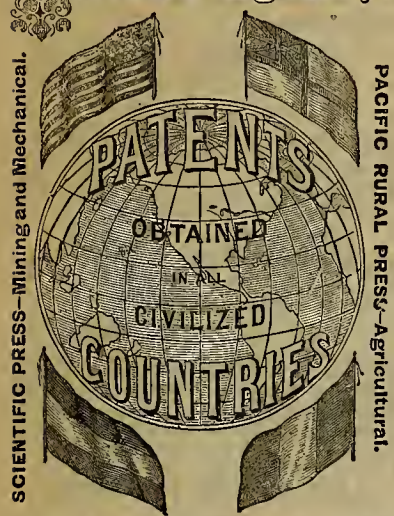
SIMPLE, CHEAP AND DURABLE.

Adapted for all purposes for which Steam Pumps are used. Manufactured by the inventor and patentee, at Hooker's Machine Works, No. 13 Fremont st., San Francisco

SEND FOR CIRCULAR.

DATA OF CAMERON'S PATENT STEAM PUMPS, REGULAR SIZES.												
DAVID STODDART, Agent. 114 BEALE ST., SAN FRANCISCO.												
NUMBERS.												
	0	1	2	2½	3	3½	4	4½	5	6	7	8
Diameter of Steam Cylinders, in inches.....	4	5	6	6	7	8	9	10	12	14	16	18
Diameter of Pump Cylinders, in inches.....	4	5	6	7	8	9	10	12	14	16	18	20
Stroke of Piston, in inches.....	6	6	7	7	8	8	9	10	12	14	16	18
Capacity per cubic Stroke, in gallons.....	1-6	2	3	4	5	6	7	8	10	12	15	18
Capacity at ordinary Speed, per minute.....	10	15	25	35	45	60	80	110	140	270	325	400
Maximum Capacity.....	30	45	80	100	155	165	240	300	360	675	900	1200
Boilers in horses power they will supply.....	25	40	60	120	150	225	350	425	500	750	900	1200
Size of Steam Pipes, in inches.....	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
Size of Exhaust Pipe, in inches.....	1	1½	1½	2	2½	2½	3	3	3	4	4	5
Size of Injection Pipe, in inches.....	¾	1	1	1	1½	1½	2	2	2	3	3	4
Weight of Pump, in pounds.....	185	235	400	425	540	615	1180	1500	1612	2150	3375	4800
Length over all, in feet and inches.....	3-4	3-8	3-10	3-10	4-11	4-11	5-4	5-4	6-10	7	8	9
Height over all, in feet and inches.....	1-6	1-9	1-9	2-3	2-3	2-3	3-7	4-3	4-8	4-7	5-7	6-0
Width over all, in feet and inches.....	9	9	1-1	1-3	1-3	1-4	1-6	1-10	1-10	2-1	2-8	3-5
PUMP.												
The above data apply to the Regular sizes only. All these pumps have <i>Brass Valve Seats and</i>												
<i>Brass Water Pistons.</i> Pumps when built with brass cost extra. We have many supplementary sizes and												
LONG STROKE PUMPS. No. 4, 24-in. Stroke, \$ No. 6, 30-in. Stroke, \$ No. 7, 30-in. Stroke, \$ No. 8, 38-in. Stroke, \$												
These Long Stroke Pumps have large free openings and are highly esteemed for <i>draining mines.</i>												

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OUR U. S. AND FOREIGN PATENT AGENCY presents many and important advantages as a Home Agency over all others by reasons of long establishment, great experience, thorough system, and intimate acquaintance with the subjects of inventions in our own community. All worthy inventions patented through our Agency will have the benefit of an illustration or a description in the MINING AND SCIENTIFIC PRESS. We transact every branch of Patent soliciting business, obtaining Patents in all civilized countries. The large majority of U. S. and Foreign Patents granted to inventors on the Pacific Coast have been obtained through our Agency. We can give the best and most reliable advice as to the patentability of new inventions. ADVISOR AND CIRCULARS FREE.

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Of real merit, if brought plainly before the public when fresh, are most likely to become profitable to the patentee. For this reason, patentees (of worthy devices) should have the best of Engravings Made, and published in the Press. Superior Engravings Made, at reasonable rates, by artists in this office. bp-tf

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WM. SMALL & CO.,

331 Kearny Street, San Francisco, Cal.

We offer for sale the right to manufacture and sell in the Pacific States and Territories the following new and valuable inventions:

Dahl's Improved Plow.
Pooley's Miter Machine.
Mantzberger's Barrel Washer.
Kaestner's Wire Coal Scoop.
House's Wire Fence Stretcher.
Ramsdell's Adjustable Plasterers' Float Handle.
Wells' Improved Egg Carrier.
Baecker's Seat-Spring for Vehicles.
Campbell's Ice Cream Freezer.
Corliss' Clothes Line Reel.
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Call and examine samples and specifications. No unreasonable terms demanded.

WM. SMALL & CO.,
331 Kearny street, up stairs.

A. K. Dahl's Patent Cast Steel Plow.—We have been appointed agents for the right of the above valuable patent, to which we would respectfully call the attention of manufacturers. Strong and durable, easily repaired, light draught, well adapted to our soil.

WM. SMALL & CO., 331 Kearny St.

Pooley's Improved Index Miter Machine.—This machine is calculated to cut miters by index of any size desired. Can be gotten up at low cost. The right for this coast for sale by WM. SMALL & CO., 331 Kearny St.

House's Patent Stretcher for Wire Fences.—Invaluable for the construction and adjustment of wire fencing. Gives uniform and constant tightness, prevents breakage and pulling over of fence posts. For further particulars apply to Pacific Coast Agency for Patent Rights.

WM. SMALL & CO., 331 Kearny St.

Wood's Spiral Spring False Bottom for Water Coolers.—A sample of this important improvement for Refrigerators and Water Coolers can be seen as below. Effects a saving of thirty-five per cent. in ice and adds greatly to the durability of the cooler. Agents for right for Pacific Coast. WM. SMALL & CO., 331 Kearny St.

Muntzberger's Patent Barrel Washer.—This simple but effective machine will cleanse ten or twenty barrels at a time, by hand or other power, at a great saving of labor. The right for Pacific States and Territories on reasonable terms. For sale by WM. SMALL & CO., 331 Kearny St.

Kaestner's Wire Coal Scoop and Sifter.—The right of this handy article for housekeepers' use, for sale. A large size for furnace use can be manufactured. For right to manufacture and sell on this coast, apply to WM. SMALL & CO., 331 Kearny St.

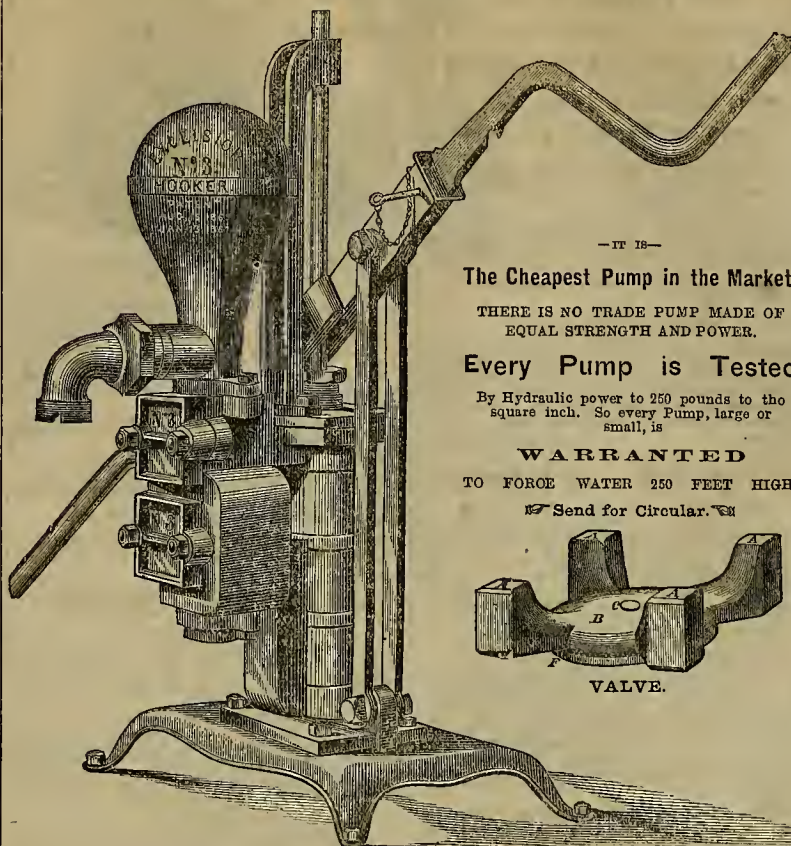
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WITH SEVEN YEARS' USE OF THIS PUMP WE CONFIDENTLY

RECOMMEND ITS USE FOR MINING AND PROSPECTING.



The Cheapest Pump in the Market.

THERE IS NO TRADE PUMP MADE OF EQUAL STRENGTH AND POWER.

Every Pump is Tested

By Hydraulic power to 250 pounds to the square inch. So every Pump, large or small, is

WARRANTED

TO FORCE WATER 250 FEET HIGH.

Send for Circular.

VALVE.

BRITTAN, HOLBROOK & CO.,

111 & 113 California St., San Francisco, (and also Sacramento), General Agents.

GIANT POWDER.

Patented May 26, 1868.

THE ONLY SAFE BLASTING POWDER IN USE.

GIANT POWDER, NO. 1,

For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

GIANT POWDER, NO. 2,

For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.

Its EXCLUSIVE use saves from 30 to 60 per cent. in expenses, besides doing the work in half the time required for black powder.

The only Blasting Powder used in Europe and the Eastern States.

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General Agents, No. 210 Front Street.

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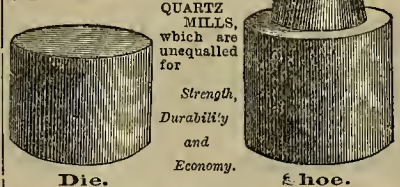
When heard from last, ten years ago, was at Pikes Peak, Colorado. Any information of him, or his fate, w l be thankfully received by his brother, JOHN GAVAR, at 1309 Vallejo street, San Francisco. 25v27-3m

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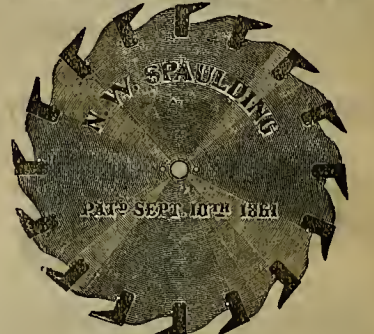
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SAN FRANCISCO, SATURDAY, MARCH 7, 1874.

VOLUME XXVIII
Number 10.

Working Claims by Tunnels.

A correspondent asks us some questions in relation to whether the work on a tunnel location will cover the annual expenditures required on a lode, etc., the answers of which are of interest to miners generally. He says: "Near the place I reside, is a large ledge, which crops out for some distance, and which has been located and abandoned by several different parties. I think that if a tunnel were run into the hill, so as to tap this ledge low down, good pay rock would be found. Moreover, I know of a blind ledge running parallel with, and close beside it, which I know is rich. Now, I want to work both these claims by a tunnel. Shall I make a regular tunnel location so as to catch the blind lode—and, if I do, will the work on that tunnel serve as expenditures on both claims—or must I locate the big ledge that crops, and the blind ledge separately? I do not want to do that; as I want, in some way, to work both ledges by tunnel; and make the money I spend on each cover necessary annual expenditures on both ledges. One other point is that some twelve hundred feet from where I propose to work, croppings appear, which I suppose are those of my blind ledge."

We do not see exactly how our correspondent is to get out of paying the annual expenditures on both claims, even by his tunnel location. He cannot locate both claims by a mere tunnel location. That might cover the blind ledge, but if he began to work his tunnel and did not first take up the big ledge some one else would do so, thinking he would prove its worth by his tunnel, without cost to them. Moreover he says his "blind ledge" crops out some distance from him, in which case it is not a "blind" ledge at all. Again, he knows now, as perhaps do his partners or others, that this ledge exists there or he would not be so anxious to develop it; and the law plainly says that the tunnel can only give right of possession to ledges not previously known to exist, or not appearing on the surface. If croppings of what he calls his blind lode really exist it might be traced to his location and after he began his tunnel there would be nothing to prevent other parties taking it up. The large ledge might or might not be touched after he began work but unless he regularly located it before, he could not prevent parties taking possession.

The general supposition now is that work must be done on the ledge itself to cover the expenditures. In fact, an amendment to the mining act of May 10, 1872 introduced in Congress recently by delegate Chisfee of Colorado, on this very subject, is now before the committee on mines and mining. It amends the act so as to make it declare that where a person or company shall run a tunnel for the purpose of developing a lode or lodes, owned by said person or company, the money so expended in said tunnel shall be taken and considered as expended on said lode or lodes, whether located prior to, or since the passage of said act; and such person or company shall not be required to perform work on the surface of said lode or lodes, in order to hold the same as required by said act.

After consulting with several parties well qualified to judge we do not see how our correspondent can evade the law so as to make the work done new for both claims. He must spend at least \$100 each year on each of his claims, or else render the one upon which no work is done liable to re-location.

QUICKSILVER DISCOVERIES.—The West Coast Star, published in Mendocino City, has intelligence from a Boonville correspondent of rich cinnabar discoveries having been made in Anderson valley. The assays are very satisfactory. This adds another link to the chain of quicksilver developments now taking place in the region of country extending from Sonoma round to Amador county.

PATENT INFRINGEMENT.—Joseph L. and James Hilton, by their attorney, Mr. Morgan, have commenced an action in the United States Circuit Court, against B. & B. F. Jackson, of Woodland, to recover \$10,000 damages for an infringement of an improvement on grain separators.

A Convenient Book Support.

We illustrate herewith a convenient little device for supporting the leaves of large blank books, which is the invention of Morgan Bros., of Cincinnati, Ohio. Its dimensions are, upright, six inches; arms three and one-half inches. It is made of malleable iron, polished and nickel-plated, and being neatly finished, is quite an ornament.

It has a decided advantage over the weight, as it supports the back of the book at any de-



MORGAN'S BOOK SUPPORT.

sired height, holding the page to be written upon perfectly level and firm. It is independent of the table, allowing the book to be moved freely without detaching the support. Its strength will admit of resting the weight of the arm on the hook. It is very rapidly and easily adjusted, occupying but a few seconds in removing and re-adjusting on a fresh page. It requires but one turn of the screw to fasten it, as the arms slide, and are adjustable at any desired point along the length of the upright; being held by the vertical pressure of the screw in end of upper arm. Book keepers and others, who use large, heavy books, will readily appreciate the usefulness of this invention.

California Deep Well Pump.

This pump, as its name indicates, is a California invention, patented July 15th 1873. One of the figures shown on this page represents the pump suspended in a holed well; and the other is a transverse-vertical section, showing the working portion thereof.

It is well known to farmers and others using holed wells that a single-action submerged pump, the only one heretofore adapted to holed wells, when run by horse, steam or wind power, owing to the burden of work being thrown upon one stroke, gives an uneven strain upon the machinery and causes a thumping or jerking action injurious to it, and annoying to horses when horse power is used and various means have been resorted to for remedying these evils, such as sinking double wells and using two pumps, the use of balance wheels and other expensive devices. In wells where water comes near enough to the surface to admit of using double action suction pumps, if the pump is run by wind-power and forced by high wind beyond a certain speed the cylinders fail to fill with the stroke, and the mill being relieved thereby from its work has to be "tied up" to prevent its "running away."

This invention was designed for the purpose of obviating these difficulties by furnishing a double action submerged pump, which could be operated inside of the casing of holed wells, and the inventor claims that it is the only double action pump which can thus be operated. It can of course be used in any other position in which a pump is needed, but its construction is such that the inside diameter, or bore of the pump, need be but one inch less than the diameter of the well casing; and, being submerged, it will fill with every stroke at any practical speed, thus keeping the strain equal upon the machinery; and the weight of water raised, increasing with the speed, operates as a brake to prevent wind mills from "running away."

This pump is admirably adapted for situations exposed to freezing, as by having a small hole in the conducting pipe at a point below the freezing point, to which the water will recede when the pump is at rest, it will always be ready for action. The pump is so constructed with brass and iron as to prevent corrosion by contact of iron with iron.

Brittan, Holbrook & Co., 111 and 113 California street, San Francisco, are sole agents for the manufacture and sale of these pumps, and for the sale of State and Territorial rights throughout the United States.

SAN JUAN.—Disconcerting news comes to us from the San Juan country. The Indians on the route are said to be prospecting for miners' scalps. The route is infested by hostile Indians. One party had two killed, one wounded, and lost all their clothing, provisions, stock, etc.

The greatest danger to be anticipated from the savages is in the spring. The Utes are reported



Fig. 1

Fig. 2



DEEP WELL PUMP.

to be trying to get the Navajoes to unite with them in a general raid on the whites.

Rich gold-quartz diggings are reported near Silver City, but whether it is a regular lead or only a deposit remains to be proved.

Academy of Sciences.

At the regular meeting of the California Academy of Science held on Monday evening last, the following new members were elected. A. G. Stiles, Frederick Cassell, Charles Troyer, life members; James Behrens, O. E. Gibbs, John McHenry, Jr., Walter Van Dyke, Carlton W. Miller, Edward Steele, James McKinley, William H. Sharpe and Josiah Belden, resident members.

Contributions to Museum.

The museum received a considerable addition of interesting specimens as follows: From J. W. Raymond, specimens comprising walrus teeth, fishing implements, carvings, costumes, etc., from Alaska; and spears, war clubs, hunting implements, from the South Sea Islands.

Mrs. Capt. Shelley, donated samples of Tapa or Kupa, a cloth manufactured by natives of the Samoan Islands; also specimens of the bark from which it is made.

Capt. Eldridge gave a fine specimen of the "Wandering Albatross," and also a parakeet; both stuffed and mounted.

Vicente Denis, of the Coast Survey, donated 4 specimens of shells, from the Kelp, off San Miguel Island, in Santa Barbara channel.

From W. W. Russell, specimens of "club moss" from Sandwich Islands.

From Alfred Gros, skeletons of male and female otter, with numerous shells, sponges, corals and other natural curiosities from Alaska.

From Mrs. A. Mc. F. Davis, several curiously formed bricks, which have apparently been subjected to the action of fire, each bearing strange hieroglyphics. They were dug up near Saucelito.

From Judge Ford of Monterey, through Barry and Patten, a fossil tooth of an extinct species of shark. (*Carchorodon*.) It was found imbedded in the rock at Martinez, from which it was taken with hammer and chisel. This is the same tooth which was the subject of a paper by Dr. Blake at a recent meeting.

Mr. G. F. Barker also sent through the same gentlemen a small tooth procured while digging a well at San Bruno. The tooth is supposed to be that of an extinct species of buffalo, (*Bison Latifrons*?)

A medal was also received from the Royal University of Fredericiana, celebrating the thousandth anniversary of the Norwegian Kingdom.

To the library, the Mexican Consul donated, a valuable work entitled the Natural History of Mexico.

Professor Davidson announced that he had received a letter from Alexis Agassiz, offering the Society, according to the expressed wish of his deceased father, a set of the *Flora Brasiliensis*, which work, in thirty-four volumes was now on the shelves of the society.

Papers Etc.,

A paper by W. H. Dall of the U. S. coast survey was read, entitled Notes on the Avifauna of the Aleutian Islands, especially those west of Unalaska; being a continuation of previous papers on the same subject by Dr. Dall.

R. E. O. Stearns read an interesting translation from the reports of the Society for the Preservation of the Norwegian Antiquities. It described the excavation of an ancient vessel, of the Viking period, found in the parish of Tane, Norway. It was the custom of the Vikings to convert one of their vessels into a sarcophagus on the death of a great warrior. The vessel was conveyed inland, the remains of the hero deposited in the hull, with his armor, weapons, the bones of his war charger, and the whole covered with earth. These tumuli have been discovered and excavated in various parts of Norway, and the peculiarities of ancient marine architecture exposed for inspection.

Judge Hastings read a paper on the "creeping" of railroad tracks; and one on the modern style of scientific writers, in expressing themselves in treatises.

The President made some additional observations to the paper read at the previous meeting, which are mentioned in another column.

Dr. H. C. Sill, from Montana, exhibited at the meeting skins of the Rocky Mountain goat *Aplocerus Montanus*, of a supposed newly discovered species. The hair is remarkably fine in texture, and said to equal that of the Thibet goat, employed in the costly manufacture of Cashmere.

CORRESPONDENCE.

Mining in Sierra and Plumas Counties. No. 2.

[By our Special Correspondent.]

In my previous letter, I gave but an imperfect sketch of the different methods employed by miners in extracting the precious metal from mother Earth. I said nothing of

River Mining

Yet, not intending to slight that—at one time—popular branch of California's mineral wealth. Its almost fabulous deposits of virgin gold, its prosperous mining camps, teeming with hardy and industrious miners, where want and privation were unknown, have passed away and only belong to the past. The Chinaman invaded the rivers, creeks and cañons, steadily driving the white man to the hills; and, with what result, has been fully demonstrated, in the opening up of our three great gold-producing systems, tunnel, or drift diggings, quartz—and last, but not least—

Hydraulic Mining.

In my previous letter, I had come down to this, the latest and most important system of all placer mining. To the old pioneer it seems like a dream, as he looks back along those columned years of time into the dim vista of the past, and draws in imagination a picture of mining—then and now. In the one, he sees a miner crouched beside a pool of water, panning out the products of the day's labor, beside him his rocker, pick, shovel, and buckets. In the back ground, seated by the fire in front of a canvas or hutch tent, two men are engaged in a game of "seven up," while the fourth is attending to getting supper—a rough, but happy group—happy in the thought that they possess the only means whereby the precious metal could be extracted from among the rocks and sands, beneath which it had been buried for ages. Years have passed, the picture has given way to another, more extensive and wonderful than the first. On its surface, he sees hills perforated with tunnels; mills, whose ceaseless roar of stamps crushing from the rock its hidden treasures, sounds like peals of distant thunder. Flumes of a vast size, almost large enough to convey the waters of a small river, cross each other in every direction, conveying water to the different mining sections. Great, iron pipes over three feet in diameter, through which water is conveyed from one hill top to another, by descending and ascending the mountain slopes, to which the miner attaches his "giant" pipes, through some of which 1,200 solid inches of water is forced a distance of from 200 to 300 feet, tearing down hills that are teeming with gold, and rolling immense boulders from their rocky beds, where they have lain since being called into existence by the great Creator. The pioneer turns away from the picture, wondering why it is, that the inventive genius of man has been able to construct such terrible engines of destruction as to uproot, and demolish the works of deity itself. And this is termed hydraulic mining, one asks himself, as he beholds with wonder the vast amount of labor performed by the "little giant," and "monitor" pipes. As I shall have frequent occasions to speak of the different methods of mining in these letters, I will commence with the

Mines of Plumas County.

As to their entire extent and resources, I am unable to speak at the present, as I have not visited the northern portion of the county.

The great Blue Lead is known to have its starting point several miles north of Quincy, but the exact location has never as yet been fully determined. From thence it continues along the western slope of the Sierras, or properly, over what is generally known as the foothills, to what is supposed to be its southern limit, not far south of Placerville. It seems so strange, this theory to me, that a lead running as one would suppose directly north and south, should have such a tortuous course as to embrace within its area, such world-renowned mining camps as, Howland Flat, Gibsonville, St. Louis, Grass Flat, Gardner's Point, Craig's, Eureka North, Pine Grove, Morrilstown, Poverty Hill, Whisky Diggins, Esporte, Port Wine, Sawpit Flat, Secret Diggins, Scales' Diggins, Fairplay, Brandy City, Fowler's Diggins, not forgetting Quincy and other places, including Downieville, Forest City and Alleghany, all of which are situated in Plumas and Sierra counties. By some of our best informed writers, it is claimed that the lead is divided into two distinct channels, at or near Pilot Peak, the one keeping on in almost a direct line south, while the other diverging, passes on through this place in a south-westerly direction until it strikes the great

Hydraulic Claims of Sucker Flat

And Timbuctoo. From thence taking a more southerly course it is supposed to reach the main lead south of Placerville. I wish here to correct an error that is extensively believed, both at home and abroad. It is generally supposed that all the great hydraulic mines of Sucker Flat are situated in Smartsville. This is not so. Having resided there for a period of over four months, I know that Smartville itself does not contain a mining claim as large as a gopher hole. The mining district is known as

that of Sucker Flat; Timbuctoo and Smartsville are embraced within the district. Of Timbuctoo's former greatness, and Sucker Flat's present prosperity, I shall have something to say on some future occasion. I only make these remarks, that capitalists may know that Smartsville arrogates to herself claims that belong to a neighboring town, which unfortunately sports a name not pleasing to the ear of high-toned shareholders.

The Mines around Quincy

Are undoubtedly very rich. The great detriment is want of water. Many a colossal fortune lies sleeping to-day in their mountain fastnesses for want of water. This seems to be the great drawback to placer mining in Plumas and Sierra. There are thousands of acres of rich mineral lands lying dormant in these two counties, for want of water to work them. Water could be brought from some point on the Feather river, in sufficient quantities to supply a large section of rich mineral lands, and would pay large dividends on the money invested. I would recommend the attention of capitalists to this enterprise, as they could not invest their money in anything more profitable to themselves, or the miners, who have to work for \$3 to \$4 per day four or five months in the year to pay for the privilege of living the balance of the year. I understand that the Gopher Hill hydraulic company, near Quincy, are bringing in water to their claims, which will be of immense value to them when water fails in the smaller streams. From what source they obtain water, I am not informed at present.

Nelson Creek

At one time was a rich mining camp, but at the present time is of little or no importance, except for its water privileges. Poorman's creek is struggling on, and may do well yet.

At Sawpit Flat

We find diggings of great value, which consist, principally, of the New York and Union tunnel, or drift diggings, and the Richmond Hill hydraulic claims, the Buckeye and Monitor. These two latter claims are about one quarter of a mile north-west of Sawpit Flat. The Monitor is what is termed by miners a virgin claim, and is yet hardly prospected. J. H. Thomas, Esq., has succeeded in purchasing the entire interest of the company in the Monitor, and is considered very fortunate in getting possession of so valuable a piece of mining property. The Monitor company having purchased the old Buckeye tunnel, ran an incline over 300 ft. in length to reach their pay gravel. The water was pumped out from the mine by using a turbine water wheel. The company expended \$43,000 in opening the mine, and took therefrom over \$40,000 within the space of four months, when an extensive cave occurred, caused by tapping a large vein of water, which the pump was unable to keep down.

The company were unable to reopen the mine, and the richest tunnel claim in Plumas county lay dormant, for want of capital to work it. Since Mr. Thomas has obtained possession of the Monitor, he has succeeded in consolidating it and the Buckeye. This claim being so much lower than the Monitor, has completely drained the latter of water. The object to be obtained in the consolidation, is this: The Monitor can be worked through the Buckeye tunnel, thus saving from \$25,000 to \$30,000 of outlay to reopen it, the Buckeye having everything necessary for working the consolidated mine on an A No. 1 principle. This is the claim the \$800 chunk was taken from. The water privileges of the two claims cannot be surpassed by any thing of the kind in the county, there being a full supply the year round. The consolidation of the Buckeye and Monitor was a wise and masterly stroke of policy in mining engineering, and is entirely due to that masterly spirit of development with which Mr. Thomas is deeply imbued.

The Buckeye

Is a rich and prosperous mine. The main tunnel is about 1,800 feet in length, and well timbered. There are 16 shareholders, all working men, and under the able and efficient management of J. C. Foulk, Esq., Superintendent of the company. All disagreements are avoided, everything being left to his judgment.

"The Sawpit Flat gravel mining company consolidated" is another piece of mining engineering of Mr. Thomas, and will certainly be of great benefit to the county.

The New York

Drift claim, after yielding over \$250,000, through an accidental cave of cement, was supposed to be worked out; but Mr. Thomas snatching differently bought it, and has proved, successfully, that its hidden wealth has scarcely been developed. The Union, another member of the consolidation, is also a drift claim, and is worked through the New York tunnel.

The Front Positions

Of these claims are of great value for hydraulic, which as drift claims would be valueless. The introduction of the Richmond Hill hydraulic company into the consolidation, will enable the company to work off the front position of the ground, while the rich deposits back are being rolled to the front the year round. I have been informed that the claim is owned by a company of San Francisco capitalists; if so, they can congratulate themselves on making a lucky investment.

Fowler's Diggings

Are some six miles northerly from this place, and as yet but little known. Several tunnels

were started in 1859, but abandoned for want of capital. Mr. Thomas has succeeded, after their passing through several hands, in getting control of all these claims, with the exception of Fowler's. It is generally believed that Mr. Thomas will open up a rich mining district at Fowler's. The main tunnel is in 2,300 ft., and nearly through the rim rock. This tunnel has cost some \$76,000 up to the present writing.

Fowler's tunnel is in 1,200 feet, but as the owners are quite reticent, I can say but little on the subject. La Porte, and northern Sierra mines, will form the subject for my next letter. I send you some stereoscopic views of snow scenes here. Anyone wishing to see the depth of the snow, can form a very correct opinion by looking at them through a stereoscope.

MAXIMILIAN.

La Porte, Feb. 27, 1874.

Silver City Mining Excitement.

The Virginia Enterprise of the 26th ult., says: An exceedingly rich strike was made day before yesterday by some prospectors of Silver City who have for some time been engaged in sinking a shaft a mile or so to the eastward of that town. The whole town has been thrown into a fever of excitement, and the big strike is now the talk among Silverites—every man has chunks of quartz in his fist, and gold—big, coarse, scraggy, gold in his eye. From several gentlemen of this place, who yesterday visited Silver City, we have the following particulars in regard to the location of the lead and the rich deposit so unexpectedly found: There is, at the point where the men began operations, a

Ledge Nearly Fifty Feet in Width,

Which crops out a little above the general level of the ground and which can be traced a great distance. These croppings do not wear a very promising look, the quartz closely approaching in appearance that kind commonly termed "bastard" and the surface rock containing little more than the "color" of gold. In the early days a small shaft was sunk on the line of the croppings, but the lead has long been looked upon as a "big thing" with nothing in it. The present proprietors, Harkin & Co., determined to test the leads, and relocating it, began sinking a shaft at no great distance from the old prospect hole mentioned above, and it would now seem that their faith and labors are likely to be richly rewarded. Day before yesterday, after passing through a considerable thickness of clay (resembling the pipe clay found in the gravel mines of California), at the depth of about 75 feet they came upon

A Mass of Broken Quartz Filled and Covered with Gold.

The quartz was in the form of gravel and small boulders, mingled with dirt, and presenting almost the same appearance as washed gravel. These pieces of gravel are literally filled and spangled with gold, some of it very bright, but the greater part presenting a rusty appearance. Much of this gold is quite coarse, some of the largest pieces being worth \$5, and all of it is rough and scraggy, as is all quartz gold. The dirt in which the broken quartz is imbedded is also very rich in the same quality of gold that is found in the rock, and a gentleman who was at Silver City yesterday informs us that he saw a lot of gold worth about \$20, which was panned out of some of this dirt. This rich deposit covers the whole bottom of the shaft, but, as yet, only about a wheelbarrow load of the dirt and rock has been hoisted out. Some of the boulders on exhibition at Silver City are said to look as though nearly half gold. In the middle of the shaft, where the lead seems solid,

A Hole has been Drilled

Down to a considerable depth, and the drillings brought out seem to be more than half gold. Indeed, as far as developed, all in and about the bottom of the shaft seems to be "louey" with gold. The deposit is no doubt a pocket, but how large it may be can only be surmised. It may contain no more than a thousand dollars or so, and it may contain fifty thousand dollars. The men who have struck it seem to be in no hurry to dig further at present. Coming upon so big a thing all on a sudden seems to have demoralized them and they hardly know what to do. After the exciting news was known in Silver City there was a grand rush, and men were

Out at Midnight with Lanterns,

Making locations in all directions—north, south, east and west. The mine is situated at some distance south of the Buckeye and about two hundred yards west of the Leet & Birdsell grade, a road running from this city to Dayton. The men who made the location and have been doing the work on the shaft are Mr. Harkin, a blacksmith, and some of his men about the shop. Some of those located in the claim by Mr. Harkin, thought so little of the lead that they refused to pay anything toward sinking the shaft; now, however, they are the readiest men in the world with their assessments. This strike, torn out as it may, will set a great many men to scratching the surface and "vexing" all croppings in that neighborhood.

A REAMING DRILL has been tested in several of the Leavenworth mountain mines of Colorado. The device consists of an ordinary steel bar, with a hinged tongue at one end, which cuts out at the bottom of a blast hole a spherical chamber for the powder. The drill will work excellently in all but the very hard rocks.

The Volcano Mines.

A correspondent of the Amador Ledger writes as follows from Volcano: Mr. Crandall, a gentleman representing a San Francisco company, has bonded a quartz mine situated on Grass Valley creek, belonging to the Messrs. McLaine & Sarocco, abandoned some five years ago by them, they having lost the lead. Mr. Crandall is a practical man, and commenced right by making a new survey, and having satisfied himself that the former owners had been running their tunnel away from the lode, instead of following it, commenced on a line of their own survey, diverging from the old tunnel, he struck the ledge in running eight feet and found good pay rock; he followed the lode some times when it pinched, or partially so, but Mr. Crandall is not a man to stop at trifles, he felt satisfied the lode was a true one, and such seems to be the fact; he continued on, and the ledge commenced widening, having good and well-defined hanging and foot walls, the rock increasing in richness; and now, if you should go to the tunnel, you will find a strong frame and door, with lock and chain, to keep the outside world from gazing and perhaps envying him his good luck; rumor says the rock will assay, mill process, five hundred dollars per ton; it is no doubt the richest rock ever found in this part of the county, not excepting the Telurium, a short distance to the west of this lode, which is and was very rich. Such finds give us courage, for we believe there are many more rich lodes near Volcano, and only lack a Crandall to develop them.

Our Volcano quartz and gravel company are still progressing with their tunnel. The rock continues soft; they are in two hundred and twenty feet; we are determined to push it through, believing we are bound to strike something good, either in quartz or gravel.

The placer mining, in and about Volcano, is carried on as briskly as ever; and generally with satisfactory results. The winter has been severe thus far—heavy snows, with considerable frost, have somewhat retarded mining. We are confident the fall of snow in the mountains will give us plenty of water in the summer, and probably last later in the season than last year. In consequence of the heavy rain, with snow in the mountains, the Jackson and Volcano ditches have been clogged, and several breaks and slides have occurred—one slide on the Jackson ditch, on China hill, required the removal of one thousand yards of earth—it was promptly repaired, and is now running, supplying all demands for water. As I write, Mr. Stirman came in the office, and showed me a nugget he picked up to-day, weighing five ounces; so you see the gold has not all been found yet.

OREANA SMELTING WORKS.—The old Montezuma Smelting and Refining Works, situated at Oresana, on the Humboldt river, were purchased about a year ago by General Conner, of Salt Lake. Recently the property was incorporated in San Francisco and the stock is offered for sale. A copy of the prospectus issued by the company states that the property of the Works consists of one ten-stamp quartz mill and thirty-horse power engine, two blissing stack furnaces with a fifteen-horse power engine for blowing purposes, three calcine furnaces, one cupel furnace, one reverberatory furnace, and a blacksmith shop, with tools, all enclosed in a large substantial building on the banks of the Humboldt river; also, good quarters for officers and men. The company also owns a gold mine in Sacramento District, six miles east of the works, and a water privilege sufficient to run a mill. The whole is incorporated at \$50,000, in 20,000 shares at \$2.50 each. The smelting works were erected several years ago at a cost of \$200,000, and have run successfully for a year or two on ore from the Montezuma mine in Arabia District. This was before the completion of the Central Pacific Railroad, and owing to the high price of charcoal, and materials for smelting, and a break in the mine, the business of smelting fell to the ground, and the Superintendent, an Eastern man named Nason, left the country owing everybody who trusted him for labor and material. Since then the works have been shut down, and the Montezuma has become the property of Attorney General Becker.—Silver State.

QUICKSILVER MINING.—The San José Mercury says: Among the greatest obstacles in the way of successful quicksilver mining is, first, the uncertainty and irregularity of cinnabar deposits; and, second, the immense cost attending the reduction of the ore. Unlike the well-defined gold or silver-bearing ledge, cinnabar is found only in pockets, or labores, as they are called; and, delving for these hidden deposits is a most expensive and uncertain pursuit. It is all blind groveling in the dark. Over twenty miles of tunneling and shuffling have been run down and through the Almaden hill, up to the present time, over six miles of which has been done during the last four years, under the supervision of J. B. Randol. At times the ore deposits are apparently exhausted, and the company is compelled to work over refuse rock and earth, which were formerly cast aside, as comparatively worthless; but which, now, with improved furnaces and condensers, and at the present high price of quicksilver, will pay for roasting. In the meantime, prospecting is pushed forward, and new and valuable deposits are discovered from time to time. A large portion of the hill is yet unexplored; and judging the future of the mine by the past, it is more than probable that vast treasures will yet be unearthed.

MECHANICAL PROGRESS

American vs. European Machinery.

American travelers who have seen something of their own country, and are acquainted with the condition of her trades and manufactures, agree in regard to their testimonial that even the foremost nations of Europe, which England, France, and Germany each in turn claim to be, are far behind in the possession and use of proper machinery and tools for the manufacturing purposes. So in Sheffield's first entirely shop, everything is still made by the muscular labor of the man bending over his anvil with hammer in hand, while we produce the divers objects of this trade by the dies of a drop-press worked by steam, and thus manufacture a greater quantity of a more uniform article, at a less cost, and of a quality conformed to our superior materials. No wonder that we can easily compete in many trades with Europe, notwithstanding the high price of the labor market here.

Similar features were forcibly brought out at the late Vienna exhibition, and Prof. Reuleaux, Director of the Industrial Academy of Berlin, surely an impartial witness, says in his report the following, which is highly flattering to our country and people:

"Upon the field of inventions and of inventive genius, there were but few highly remarkable achievements present; and among these, America held the first rank. Her machine exhibition bore almost exclusively the character of originality; and, although the execution was not generally superior, it contained examples of the highest order of constructive ability and perfect workmanship. France and England offered less original matter—more than both perhaps Germany and Switzerland. Upon the whole it may be said that in machine industry England has partly lost her former undisputed leadership, or that she is at least about to lose it. The healthy young transatlantic industry, which continually withdraws from us energetic and intelligent heads and robust hands, makes, with the aid of her peculiar genius, the most sweeping progress, so that we shall soon have to turn our front from England westward.

Newly devised motors, forming parts of complete machines, and models of distinct parts, exhibited as novelties or inventions, were numerous. They are distinguished from us by more direct and rapid conception. The American aims straightways for the needed construction, using the means that appear to him the simplest and most effective, whether new or old. Our historically heaped-up material, and the cautious character of the German, are so inseparably interwoven, that among the number of known means, we often forget to ask whether they are the simplest, or whether new ones might not be better. The American really constructs in accordance with the severest theoretical abstraction; observing on the one side a distinctly marked-out aim, weighing on the other the already available means or creating new ones, and then proceeding, regardless of precedents, as straight as possible for the object."—*Manufacturer and Builder.*

VESSEL FOR TRANSPORTING GRAIN IN BULK. Cross-stays are placed about half way between the deck and the bottom of the vessel, and are connected for the support of the sides. Stanchions are placed on each of the cross-stays, supported at right angles with the deck, and have partition boards upon each side, which divide the portion of the hold above the cross-stays into three compartments. The partition boards on the inside of the stanchions extend from the deck about one-third the distance to the stays. Those attached to the outer sides of the stanchions extend from the cross-stays upward a short distance above the lower edges of the inner partition boards, so that the two boards of each set of stanchions lap past each other. The compartments are connected by the spaces between the stanchions, so that the grain may pass over the outside partitions from the outside compartments, and under the inside partitions into the central compartment. This is done as the vessel rolls and is careened. The result is, the central compartment is soon filled after the vessel commences to roll, and the grain in that compartment is retained. By this improvement, shifting of cargo, it is claimed, is so prevented that no damage can occur, and the vessel is navigated as easily as it is when laden with immovable cargo.

SAFETY ATTACHMENT FOR CAR TRUCKS.—The rollers are about three times as wide as the truck wheels, and are provided with short side flanges, and turn in bracket-shaped bearings, which are pivoted in suitable manner to the cross-piece, to keep square on the track in case the truck is thrown off the track. They are hung at such height above the track that they just clear the same, the flanges keeping them on the track when thrown into use. The rollers may be connected suitably to the engine, to notify the engineer when the wheels are off the track. On the damaging or detaching of any wheel, they carry immediately the truck, taking the place of the wheels, and may prevent damage and accident.

A new packing for stuffing boxes is made of saw-dust mixed with talc, plumbago, plumbagine, black-lead, or other like substance. The saw-dust must be well sifted, and that from white wood out with the grain is preferred.

A Solid Foundation.

We learn from a recent issue of *Nature*, that there has been "for the past two years a stupendous undertaking in course of development at the Royal Arsenal, Woolwich, which bids fair to rival in point of solidity and grandeur of dimensions, the works of ancient Egypt itself. We allude to the gigantic steam hammer which is being erected in the gun-factories, for the purpose of welding more efficaciously than can possibly be done at present, the coils of which such massive pieces of ordnance as our modern Woolwich Infants consist. The first phase in this undertaking, viz., the laying of an appropriate foundation for the hammer has been accomplished. . . . The hammer itself is still in an unfinished condition, although rapidly approaching completion." The article then describes minutely the foundation constructed to support the anvil, weighing sixty tons, which is to receive the blows of the thirty-ton hammer. The ground for the foundation, being soft and spongy, piles of wood were driven to a depth of 18 feet 4 inches. The interspaces having been filled in with concrete, three cast iron plates, weighing respectively 30, 55 and 30 tons, were placed upon the heads of the piles. These castings were all run in the Foundry of the Royal Gun Factories, and consisted of about one-fourth of Calder pig-iron to four-fifths of scrap metal containing old broken-up shell and shot, etc.

Upon these lower plates were laid a thin layer of rock-elm planks, and upon these baulks of oak a foot square and thirty feet long. These in turn support two more plates of cast-iron each weighing seventy-five tons, and upon them rock-elm planks again form a smooth bed for a layer of oak stumps, two feet three inches long, placed upright and bound together by an iron band. Upon these are two more plates, each weighing sixty-five tons, which are separated by a thin layer of rock-elm plank from a huge superincumbent single casting, twenty-two feet square, and weighing nearly 100 tons. This, in fine, supports the enormous anvil block, weighing 103 tons, upon which will rest the anvil itself.

The anvil block was cast in a closed mould, which rested upon a substratum of coke and bricks, with passages left filled with straw, for the exit of the gas generated; it took nevertheless six months to cool, and could not be removed until after the manufacture and removal of several subsequent castings. About 660 tons of metal have been made use of in completing this foundation. The foundation pit in which the above structure is built is filled in to the depth of nineteen feet with concrete. The base of the structure itself is thirty feet square, the anvil will be twelve feet square, and from the top of the piles to the face of the anvil is a height of fourteen feet four and a half inches.

IMPORTANT MINING EXPERIMENT.—A series of important experiments have been arranged by Her Majesty's Inspectors of mines, for the purpose of testing the practical value of a French invention known as the aerophane, or the Denay-Rouze mining apparatus. By means of this, and encumbered with a weight of no more than eight or ten pounds, it is said that a man may penetrate at once and to a great distance into a pit filled with choke-damp, or with smoke, or with any gas of whatever nature or density, remain there for several hours, carry a lamp with him without danger, and have free use of his arms. The aerophane has already been tried in the principal mines of France, Germany, Belgium and Switzerland, and its first trial in England has been arranged to take place in the Wignen coal-field, and the well known fiery nature of the mines in that district, which has been the scene of a fearful series of terrible disasters, will afford the opportunity of a really practical test. If the invention accomplishes what is claimed for it, there is no doubt its adoption would often save a large amount of property, and frequently many lives. The mine owners, at least, will have an opportunity of satisfying themselves as to its real merits.—*Ec.*

TURBINE WIND MOTOR.—Attention is called in the German *Architectural Magazine*, to a so-called wind turbine, or horizontal wind-wheel, near Riesa, moving about a vertical axis. It has a diameter of about 17 feet, height of 10.2 feet, six curved paddles, and eight movable guide curves, and makes 10 revolutions per minute, even while running a saw, cutting a plank over three inches thick. It would probably make twenty revolutions without work, and with a good wind would furnish about six horse-power. Similar attempts, it seems, have previously been made, and careful experiments are needed to show whether they possess any advantage over the best constructed vertical wheels; especially as the comparative difficulty is the escape of the air that has operated on the paddles, and its reflex, by reason of elasticity in the wheel, may produce a sort of gyratory motion or current, sufficient to occasion a loss of power.

LIFE BUOYS.—English papers describe an invention which substantially consists in grinding or cutting cork shavings small, and roasting or burning them to a dark brown elastic char, which causes it to swell and to be more buoyant and impervious to water, and then in filling the said ground burnt cork into small bags made of oil or other waterproof fabric, and sewing these into canvas life-belts or other shaped buoys for the purpose of floating bodies in deep water, and thus saving life and property.

SCIENTIFIC PROGRESS.

Bursting of Trees and Objects Struck by Lightning.

At a recent meeting of the Manchester Literary and Philosophical Society, Mr. Baxendell suggested that the explosive effect of lightning might be due to the conversion of moisture into steam. At the meeting of that society, Nov. 4th, 1873, Professor Osborne Reynolds, A. M., stated that this suggestion seemed to him so very probable, that he had been induced to try if he could not produce a similar effect experimentally. We give the account of these experiments in his own language.

I first of all tried to burst a thin slip of wood by discharging a jar through it, taking care so to arrange the wood that the discharge should be of the nature of a spark, and not a continuous discharge. This was done by making the wood to form part of a discharging rod, with balls on the ends. This experiment was successful in the first attempt, although the results were on a small scale. It should be mentioned that the wood had been damped with water. This experiment was repeated with larger pieces of wood with various results.

It then occurred to me to try with a glass tube. This I did at first with a very small tube, passing wires from the ends of the tube until they were within half an inch of each other. The small tubes burst both with and without water.

I then used a larger tube (about one-tenth inch bore), using it in a similar manner. The discharge without water produced no effect on this, even when repeated several times, but when the tube was full of water (with the ends open) the first discharge shattered that part of the tube opposite the gap in the wire. This tube was bent in the form of a syphon, and the water stood about one inch beyond the gap in the wire on each side of it.

I then tried a stronger tube which I had been using for insulation. It had a bore of one-eighth of an inch, and was three-eighths of an inch in external diameter. It was capable of sustaining a pressure of probably 10,000, and certainly 5,000 pounds on the square inch; that is to say, a pressure of from two to five tons per square inch. It was about fourteen inches long, and bent in the form of a square-ended syphon. The gap in the wire was about half an inch, and the water extended about one and a half inches on each side of the gap. The ends of the pipe were open, and the jar charged in the same manner as before with about 100 turns of a twelve-inch plate machine. The surface of the jar is about half a square foot, and the discharge, when effected with the common rod, took place through about two inches of air.

This tube was shattered at the first discharge. That part opposite the gap and for some way beyond, is completely broken up into fragments, which present more the appearance of having been crushed by a hammer than of being the fragments of a pipe burst under pressure. Some of the fragments show that the interior of the pipe has been reduced to powder.

These fragments were scattered to some feet on all sides, but there was nothing like an explosion. I held the pipe in my hand at the time of the discharges, and the sensation was that of a dead blow. There was no noise beyond the ordinary crack of the discharge.

The manner in which this pipe was destroyed clearly showed that a larger one might have been broken. But as it was two o'clock and my fire was out, I did not continue the experiments. It is not easy to conceive the precise way in which a pressure of probably more than 1,000 atmospheres could be produced, and transmitted in a pipe of water, the ends of which were open. It might have been caused by the sudden formation of a very minute quantity of steam, or by the expansion of the water; but which ever way it was, its effect was due to its instantaneous character, otherwise there would have been an explosion. When we consider the great strength of this pipe (which might have been used for a gun without bursting), and when we see that it was not only burst, but that the interior of the glass was actually crushed by the pressure, and all this by the discharge of on a small jar, we must cease to wonder at the bursting power of a discharge from the clouds.

BIRDS AND CHOLERA.—Can birds scent the cholera infection in the air? Certain well authenticated facts render it not improbable that they can. Recent European journals state that at Munich, where several cases of cholera have occurred, the rooks and crows, which before flew about the steeples and through the trees of the public promenade, have all emigrated; and the same thing happened during the cholera seasons of 1836 and 1854. According to Sir Samuel W. Baker, the same phenomena occurred at Mauritius, where the martins, which exist in immense numbers the year round, wholly disappeared during the prevalence of the cholera.

INDICATOR OF VITATED AIR.—A solution of palladium chloride is so connected with a battery, that so long as no metal is precipitated, no current passes; but as soon as carbonic acid appears in the atmosphere, metallic palladium is precipitated, which establishes a current, and rings a bell to give warning of the presence of the noxious gas.—*Am. Ch.*

Sensitive Plants.

A curious action of the leaves of certain plants was first discovered in 1779 by Roth, in Germany, namely, that they behave as if attempting to catch insects by bending over their bodies. Darwin, with his well-known sagacity in taking hold of any fact assisting in establishing the development theory founded by him, makes use of this peculiarity as an argument in favor of the idea that passive plants which have to wait for their food, may have developed into active animals with prehensile mouths, and of which this purely vegetable action is a first attempt of nature in the direction of producing an organism which attempts to eat. After Darwin has enriched our knowledge in this line with many valuable new observations of his own, Bennett comes with new facts, and proves that many plants show this daily while growing in wet moss in our rooms in the summer. But the most important and surprising discovery is that made by Darwin and Bennett both, namely that the leaves of the common round-leaved sundew act differently when different objects are placed upon them. For instance, if a small piece of raw meat be placed upon them in place of a living fly, it will close upon it in the same manner as upon the insect, while in regard to a particle of chalk, or wood, or wool, it will remain motionless, or at least nearly indifferent.

Prof. Asa Gray, while commenting in *Silliman's Journal* upon the paper read by Mr. Bennett before the Bradford meeting of the British Association, says that with us the leaves do much more than curve around the insect or piece of meat; that as well in the *Drosera rotundifolia* as in the *Drosera longifolia* the end of the leaf folds over upon the base, and like a shut hand fairly incloses the captured insect or piece of meat.

In order to account for many unexplained habits of supposed unreasonable animals, the word "instinct" was invented, which in fact explains absolutely nothing. Now we see that this so-called instinct is shared by some plants; or have the leaves the organ of taste, so that they can distinguish between the piece of meat and wood? Is there also a consciousness in vegetable organism? or is all matter conscious?—*Manufacturer and Builder.*

Improved Manufacture of Artificial Fuel.

The *Scientific American* says: "The visitor to the coal regions of Pennsylvania, and indeed to all other localities where coal-mining operations are in active and continual progress, will not fail to remark the vast heaps of waste or slack piled in the neighborhood of the mines. It is estimated that, on an average, from forty to fifty per cent. of the entire yield, both of anthracite and bituminous coal, is, through the medium of mining, breaking, screening, and handling, reduced to this remarkable condition, causing loss to the producer and increasing the cost of the staple to the public."

Mr. E. F. Loiseau, of Mauch Chunk, Penn., has recently patented a process by which this waste or slack may be made available for fuel. "The composition of the fuel is coal-slack and common yellow clay free from sand, moistened with milk of lime. The manufacture is carried on automatically, the crude materials entering the apparatus at one end and emerging finished and ready for shipment at the other. No labor during the progress of the operation is therefore required, nor does the machine, we are informed, need any attention except to replenish its supply and remove its completed product.

At a recent trial of the fuel under one of the boilers, at the present Fair of the American Institute, we were afforded an opportunity to examine its cohesive quality. The pieces were thrown into a furnace, where very active combustion was in progress; and although allowed to remain there for a considerable period of time, they did not lose their shape or run together. As regards heating power, the inventor considers the same to be equal to the best coal. No unpleasant odor is given off; there is, of course, no slate, and we are assured that clunking does not take place. The ash, being mixed with clay, is heavy; and hence, where the fuel is used for domestic purposes, does not rise in light clouds, covering carpets, furniture, &c., with dust. The oval shape of the lumps is designed to insure a free draft through the interstices. As to cost, the inventor demonstrates that the material can be supplied at about \$1 per ton."

FIRE-BRICK atones for hot blast furnaces are attracting a good deal of attention among iron producers. The improvement is designed to increase and utilize all the heat of the blasts, and consequently to decrease the consumption of fuel necessary in operating the furnace. The greatest temperature which can be got through the usual system of metal pipes, without danger of the pipes melting, is 1,200 to 1,300 degrees, but with these new fire-brick atones, the temperature may be advanced, without risk of damage, to 2,000 degrees.

THE addition of a small quantity of borio acid to milk retards the separation of cream, and the milk does not become sour when kept several days. Beer also, to which borio acid has been added, does not so quickly become hard.—*Hirschberg.*

SHULZ's chronoscope, used in estimating the initial velocity of a cannon ball, measures an interval of time to within one fifty-thousandth of a second.—*Am. Mf.*

Weekly Variations in Stocks.

(Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.)
For 6 days ending Wednesday, Mar. 4, 1874.

NAME OF COMPANY.	IN MINES.	SHARPS IN MINES.	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.						
Alamo	300	6000	14s	11 1/4t	1/2	1/2
Alta	3900	1500	24 1/2t	22 1/2t	1/2	1/2
American Flat	1500	1500	15t	15t	1/2	1/2
Arizona & Utah	65	2400	15t	15t	1/2	1/2
Bacon M. & M.	20	5000	15t	15t	1/2	1/2
Baltimore Con.	200	2000	15t	15t	1/2	1/2
Belcher	1000	1000	15t	15t	1/2	1/2
Best & Belcher	224	2400	24 1/2t	21 1/2t	1/2	1/2
Bowers	20	5000	15t	15t	1/2	1/2
Buckeye	200	2000	15t	15t	1/2	1/2
Bullion	1000	1000	15t	15t	1/2	1/2
California	5000	20000	28 1/2t	25 1/2t	1/2	1/2
Chollar-Potosi	130	2400	15t	15t	1/2	1/2
Confidence	342	2000	15t	15t	1/2	1/2
Con. Gold Hill Quartz	1100	10000	15t	15t	1/2	1/2
Cook & Coyer	180	2000	15t	15t	1/2	1/2
Crown Point	600	10000	15t	15t	1/2	1/2
Danby	2000	2400	15t	15t	1/2	1/2
Dardanelles	1200	2400	15t	15t	1/2	1/2
Eclipse	100	2000	15t	15t	1/2	1/2
Empire M. & M.	70	2000	15t	15t	1/2	1/2
Eschschuer	400	6000	26 1/2t	21 1/2t	1/2	1/2
Fairmount	3000	12000	15t	15t	1/2	1/2
Flowers	200	2000	15t	15t	1/2	1/2
Franklin	1000	2000	15t	15t	1/2	1/2
Globe	1000	2000	15t	15t	1/2	1/2
Gould & Curry	1200	10000	15t	15t	1/2	1/2
Hale & Norcross	400	18000	6 1/2t	5 1/2t	1/2	1/2
Imperial	181	10000	6 1/2t	5 1/2t	1/2	1/2
Indus.	2000	30000	15t	15t	1/2	1/2
Insurance	2000	30000	15t	15t	1/2	1/2
Jacob Little	2000	30000	15t	15t	1/2	1/2
Julia	2000	30000	15t	15t	1/2	1/2
Justice	3000	21000	15t	15t	1/2	1/2
Kentuck	1000	2000	15t	15t	1/2	1/2
Knickerbocker	1200	2400	15t	15t	1/2	1/2
Kossuth	1000	2000	15t	15t	1/2	1/2
Lady Bryan	3000	10000	15t	15t	1/2	1/2
Means	1000	2000	15t	15t	1/2	1/2
Mint	1000	2000	15t	15t	1/2	1/2
Nevada	1000	2000	15t	15t	1/2	1/2
New York Con.	3000	20000	15t	15t	1/2	1/2
Occidental	1000	2000	15t	15t	1/2	1/2
Ophir	1400	16000	35 1/2t	25 1/2t	1/2	1/2
Overman	1200	2400	15t	15t	1/2	1/2
Phil. Sheridan	1200	2400	15t	15t	1/2	1/2
Potosi	2000	2000	15t	15t	1/2	1/2
Rock Island	1000	10000	15t	15t	1/2	1/2
Sage	1000	10000	15t	15t	1/2	1/2
Seg. Belcher	100	1000	15t	15t	1/2	1/2
Seg. Caladonia	1000	10000	15t	15t	1/2	1/2
Seg. Rock Island	1000	10000	15t	15t	1/2	1/2
Senator	2400	10000	15t	15t	1/2	1/2
Sierra Nevada	2000	20000	15t	15t	1/2	1/2
Silver Hill	5400	10000	10 1/2t	9 1/2t	1/2	1/2
South Comstock	2400	10000	15t	15t	1/2	1/2
South Overman	2400	10000	15t	15t	1/2	1/2
Succor M. & M.	7600	22000	15t	15t	1/2	1/2
Sutro	200	2000	15t	15t	1/2	1/2
Trenoh	20	2000	15t	15t	1/2	1/2
Tyler	2200	30000	15t	15t	1/2	1/2
Union Con.	800	2000	15t	15t	1/2	1/2
Utah	1000	2000	15t	15t	1/2	1/2
Woodville	1400	2000	15t	15t	1/2	1/2
Yellow Jacket	1200	2400	15t	15t	1/2	1/2
NEVADA.						
Alps	500	5000	15t	15t	1/2	1/2
Amador Tunnel	500	5000	15t	15t	1/2	1/2
American Flat M. & M.	500	5000	15t	15t	1/2	1/2
Arizona	500	5000	15t	15t	1/2	1/2
Belmont	500	5000	15t	15t	1/2	1/2
Bowers	500	5000	15t	15t	1/2	1/2
Chapman M. & M.	500	5000	15t	15t	1/2	1/2
Charter Oak	500	5000	15t	15t	1/2	1/2
Chief of the Hill	500	5000	15t	15t	1/2	1/2
Chief East Extension	500	5000	15t	15t	1/2	1/2
Columbus M. & M.	500	5000	15t	15t	1/2	1/2
Condor	500	5000	15t	15t	1/2	1/2
El Dorado South	500	5000	15t	15t	1/2	1/2
Eureka Con.	500	5000	15t	15t	1/2	1/2
Excelsior	500	5000	15t	15t	1/2	1/2
Harper	500	5000	15t	15t	1/2	1/2
Hayes	500	5000	15t	15t	1/2	1/2
Hermes	500	5000	15t	15t	1/2	1/2
Home Tacket	500	5000	15t	15t	1/2	1/2
Huhn & Hunt	500	5000	15t	15t	1/2	1/2
Ingram	500	5000	15t	15t	1/2	1/2
Ivanhoe	500	5000	15t	15t	1/2	1/2
Jackpot	500	5000	15t	15t	1/2	1/2
Josephine	500	5000	15t	15t	1/2	1/2
Junius Con.	500	5000	15t	15t	1/2	1/2
K. K. Con.	500	5000	15t	15t	1/2	1/2
Knickerbocker	500	5000	15t	15t	1/2	1/2
Kinston	500	5000	15t	15t	1/2	1/2
Lehigh	500	5000	15t	15t	1/2	1/2
Lillian Hall	500	5000	15t	15t	1/2	1/2
Louis	500	5000	15t	15t	1/2	1/2
McMahon	500	5000	15t	15t	1/2	1/2
Marion	500	5000	15t	15t	1/2	1/2
Meadow Valley	500	5000	15t	15t	1/2	1/2
Mocking-Bird	500	5000	15t	15t	1/2	1/2
Monitor-Belmont	500	5000	15t	15t	1/2	1/2
Murphy	500	5000	15t	15t	1/2	1/2
Newark	500	5000	15t	15t	1/2	1/2
Pacific Tunnel	500	5000	15t	15t	1/2	1/2
Page & Pansca	500	5000	15t	15t	1/2	1/2
Peavine	500	5000	15t	15t	1/2	1/2
Phoenix	500	5000	15t	15t	1/2	1/2
Pioche	500	5000	15t	15t	1/2	1/2
Pioche West Ex.	500	5000	15t	15t	1/2	1/2
Pioche-Phoenix	500	5000	15t	15t	1/2	1/2
Portland	500	5000	15t	15t	1/2	1/2
Raymond & Ely	500	5000	15t	15t	1/2	1/2
Rye Patch	500	5000	15t	15t	1/2	1/2
Silver Peak	500	5000	15t	15t	1/2	1/2
Silver West Con.	500	5000	15t	15t	1/2	1/2
Standard M. & M.	500	5000	15t	15t	1/2	1/2
Star Con.	500	5000	15t	15t	1/2	1/2
Starlight	500	5000	15t	15t	1/2	1/2
Sterling	500	5000	15t	15t	1/2	1/2
Spring Mount	500	5000	15t	15t	1/2	1/2
Spring Mt. Tunnel	500	5000	15t	15t	1/2	1/2
Ward Beecher	500	5000	15t	15t	1/2	1/2
Washington & Oreole	500	5000	15t	15t	1/2	1/2
Watson	500	5000	15t	15t	1/2	1/2
Yellowstone	500	5000	15t	15t	1/2	1/2
CALIFORNIA.						
Alpine	1200	12000	15t	15t	1/2	1/2
Bellevue	8000	20000	15t	15t	1/2	1/2
Calaveras	3200	20000	15t	15t	1/2	1/2
Cedberg	2000	20000	15t	15t	1/2	1/2
Chollar Mill	1000	10000	15t	15t	1/2	1/2
Con. Amador	1000	10000	15t	15t	1/2	1/2
Cottonwood Creek	1000	10000	15t	15t	1/2	1/2
Dunderberg M. & M.	1000	10000	15t	15t	1/2	1/2
El Dorado	1000	10000	15t	15t	1/2	1/2
Eureka	1600	20000	11t	10t	1/2	1/2
Gillia	1000	24000	15t	15t	1/2	1/2
Independence	1800	20000	15t	15t	1/2	1/2
Keystone	1000	10000	15t	15t	1/2	1/2
St. Lawrence	1500	25000	15t	15t	1/2	1/2
St. Patrick	1800	20000	15t	15t	1/2	1/2
Tennison	3000	30000	15t	15t	1/2	1/2
Yule Gravel	400	10000	15t	15t	1/2	1/2
IDAHO.						
Empire	2500	8 1/2t	8 1/2t	8 1/2t	1/2	1/2
Golden Chariot	750	3000	21 1/2t	18t	1/2	1/2
Ida Elmore	1300	10000	24 1/2t	14t	1/2	1/2
Mahogany	720	1000	24 1/2t	24 1/2t	1/2	1/2
Red Jacket	650	2000	21 1/2t	25t	1/2	1/2
South Chariot	650	2000	21 1/2t	25t	1/2	1/2
War Eagle	1000	10000	4 1/2t	3 1/2t	1/2	1/2
WHITE PINE.						
General Lee	1000	20000	15t	15t	1/2	1/2
Mammoth	1800	30000	15t	15t	1/2	1/2
Noonday	1000	20000	15t	15t	1/2	1/2
Orig. Hidden T.	1000	20000	15t	15t	1/2	1/2
Silver Wave	800	20000	15t	15t	1/2	1/2
Ward Beecher	2400	30000	15t	15t	1/2	1/2
UTAH.						
Deseret Con.	2400	30000	15t	15t	1/2	1/2
Wellington	2400	30000	15t	15t	1/2	1/2
OREGON.						
Virtue	1200	2000	15t	15t	1/2	1/2

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq't.	Sale.	Secretary.	Place of Business.
Alps S M Co	Ely District	6	25	Feb 2	Mar 13	April 6	C F Balcom	426 Montgomery st
American Flat M Co	Gold Hill	1	50	Feb 11	Mar 16	April 6	G W R King	441 California st
Amador Tunnel & M Co	Ely District	2	100	Feb 5	Mar 12	April 31	L Kaplan	Merchants' Ex
Andes S M Co	Washoe	1	50	Mar 2	April 6	April 27	Edward Landers	507 Montgomery st
Baltimore Cons M Co	Nevada	1	250	Jan 21	Mar 7	April 2	W H Watson	392 Montgomery st
Bellevue M Co	Cal	9	200	Jan 24	Mar 3	Mar 24	D F Verdinal	409 California st
Caladonia S M Co	Gold Hill	7	3	Jan 30	Mar 5	Mar 25	R Wegener	414 California st
Caroline M Co	Ely District	4	100	Jan 17	Feb 27	Mar 20	R H Brown	402 Montgomery st
Condor S M Co	Ely District	2	25	Jan 27	Mar 7	Mar 28	G T Grimes	240 Montgomery st
El Dorado South Cons M Co	Nevada	3	100	Feb 25	Mar 31	April 25	W Willis	401 California st
Eschschuer M Co	Gold Hill	10	300	Feb 9	Mar 13	April 4	D T Bagley	401 California st
Gould & Curry S M Co	Washoe	21	100	Jan 25	Feb 23	Mar 20	A K Jurbrow	Merchants' Ex
Hale & Norcross M Co.	Washoe	42	100	Jan 20	Feb 24	Mar 17	J F Lufkin	401 California st
Ida Elmore M Co	Idaho	12	100	Feb 12	Mar 13	April 11	W Willis	419 California st
Independent M Co	Cal	5	50	Feb 7	Mar 14	April 4	G T Grimes	240 Montgomery st
Julia M Co	Washoe	17	100	Feb 10	Mar 16	April 4	A Noel	419 California st
Kentucky G. S. & M. Co.	Ely District	7	25	Jan 3	Mar 2	Mar 23	R Goldsmith	513 California st
Knickerbocker M Co	Gold Hill	8	150	Feb 24	April 7	April 27	Henry Boyle	Stevenson Building
Mahogany G. S. & M Co	Idaho	1	150	Feb 25	April 7	April 27	T J Owens	215 Sansome st
Mint G. S. & M Co	Idaho	2	100	Feb 5	Mar 13	April 2	D A Jennings	401 California st
Newark S M Co	Ely District	6	100	Feb 13	Mar 23	April 13	D T Bagley	401 California st
New York Cons M Co	Gold Hill	28	100	Feb 17	Mar 20	April 20	O K Osbhe	419 California st
Norcross M Co	Nevada	28	100	Feb 17	Mar 26	April 14	Joseph Marks	419 California st
Page & Panaca S M Co	Ely District	5	50	Jan 19	Feb 24	Mar 16	L Kaplan	Merchants' Ex
Pioche S M Co.	Ely District	5	100	Jan 19	Mar 5	Mar 26	C E Elliott,	419 California st
Portland S M Co	Ely District	3	25	Jan 10	Feb 16	Mar 16	W H Watson	419 California st
Reynolds G. S. S M Co	Nevada	2	100	Feb 28	April 2	April 24	J W Clark	418 California st
Rye Patch Cons M & M Co	Nevada	2	100	Feb 25	April 2	April 29	D F Verdinal	409 California st
Silver Peak M Co	Ely District	4	25	Jan 23	Mar 7	Mar 28	G T Grimes	240 Montgomery st
South Chariot M Co	Idaho	4	75	Jan 24	April 30	April 30	W H Watson	419 California st
St. Laurence M Co	Ely District	9	15	Jan 24	Mar 2	Mar 20	M J Buntington	Merchants' Ex
St. Laurence M & M Co	Placer Co Cal	5	50	Feb 25	April 1	April 20	E B Noyes	411 1/2 California st
Union Cons't S M Co	Washoe	5	50	Mar 2	April 3	April 20	M J Buntington	Merchants' Ex
Virtue M Co	Oregon	2	100	Jan 20	April 6	April 6	W H Watson	402 Montgomery st
Washoe M Co	Idaho	4	100	Jan 17	Feb 23	Mar 14	L Kaplan	Merchants' Ex
Washoe Raze M Co	Idaho	1	50	Dec 13	Jan 19	Mar 11	D A Jennings	401 California st
White Rancher Cons M Co	White Pine	10	100	Feb 5	Mar 14	April 6	F D Clary	Merchants' Ex
Washington & Creole M Co	Ely District	10	100	Feb 17	April 7	April 27	W H Watson	414 California st
Wellington M & S Co	Washoe	17	500	Feb 10	Mar 14	April 15	G W Hopkins	Gold Hill

March 7, 1874.]

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE COUNTY.

HOME AFFAIRS.—*Miner*, Feb. 28: In the Silver Glance mine the old rope cable of the hoisting works has been replaced by a good, strong wire cable, and the work of sinking goes steadily on. At the M. & N. W. mill men are tearing away the old furnace.

From Silver Mountain we hear very encouraging reports of a good strike in the Exchequer. The mill is making a short run on some good looking ore.

AMADOR COUNTY.

QUICKSILVER ORE TESTED.—*Dispatch*, Feb. 28: Mr. W. L. McKim, one of the owners of the quicksilver mine recently discovered in the ledge of El Dorado county, selected a piece of the ore weighing ten ounces, which he pulverized and placed in a small retort, and by this simple process saved five ounces of pure quicksilver, or 50 per cent. of the original weight of the ore. On Tuesday he took 17 pounds of the lowest grade ore, treated it in a similar manner, and it yielded about two pounds of quicksilver.

THE AMADOR CANAL.—Work on the Amador Canal is progressing finely, and will soon be completed if the weather continues pleasant.

CALAVERAS COUNTY.

SAN BARTO.—*Chronicle*, Feb. 28: The intelligence we continue to receive of the result of operations in the San Barto mine at Mosquito gulch, is of the most cheering nature. The tunnel has now been run a distance of over 60 ft. in the pay chert, and there are no indications of reaching the end of the rich body of ore. The end has widened out about three ft. Throughout the entire distance, taking the rock as it comes, unassorted, good judges estimate that the quartz will average \$50 per ton. Stopping has been commenced. A large force of men has been employed. There are about 150 tons of ore now in the dumps.

CLARK'S HYDRAULICS.—W. Y. Clark, Esq., of Railroad Flat, has two hydraulics in operation, day and night, and is preparing to start a third. In the neighborhood of a thousand inches of water will be used when three streams are employed. The hydraulics are splendidly equipped, huge iron pipes being used for conveying water to the claims, the whole being supplied with "monitors," patent nozzles, etc. The hydraulics have a pressure of nearly 300 feet.

AN IMMENSE HYDRAULIC.—We learn that a mammoth claim has been opened about 5 miles southeast of Murphy's in this county, near the Stanislaus river. Preparations for washing have been made upon a very extensive scale. Five hundred inches of water are used, having a pressure of several hundred feet. The bank of gravel is very deep, and contains gold from top to bottom.

CLEANING UP.—Washing has been temporarily suspended on the Duryea hydraulic, in Chili gulch, for the purpose of cleaning up. That process will occupy about two weeks, when we understand it to be the intention of the proprietor to tunnel the bank for the purpose of putting in blasts. Veith & Co., proprietors of the great hydraulic in Tunnel ridge, are also cleaning up.

QUARTZ DISCOVERY.—Messrs. Lewis & Fairchild have recently discovered a quartz ledge of extraordinary richness near the Mokelumne river opposite Albers' ranch, on the road to West Point. The vein is narrow, averaging about six inches in width. But little prospecting has been done upon it yet, but the rock shows immensely rich for a distance of three hundred feet in length upon the surface.

THE SPRING GULCH CLAIM.—S. S. Moser, Esq., of the Spring Gulch Claim, has recently put in a flume of immense size which greatly facilitates operations.

COOK & CO., owners of the hydraulic at the head of Spring Gulch, are washing away with energy.

RAILROAD FLAT DISTRICT.—Two weeks ago the crown-wheel of the hoisting machinery at the Sanderson broke in two pieces. The mine filled with water rapidly. The occurrence is to be deplored, not alone on account of the vexatious delay and expense, but also on account of Wm. S. Pinney, the energetic and competent agent for the Ingersoll Rock Drill, which had been employed in sinking the shaft previous to the accident. The Ingersoll Drill is another triumph of science. With the limited convenience in the Sanderson, and being driven by steam, the drill gained 65 per cent. over hand-drilling.

WEST POINT DISTRICT.—Valuable discoveries were made, recently, on the north portion of the Woodhouse, on the surface. The ore is from 12 to 18 inches thick, worth about \$100 per ton. The dumps of the Lone Star are well filled with fine ore. Several teams are hauling rock to Harris & Carlton's custom mills. Fisher Bros. struck a handsome vein near Camp Flores, some 8 inches thick, of high grade ore. A gang of men have been set at work on the Pascoe mine. An overshot wheel is being erected to supply the motive power for the hoisting works. The vein is strong and valuable, having been worked extensively but superficially in former times. Kincaid & Co. are extracting rich ore from an old mine at Camp Flores. A number of abandoned mines have been re-located lately and surveyed.

EL DORADO COUNTY.

ROSE.—*Republican*, Feb. 26: Two hundred and twenty-eight ounces of refined gold, was the result of a week's run, with 10 stamps, on ore from the Rose, which was cleaned up on Monday. The rock was taken from the shaft in sinking 30 ft.

OZON.—The ledge struck in the old Oregon mine, at a depth of over 300 ft., is exceedingly rich. At the rate at which developments are now being made, Placerville will soon be able to ship from 200 to 500 ounces per day.

NUGGETS.—We were shown several handsome nuggets of gold, a few days since, said to have been taken out of Blakely's claim, on the Blakely-Johnson "lava bed." The largest piece was valued at \$30, and the others would go from \$10 to \$15.

TREASURES FROM GEORGETOWN.—The Taylor mine still continues to prove one of the richest mines in the State.

The California Water Company is running about 10,000 inches on this divide. This is all sold at ten cents an inch, and the cry is for more.

PARSON AND SHEPHERD'S CLAIM is panning out handsomely. Their last clean up was 15 pounds of gold for 30 days run of three men.

BALD MOUNTAIN.—*Messenger*, Feb. 28: The Bald Mountain company, of Forest City, have been for some time working a full force of men. The company have cleaned up the small dump and commenced on the large one. The claim continues to pay about \$50 net per day to the share.

OAK RANCH.—The Oak Ranch company are sinking a shaft in their tunnel, which was, unfortunately, too high. They are down some 27 ft. in a body of blue gravel, but have not reached the bedrock yet. The gravel prospects well. Ten of the 27 ft. of gravel through which they have sunk, prospects splendidly, and still no bedrock. That there is an immense and rich deposit of gravel under Oak Ranch is now demonstrated.

INYO COUNTY.

FROM BENTON.—*Cor. Independent*, Feb. 21: Our mines are looking more favorable than ever, establishing the fact beyond a doubt that they are true fissure veins. The Comanche, Wilson, Eureka and the Diana are all working profitably at present, panning out largely. The Brewster and Crockett companies, of Montgomery District, have commenced work upon their claims, notwithstanding the inclemency of the weather.

KERN COUNTY.

HONDORAS MINE.—*Miner*, Feb. 28: A tunnel of several hundred feet is being run to this mine.

PLACER DIGGINGS.—Winn & Scott are Placer digging below the Mammoth mine, and are getting good pay dirt.

MENDOCINO COUNTY.

QUICKSILVER.—*Cor. West Coast Star*, Feb. 28: There is considerable excitement among the people of Anderson valley in regard to cinabar mines. They believe that without a doubt rich deposits of cinabar exist in that region, and that in a short time very rich quicksilver mines will be in operation. Several assays which have been made of croppings, give good indications.

NEVADA COUNTY.

ORIENTAL.—*Tidings*, Feb. 28: The Oriental quartz mine, situated about nine miles below Grass Valley, owned by Winn & Co., is one of those large veins which, if only an ore of average grade can be found, would pay largely. The present proprietors have worked this mine about four years with varied results; the highest average run was \$25, and the lowest \$4 per ton. They have a four-stamp mill run by water power, and with a ledge averaging five feet thick, of eight dollar rock, should be able to do a paying business.

INABO.—*Graes Valley Union*, March 1: This mine has made the usual run during the month of February. The trustees to-morrow will declare the regular monthly dividend of ten per cent. on the capital stock of the company, which will aggregate the sum of \$31,000.

Emerals did not make as good a run during February as it has done in some of the months of the past. The run, however, was a profitable one, the mill turning out something over \$10,000.

NEW YORK HILL.—Work on the tunnels and opening the mine has been actively prosecuted during the winter, the heavy rains having no effect to retard the work. The upper tunnel is producing rich ore, which improves in quality the farther in the work is carried. The mine is now self-sustaining; the profits from the ore in the upper tunnel is sufficient to pay the expense of running the lower one.

MACENTA.—The shaft is down on the incline a depth of 240 feet. A level from the shaft at the depth of 210 feet, has been run. The ledge makes a turn so that the level is toward the north in one direction, and toward the east in the other. The ledge is two feet or over in thickness, and is heavily charged with metal. About 100 tons of ore is on the dump, and will be hauled to the mill and crushed as soon as the roads will allow.

POK.—This mine is again at work sinking the shaft and taking out rock. The ore coming out of the shaft now appears to be very fine.

KENTUCKY has been doing very little work during the month. The water in the mine was too strong to be handled with advantage by the pump.

WASHINGTON BAYS.—Work is still prosecuted on the Bay mine with good results. The rock shows well in free gold and sulphurets, and

the decomposed portion of the ledge gives very rich pannings.

RANDOLPH FLAT.—The Picayune company, at Randolph Flat, have spent some months in running their tunnel further into the hill, laying a new track, flume, etc., for the better working their valuable claims. Having completed their improvements they are now taking out and washing the gravel, which shows well in gold, and gives promise of a rich yield.

PLACER COUNTY.

MINING INTELLIGENCE, ETC.—The Crater Hill mine, owned by the St. Patrick company, employ about 100 men. The yield of gold at the last cleaning was highly satisfactory, and a bright future is predicted for this mine.

THE ORLEANS MINE.—We called at the works last Saturday, and found a lively force at work, some sinking and some drifting. The main shaft is down about 60 feet, from which level they are drifting to connect with shaft No. 2, now about 40 ft. deep—100 ft. easterly—which eventually is intended to be the main working shaft.

FROM IOWA HILL.—Our mines are most all worked by hydraulic; and, at present, miners are as busy as bees. The mines here are small, there being used for hydraulic purposes only about two thousand inches of water.

PLUMAS COUNTY.

MINING NOTES.—*Cor. National*, Feb. 21: The new Black Hawks have not done much panning as yet, in their claims. The high waters have cleared the cañon of accumulated tailings, and they are going to clean up the bed rock the coming summer.

The Spanish Creek company have been running all winter, have stripped considerable bed rock, and, as I understand, are making some money. They are running one Giant all the time, and will start another one during the coming summer.

Bushman & Co., on the head of the Blackhawk, are making improvements in digging ditch, making new reservoirs, a new house, clearing away timbers, etc.

Nevada.

WASHOE DISTRICT.

OPHIA.—*Gold Hill News*, Feb. 26: The bottom of the south winze on the 1,300-ft. level is still in good ore. The ore in cross-cut No. 2, on this level, shows considerable improvement in quality. The up-raise from the 1,465-ft. level is still in rich ore. The south winze from the 1,465 ft. level has penetrated the west ore body to the depth of 25 feet, the entire distance in very rich ore, showing a steadily increasing richness, as greater depth is attained. The ore extracted from the winzes, drifts and cross-cuts on the 1,300 and 1,465 ft. levels has been stowed away temporarily in drifts and tunnels until, there being no longer room for more, the hoisting of ore was necessarily commenced last evening.

CROWN POINT.—Daily yield 450 tons of ore, from the 1,000, 1,200, and 1,300-ft. levels. The 1,400-ft. level is being opened out so as to make room for the employment of more men. The north winze, at the 1,400 ft. level, has attained a depth of 40 ft.—all the way in very rich ore. The middle winze, on the same level, is in good ore. In the main east drift, on the 1,500-ft. level, excellent ore has been encountered. The ore has remained of the same rich character for the last 10 feet made in the drift.

BELCHER.—Daily yield, 550 tons of ore, from the 1,000, 1,200, and 1,300-ft. levels. The ore stops on the 1,200 and 1,300-ft. levels are looking splendidly.

GOULD & CURRY.—The main east drift on the 1500-ft. level is in barren quartz, with a considerable flow of very hot water from the face, causing slow progress. A large air compressor, with all the necessary air pipes, and a complete set of drills, have been ordered from Pittsburgh, Pa., and are expected to arrive daily.

SILVER HILL.—A fine body of good ore has been developed between the first and second levels, lying between the north and Justice winzes. Work has been again resumed in the face of the main south drift on the first level. This drift is evidently just entering the body of ore worked on the surface, and known as the old St. Louis chimney, which was extremely rich in gold.

JULIA.—The main south drift, at the 900 ft. level is advancing at the rate of 4 ft. per day. It is now in 560 ft. south from the shaft and show some excellent prospects of good ore.

OVERMAN.—The main west drift on the 1200-ft. level is still driven vigorously ahead, the rock in the face working finely.

GLOVE CONSOLIDATED.—The main west drift, on the 1,400-ft. level is advancing favorably, the face showing very good ore.

NEVADA.—The main south drift is discontinued at present, it being through the main ore chimney, which proves to be about 60 ft. in extent, all good milling ore. The extent of this chimney is not fully ascertained as yet, but it is evidently the largest body of ore known of on American Flat.

DAYTON.—The north winze, on the third station level, is down 40 ft., the entire distance in good ore, much of the ore encountered being of the soft, decomposed, black-looking and rich character, of that found near the junction formed by the winze from the second level with the north drift on the third level.

UTAH.—The heavy drain of water from the main west drift at the first station is gradually decreasing. The bad air encountered in this drift has been driven out, and work in the face resumed. Since this drain of water from this drift commenced, the head of water in the old shaft has been lowered about 140 feet.

SIENNA NEVADA.—There is still a slight improvement in the quality of the ore extracted. Daily yield 60 tons. The ore breasts show no signs whatever of giving out. The mill is in fine condition and is kept steadily at work crushing ore from the mine. The cross drift, from the up-raise in the old Sacramento ground has passed through the small streak of ore encountered last week, and is again in clay mixed with quartz.

LEO.—The main tunnel or shaft is still being driven forward into the hill, following the ore vein, which has widened again till the foot wall has gone out of the tunnel. The ledge matter is more broken up and less concentrated than it was.

YELLOW JACKET.—Main incline 110 feet below the 1,540-ft. level, but little progress being made in sinking the last three or four days, on account of being employed in getting another pump-lift down. Water troubles less, as it is getting more drained out.

BALTIMORE CONSOLIDATED.—The large, new hoisting works building is inclosed, the roof on, and otherwise rapidly approaching completion. The new boilers are on the ground. The new pump on the 600-ft. level is in place ready for use. The pump column is nearly all in, and everything rapidly approaching a readiness to resume sinking the main shaft, and opening and prospecting the 500 and 600-ft. levels.

CONSOLIDATED VIRGINIA.—Sinking the main shaft is making rapid progress. Opening the 1,400-ft. station is also making good headway. The ore stops and breasts on both the 1,000 and 1,200-ft. levels are looking splendidly.

IMPERIAL EMPIRE.—Sinking both the north and south winzes on the 1,700-ft. level, is making good headway, the bottom of both still in quartz of a very promising character.

CALIFORNIA.—Both the north drift from the Virginia Consolidated, and the south drift from the Ophir on the 1,300-ft. level are advancing rapidly to connect with each other.

INDEPENDENT AND OMEGA.—Sinking the main shaft is progressing finely.

HALE & NONCAS.—The main north drift, on the 1,900-ft. level, has reached the north line without encountering any considerable body of pay ore.

CHOLLAS-POTOSI.—Daily yield 60 tons of ore, the assay value of which is \$30 per ton.

SOUTH SRAA.—Work is about being resumed on this mine, which is eligibly located, a short distance south of the Dayton and Kossuth mines.

CALEDONIA.—The main west drift, at the 600-ft. station, is in 212 feet, the rock in the face working a little softer, with good indications of soon reaching the main ledge.

NEW YORK CONSOLIDATED.—Sinking the main shaft is progressing at the rate of two feet per day. It is expected that the shaft will cut the top of the ledge by the time a depth of 200 ft. more shall have been attained. The drain tunnel is completed, connection having been made with the shaft, and all the water being now discharged through the tunnel.

LADY WASHINGTON.—Sinking the main shaft is being pushed vigorously ahead. The heavy body of water encountered is subsiding, the rock is much softer, and better progress is being made.

ALPHA.—The streak of ore encountered last week in the north drift, on the 1,500-ft. level from the Imperial shaft, still continues, sometimes widening out, and then again narrowing down as the work advances.

JUSTICE.—The main incline is now down 30 feet below the 400-ft. level, and progressing downward at the rate of two feet per day.

SUTRO.—The north drift is still being driven forward vigorously and is now in 120 feet. The drift is still in ledge matter, assaying on the average \$30 to the ton.

FLORADA.—The clearing out and repairing of the old tunnel is getting along finely. Good prospects have been found at various points in this tunnel.

SAVAGE.—Sinking the south winze on the 1,700-ft. level is making steady progress.

SEGREGATED ROCK ISLAND.—It is the intention of this company to commence sinking a large three-compartment working shaft in a very few days.

TYLER.—The north cross-cut from the main west drift, has penetrated the ore vein a distance of 8 feet, all the way in low grade ore.

SCORPION.—This Company are making all necessary preparations for sinking the main shaft of 800 feet before drifting for the ledges.

DANEX.—The shaft is down 342 feet, the bottom in rock of a much harder nature than that heretofore encountered and requiring continued blasting.

BUCKEYE.—Opening the new station at the 450-foot level is making rapid progress.

CHAPIN AND EAST COMSTOCK.—The new hoisting works being completed will be started up to-morrow morning.

CROWN POINT EXTENSION.—Sinking at the bottom of the shaft will shortly be resumed.

WOODVILLE.—Sinking the main incline is making rapid progress.

EUROPA.—The face of the west drift has shown an improved quality of quartz and gypsum ore the last two or three days, giving assays of \$10 to \$25 to the ton.

SOUTH COMSTOCK.—New shaft down 57 feet below the car track of the main tunnel to-day, with the bottom in very favorable looking decomposed quartz and gypsum vein matter.

KNICKERBOCKER.—The water is drained from the shaft, and preparations being rapidly made for prospecting on the lower levels of the mine.

FARMOUNT.—The main north drift is still advancing along the line of the ledge, the face in low grade ore.

The Great Bowlder Drift.

Every geological formation, whether crystal, stratum or fossil, is deeply interesting to the thoughtful observer; but possibly the most interesting of all is that wonderful deposit familiarly known as the "drift." This drift formation is a peculiar girdle of pebbles and bowlders which encircle the globe in the North Temperate zone. This remarkable gravel belt has an average width of about twelve degrees, and preserves throughout a notable uniformity in its deposition and general characteristics. In geological phrase the drift is variously denominated the "glacial period," "post tertiary period," and "quaternary period." By whatever name it may be designated, it is quite apparent that the drift immediately preceded the present condition of affairs upon this planet, and that its deposition was comparatively recent. Indeed, there are substantial reasons for believing that this latest of terrestrial cataclysms occurred long ages after man had existed upon the earth. Many theories have been advanced in relation to the origin of the drift, some maintaining that the gravel and bowlders were carried from the North by floating icebergs; others that they were borne along by moving glaciers, and others that they were distributed by a mighty tidal wave of the ocean. We have neither the space or the inclination to discuss these theories here. Suffice it to say that the gravel beds vary in depth from a few feet on their extreme southern rim to many fathoms in the far North. The pebbles and bowlders are nearly all rounded and polished by the action of water and by mutual attrition. That this tremendous mass of loose rocks came from the North has been proven by actual investigation, for they have been traced to the parent ledges from which they were torn in Asia, Europe and America. Another proof of their northern origin rests in the fact that wherever the drift beds are observed, the gravel invariably increases in size as they are traced toward the Arctic regions.

That the deposition of this immense mass of stony fragments was sudden and violent is apparent from the fact that the beds not only bear a general uniformity of structure and present no features of gradual formation, but they also give proof that the mighty force which hurled them towards the equator, also caused them to annihilate and entomb all the fauna and flora which then existed in the North Temperate Zone. That man existed on almost every portion of the globe prior to the great drift catastrophe is now generally conceded by archaeologists and geologists. Rude works of art, such as stone hatchets, obsidian and flint arrow heads, stone mortars and pestles, and many other works of primitive men, have from time to time been picked up from the "hed rock" or strata immediately underlying the drift in every portion of Northern Europe, Asia and in North America. That the manufacturers of these stone implements existed upon the spot where the articles are now found is evinced by the fact that each locality affords its own distinctive character of implements. There seems, however, to have been a surprising similarity in the habits and mode of living of the *genus homo* in the stone age, the world over. They were all flesh-eaters, and subsisted like savages now subsist, by the chase, and the small deer which they hunted were the mastodon, the giant elk, the great bear and other antediluvian monsters.

In California and Nevada the vestiges of post-pliocene man are numerous and anomalous. Since the discovery of gold in California the placer miners have been constantly exhuming vases, mortars, pestles, arrow and lance-heads, stone axes and the like, all mingled with the petrified remains of the primeval forests and the silicified bones of extinct animals. The most singular fact in relation to these relics, is that they are invariably found directly on the bed rock, under the gravel-beds, in many instances hundreds of feet from the surface, and usually in the richest "pay-dirt" of the placer, thus showing clearly that both the gold and the gravel have been deposited where they now lie long since the owners of the stone implements existed upon the earth.

Speculation upon these important facts would lead us beyond the limits of a newspaper article, and we shall merely allude to one other notable feature of the California drift. What is known as the "great blue lead," or deep, gold placer which skirts the western slope of the Sierra Nevada, and which is plainly traceable for several hundreds of miles through the country, is famous for containing gold-bearing quartz-pebbles and bowlders which, in crystallization and lithological structure, are totally different from any variety of gold quartz to be found in any explored locality on the Pacific coast. These bowlders are frequently very rich in crystallized gold: they are all worn and polished like the surrounding gravel and have evidently been carried to their present resting place by the great drift. As we have stated, these quartz bowlders are different from any of our quartz deposits both in hardness, color and texture. Now, if it be true that the great bowlder drift came from a remote region in the British possessions, which geologists assure us is true, is it not reasonable to suppose that these surprisingly rich quartz-pebbles indicate the existence, in the far North, of the heaviest gold deposit in the world?—*Virginia Chronicle*.

THE "Peerless" quicksilver mine, Sonoma county, has been sold to Eastern speculators.

Arizona Mines.

A correspondent of the *Chronicle* writes from Tucson, Arizona as follows: Since peace has been established in Arizona all kinds of business is beginning to revive. In traveling from one end of the Territory to the other no danger is or need be apprehended, provided the attempt to force the Hualapais from their homes is not persisted in. Through the wisdom and energy of General Crook the Indians have been taught, by force, the only argument they can ever understand, that they must be quiet or die. This is the first time, for many long years, that prospecting or mining could be engaged in with safety, and this short space has been more than sufficient to exemplify the truly wonderful wealth of our mountains. From all directions we receive samples of fine silver and gold ores and advices informing us that the much-needed work of sinking shafts to develop the nature and extent of the veins is begun in earnest and can have but one conclusion, that of making us the richest mining section of America. In some sections arastras have been constructed and worked with encouraging results. Aside from the precious metals, there are copper mines capable of producing sufficient for the world's consumption annually. Ores ranging in value from 30 to 60 per cent. copper exist in several mines, and no doubt others will be discovered equally as rich. The day of progress is just beginning to dawn on us and our remote land is to take a high place among the mineral producing regions of the Pacific. "The stone that was rejected by the builders afterwards became the chief corner-stone of the temple," and those who have believed that Arizona would never be anything but a wilderness, too lonely to howl, will see it, even long before the great railroad comes to help us, a rich and prosperous Territory.

The river bottom lands are very fertile and yield good crops wherever farming has been tried. The mountains, hills and valleys afford excellent grazing for any number of herds, and it is now becoming a favorite business. By the time the Texas Pacific is completed, we will be ready to ship immense quantities of gold, silver copper, horses, cattle, sheep and other products required in the business industries of the world.

The copper mines on the Frisco river are shipping to Baltimore by way of Granada, the terminus of the Atlantic and Pacific Railroad. The copper mines near Tucson are now sacking, to ship by the same route. The freight rates to San Francisco are much higher than by the Atlantic and Pacific road. So it will soon be with the passenger trade, for it costs but little more money to go to New York by this route than it does to go from Arizona to San Francisco. Several of our merchants find it to their advantage peculiarly to patronize Eastern markets. Naturally our trade should be with San Francisco; but we are not wealthy enough to pay the exorbitant freights charged—not by the ton, but by the foot. A pair of hells is squared, and though not weighing over 125 or 150 pounds, is by measurement made to weigh about 500 or 600 pounds, and so on through the whole list. The Pacific Mail Steamship Company is a great power, and through its workings much of the trade that would go to San Francisco goes away from you.

ARTESIAN SHAFT.—As soon as the weather will permit, General Williams and company will resume work on their prospecting shaft, situated in the eastern suburbs of the city. They now have a good supply of diamonds for their drills, and fear no more delays after again resuming operations. But one more hole remains to be drilled before they will begin the work of blasting out their shafts to the full size—a first-class three-compartment shaft. The holes marking out the size of the shaft are all completed to the depth of 500 feet, except one, as we have said. The work of blasting out the rock will progress very rapidly, as there is nothing to be done but to put in Giant powder cartridges and blow out the core as fast as it can be hoisted. The "prospector" brought up by the drills will justify the sinking of a first-class shaft. As soon as another hole has been completed, parties in Carson City will take the drill and machinery to that town for use in drilling artesian wells. There can be little doubt, from the lay of the land, that such wells will succeed admirably in that town. In a valley encompassed by high mountains water should rise to the surface in wells of a depth of two or three hundred feet.—*Virginia Enterprise*.

INDIUM.—Indium, like thallium, was first revealed by its spectrum, which consists of two bright indigo bands, the more brilliant of the two being a little more refrangible than that of strontium, the other a trifle less than that of potassium. It is found in one or two varieties of wolfram, and in zinc and its ore in exceedingly small quantities—the zinc of Freiberg, Germany, in which it was first observed, containing not more than one part in two thousand. When zinc is dissolved in sulphuric acid, the new metal remains in the spongy residuum. To obtain it, dissolve this residuum in nitric acid, and treat it with ammonia and carbonate of barytes, when the hydrate of indium is precipitated. This indium sponge may then be melted with cyanide of potassium, resulting in a whitish metal, which, after a while, assumes the tint of bismuth, and gradually loses its color so as to resemble lead. It has a density of 7.4 melts at 176 centigrade, burns at a red heat, and drives out hydrogen on solution in sulphuric acid.

French Guiana.

We have permitted, says the *Salt Lake Tribune* of February 20, to make the following extracts from a private letter written by Thos. E. Jones to a friend in this city. Mr. Jones is well known here, and his statements can be relied on as being strictly true:

I am now in the mountains—or forests of Cayenne, prospecting for gold. I have seen some very fine specimens of the article, and am satisfied there are spots that are probably rich. The rental of land is cheap, and wherever there is a mining company, mining successfully, the land for miles around is bought up and prospected. I think the chances are thin, but I shall, however, look a little longer and satisfy myself.

The Formation of the Country.

As far as I have seen, is a bluish clay, which resembles, when put in water, washed putty. The beds of the creeks are of the same material, and contain considerable quartz, some of which shows free gold. There is nothing here that indicates a wash. I have not seen a gravel stone in the country. The gold is in a rough state. I have examined the hills, but there is nothing to guide a person, and everything is covered with the blue clay I before mentioned.

The Climate.

It has rained every day since I came here, and the rainy season, I am informed, begins next month and continues until June. It is very hot, and a white man cannot work.

To-morrow I go with an African about ten miles to a creek, which he says is good. If I can write anything encouraging, I will, but there is one thing certain, I will not write that this is the richest country I ever saw, when I know it is not. It is by no means a fit country for a man without means. A person should have at least \$1,000 but I landed at Surinam with only \$10. That was in September, but I got through and up into the country.

Don't Come.

Mrs. Murphy wrote for one or two parties to come out. On what grounds she did it, I am unable to say, as she had only been in the country one month, and her husband had not been in the mines. She knew nothing to justify her in doing so. Until I see something very different from that I have already seen, I will not write for anybody to come.

Oregon Gulch Mountain.

The subjoined mining intelligence is furnished by the *Weaverville Journal* of the 21st ultimo:

The mountain, or dividing ridge, between Weaver Basin and Oregon Gulch has long been generally believed, and almost positively known, to be one of the very richest gravel deposits in California. No water is the only reason why it has not been extensively worked—that is, no water high enough, for the richest deposit is high up on the mountain. No work has been done on this divide, except what James Ward has done with a very limited supply of water—usually holding out no longer than while the rain was falling—and this work is considered only enough to prospect the deposit. With the small amount of water at his command, Mr. Ward has not been able to average more than two weeks' sluicing per year for several years; and during these two weeks he has not stripped as much bed rock as could have been done in a single day with a good head of water in a properly rigged claim. Yet he has made a living, and this is sufficient to show that the gravel deposit he has opened is immensely rich, and is known to be extensive. The Ward claim, together with considerable adjacent mining land, has now passed into the possession of Loveridge, George & Co., and it is to cover this deposit that this company proposes to carry the West Weaver water, lately purchased from Dr. Ware. The water will be taken from West Weaver creek about a mile above the present dam, and 3½ miles of ditch will put it on the Oregon Gulch divide, over 470 feet higher than where the Junction City wagon road crosses. This ditch will cover a more extensive and richer section of mining land than is covered by any water ditch in the county at the present time, and its completion will distinctly mark a new and brighter era for Trinity county. No time is to be lost in building this ditch, as it is intended that water shall be turned into it by the 1st of May, and perhaps sooner. The line of ditch is already surveyed and work is to commence at once. As to what immediate use is to be made of the Rush creek water, the company has not yet decided, but the waters of West Weaver, Rush creek and Stuart Fork are intended to supply a chain of ditches which, when completed, will surpass any similar work ever constructed in the State, and will add greatly to the future prosperity of our country.

The bridge to be constructed over the Frith of Forth will be by far the largest in the world. According to the *London Builder* its height will be 150 feet, and the number of spans nearly 100. The smaller span will be 150 feet wide, which is beyond the average width of the largest spans in ordinary bridges; but the crowning marvel in the whole structure is the great span in the center, which is to be 1,500 feet, or nearly one-third of a mile, in width—an extent unparalleled in any existing structure of the kind. The entire cost of the bridge will be at least ten millions of dollars.

Treating Chrome Steel.

In our last issue we presented some of the advantages of the use of chrome steel, and now give from the circular of the company the proper methods of treatment.

Forging.

For forging, it may be heated to almost a white heat without fear of injury; in fact, it is desirable that it be worked at a high heat. The Nos. 2 and 3 grades are preferable for welding purposes, as they may be welded to themselves or to iron, without fear of injuring the quality.

Tempering.

For tempering, the steel should be dipped at a low red heat, as seen in the shade; all tools forged from a large body to a small edge should be allowed to cool off after forging, and be re-heated for tempering. The reason for this is, that the interior of the tool retains the heat at which it was forged sometime after the exterior surface has cooled, and is still too hot for tempering, and if then put into the water or other cooling preparation, is liable to crack.

A simple method of arriving at the proper heat for hardening chrome steel is to place the end of a bar into the fire and heat it; take it out, and note the different degrees of heat the whole length of the heated portion; then plunge it into cold water. After cooling, break off a little at a time with a hammer across the anvil; the "grain" (if the point of the bar has been too hot) will show at first coarse and granular and gradually become finer, until you reach the point where the bar was heated to a dull red; and there the "grain" will be found fine and fibrous; and the steel harder, stronger and tougher than where the heat was greater.

The point where the fine fibrous "grain" appears, was at the proper heat when dipped, and that is the heat required for successfully hardening tools from chrome steel.

Annealing.

For annealing, heat the steel uniformly in all its parts to a low red heat, and cover well up in any of the usual annealing substances.

Welding.

For welding, heat the steel as you would iron, lay the pieces together, and "tap" quickly and lightly until they adhere, then gradually increase the force of the blows until the weld is complete.

When possible it is well to "upset" a little by "tapping" lightly on the ends with the hammer.

The reason the steel should be "tapped" lightly at first, is that being very hot and therefore very soft, (almost molten) if struck too hard it is liable to fly.

Harden at the lowest heat at which you can get the steel to take the temper.

The only way tools from this steel can be spoiled, is by dipping them in water or hardening mixtures when too hot. The steel may be restored by re-tempering at the proper heat.

It being absolutely essential to the successful use of chrome cast steel that it should be hardened at the lowest heat at which it will take temper, (a low cherry red in the shade), and all purchasers of tool steel should conform literally to this requirement; otherwise, the peculiar and distinctive properties will not be developed.

TUNNELS.—The completion of the Hoosac tunnel and the rapid progress of the Sutro have caused the miners both in the East and in the West to look with interest upon what has been and is protected in connection with tunnel driving. It is in Germany, says the *Mining Journal*, that the great tunnels have been constructed, and these have been made exclusively for mining. There is the great tunnel at Freiberg, twenty-four miles long; the Ernst-August and the Georg at Clausthal, thirteen and a half and ten and three-quarter miles respectively; the Joseph II. at Schemnitz, nine and a quarter miles; the Rothschildenberg at Freiberg, eight miles; the Mont Ceniz, seven and a half miles, which about completes the European list. In the United States we have the Hoosac, in Massachusetts, five miles long, the Sutro, in Nevada, for opening up the celebrated Comstock lode; this tunnel, although only four miles long, will, with its ramifications to the various mines of the district, prove one of the most important in America; the Sierra Madre tunnel at Black Hawk, commenced during the present year, and which will be twelve miles long, as well as San Carlos and Union Pacific tunnels, which are under two and a half miles. The Ernst-August tunnel was driven at the rate of a mile per annum, and it will be interesting to notice how long it will take the Americans, with all the approved appliances at present to command, to complete the nearly similar Sierra Madre Tunnel.

IMPROVED BUTTON HOLDER.—The holder consists of two plates of metal which are forked at one end, the space between the prongs being V-shaped. One of these plates has grooves on the inner edges of the prongs, which grooves receive the buttons. This V-shape of the opening adapts the holder for buttons of different diameters. The cloth passes in between the two plates, and is pressed upon the buttons by the prongs of back plate as the two plates are pressed together or toward each other, when the holder is in use, by the fingers of the operator. The button is then sewn on with a needle and thread, in the usual manner. The advantages claimed are that the fingers are not exposed to the needle, and the sewing on is performed with much greater ease.

USEFUL INFORMATION.

Marbled Paper.

This, much used by bookbinders, is produced in a very curious way. The name is not exactly suitable, seeing that few of the specimens are imitations of real marble; but it has gradually become applied to sheets of paper of which one surface is made to imitate any kind of stone or wood. Small brown spots on a light ground, marble veining on a shaded ground, curled patterns and wavy patterns, all are produced in great diversity. The colors are of the usual kind, such as Naples yellow, yellow lake, orpiment, verigris, rose, pink, red lead, carmine, terra di sienna, Dutch pick, indigo, Prussian blue, verditer, amber, ivory black, etc.; they are ground up very fine with prepared wax and water and a few drops of alcohol. A solution of gum is made of gum tragacanth, alum, gall, and water, and placed in a trough or shallow flat vessel. Color is thrown on the surface of this gum water, usually by striking a brush against a stick, so as to produce a shower of sprinkles. Pigments of different tints and different thicknesses or degrees of consistency are thrown on; some spread more than others, and thus a diversity of patterns is produced. Sometimes the color is thrown on by means of a pencil of very long bristles; it is diversified by means of a rod, held upright and carried along amongst the colors in a wavy or spiral course; and it is further cut up into tortuous lines by passing a kind of comb along it. All this takes place on the surface of the gum solution in the vat. When the vat is prepared, a sheet of paper is laid down flat on the solution, care being taken that every part of the surface shall be wetted; the paper takes up a layer of paint, fancifully disposed in a pattern or device, and is hung up to dry. In order that one color may not be blended or confused with another, they are ground up with different liquids, some watery, some gummy, some oily. The imitations of marble, gray and red granite, and fancy woods, are certainly not very faithful; but the paper is lively in appearance, and remains clean and bright a long time when polished. This polishing is effected by moistening the colored surface of the paper with a little soap, and rubbing it with a piece of smooth marble, an ivory knob, a glass ball, or an agate burnisher. Beautiful products have been produced within the last few years under the name of iridescent and opalescent paper. Like the commoner kinds, these receive colored devices on one surface; but great delicacy and care are called for in the processes to produce the exquisite play of light and shade which suggests the names given to these varieties.—*Practical Magazine.*

TESTS FOR ALKALOIDS.—Phosphomolybdic acid has long been used as a test for alkaloids. Phosphotungstic acid has also been recommended for the same purpose, and recently Scheibler has called attention to two new acids prepared by him, the formulae of which seem somewhat doubtful, but which are excellent tests for alkaloids. The writer has made a few experiments with a solution prepared very easily, by boiling, for a few minutes, common tungstate of soda with half its weight of syrupy phosphoric acid. Quinine gives a distinct milkiness almost immediately in 10,000th dilution, and after 24 hours in 100,000th dilution. Morphine gives the reaction plainly enough in 10,000th dilution, but not in 100,000th. Strychnine gives it quite plainly in 200,000th dilution, as stated by Scheibler. This strychnine precipitate may be used for the chromic acid test, and the morphine and quinine compounds for the ordinary tests for those alkaloids. Bromine water, which can be prepared in a minute, is more handy than chlorine water, and answers just as well, or better, in conjunction with ammonia in the test for quinine; also in the ferrocyanide test. Fluckiger has found that it will detect one part of guanine in 20,000 of water. The ferrocyanide test (Vogel's) is not so delicate, detecting the alkaloid in 2,500 parts of water.—*Canad. Phar. Jour.*

TREATMENT OF NEW DWELLING ROOMS.—The dampness of newly-finished rooms is not due so much to the water used in mixing the plaster, as to the water of hydration of the lime, liberated by the action of carbonic acid. The action of the small quantity present in the normal atmosphere, would, however, be so slow and the water be liberated so gradually, that no injurious effect could result. But as soon as the rooms had become tenanted the large amount of carbonic acid given off in respiration causes such rapid displacement of water, and with it other matters indicated by the peculiar odor, that unpleasant and injurious results may follow. Treatment of the rooms with carbonic acid, before occupying them, suggests itself at once, as a means of rendering them rapidly tenatable. Although, by calculation, it would require the carbonic acid from the combustion of about 320 pounds of coal, to displace the hydrate in water in the walls of a room of about 1,500 square feet of surface, in practice, the consumption, in a suitable way, of about five pounds of charcoal per day, for five days, in the room, would answer, because the interior portions are protected from rapid action of carbonic acid, as soon as a layer of about one-tenth of an inch has been acted on. This is proved by the fact that Professor Fuchs has detected caustic lime in walls centuries old.—*Ec.*

Solvent Powers of Water.

Water is a physical rather than a chemical agent in bleaching and dyeing; it is the vehicle which carries the chemical substance to the cloth to be operated upon, or which removes the matters necessary to be removed from it. When a substance is mixed with water, it may either be dissolved by it, and disappear, as salt does; or, it may remain in suspension, as chalk does. Nothing is considered to be actually dissolved in water if it can settle out again, or if it will not pass with the water through a filter made of paper or calico; thus, to talk of dissolving ground chalk in water, is incorrect; for, if allowed to stand, it would settle out; or, if the mixture were filtered, the water would pass clear, while the chalk would remain upon the calico; but blue vitriol (sulphate of copper), for example, does really dissolve in water, and the liquor all filters through together; to deprive the water of the blue vitriol would require chemical means different in kind from filtration. Water, therefore, dissolves some substances and not others. Water does not dissolve the same quantity of all soluble substances; of some it can dissolve its own weight, and more; of others a small portion; and of some, extremely little. As a rule, hot water dissolves more than cold; but, upon cooling, the excess mostly falls out as crystals. This point deserves notice; for a liquor, which is of right strength when a little warm, may be too weak when it becomes cold; left in a carboy, for example, in a cold place, because the salt crystallizes out; this is the case only with those salts that are but sparingly soluble, as chlorate of potash, cream of tartar, sulphate of potash, etc. The crystallizing is sometimes troublesome in steam colors; which, right enough when freshly made, become filled with small crystals, and rough on the machine; it is felt in the case of an ageing liquor, which contains chlorate of potash as an active agent; which, crystallizing out, leaves the liquor weak and not able to do its work. As a usual thing, the drug room upon a printing or dyeing works should be cool, but there are some liquors better in a moderately warm place; brown vitriol, for example, in winter time, is apt to go solid in the carboys, if kept in an exposed place.—*Ann. Tex. Manuf.*

MOLDING SAWDUST.—The cement is nothing but glue dissolved in water. In order to prepare the material the sawdust is put in an earthen vessel, boiling water poured on it, stirred up, and left to soak for about a week, and again stirring from time to time; then it is boiled until it has attained the consistency of a paste, after which it is put in a coarse cloth and the excess of moisture well squeezed out. This material is then kept ready for use; when wanted a sufficient quantity of thin glue-water is added so as to obtain a paste, which may be pressed into molds, or rubbed into cracks or holes to disguise flaws or other defects in woodwork. When the sawdust of the same wood is used, the work carefully done, well dried and cleaned, the imperfections repaired in this way can scarcely be detected; while the ornaments made differ only in one respect from those made by carving—in not showing the grain of the wood.—*Ec.*

Some one has patented an arrangement of appliances for cleansing metallic plates covered with tin and other metals; the plate is caused by series of rollers, to pass through a casing containing bran or sawdust, on issuing from which any absorbent material which may have adhered is removed by means of brushes suitably arranged. Another gentleman claims improvements in the method of cleaning and polishing tin and other plates. After the plates have been immersed in oil, they are dipped in a hot alkaline water bath, and subsequently passed through a polishing machine, which, by means of rollers supplied with bran, or some other suitable polishing substance, imparts a brilliant finish to the surface.

TESTING FOR COPPER AND TIN.—The German Pharmacopoeia demands that medicinal extracts must be free from the presence of copper and tin. Dissolve the suspected extract in five times its volume of water, or weak alcohol, and, after adding a drop of dilute chlorhydric acid, to set in the solution a rod of clean metallic zinc. Copper will be of course indicated in a half hour by the usual color. If copper and tin be present, the rod will have a brownish tint, and if tin alone, a white color. These precipitates may be scraped off with a knife and examined after re-solution.

As a simple method of detecting adulteration of wine, into a small quantity of the wine to be tested, says *Le Temps*, drop a piece of potash. If no deposit is formed, and the wine assumes a greenish tint, it has not been artificially colored. If, however, a violet deposit appears, elder or mulberries have been used. If the deposit be red, the adulteration is sugar beet; if violet red, campeachy wood; if violet blue, privet berries; if clear blue, coloring matter obtained from sunflowers.

TRAGACANTH MUCILAGE.—The Boston *Journal of Chemistry* adds the following to the many receipts for making mucilage: Take of powdered tragacanth, 1 drachm; glycerine, 6 drachms; water, enough to make in all 10 ounces. Rub the tragacanth in a mortar with the glycerine and then add the water. This will produce a mucilage at once of excellent quality.

GOOD HEALTH.

Moisture the Cause of Periodic Fevers.

Dr. A. J. Squire advances, in *the Herald of Health*, a theory which has been before maintained as to the origin of periodic fevers; namely, that these are due, not to vegetable or animal decomposition, nor to hypothesized malarial germs, but simply to moisture. In defense of this supposition, Dr. Squire makes some very good points, and we reprint the more important paragraphs from his article, as containing some interesting observations:

There is no class of diseases more prevalent than periodic fevers. The annual number of deaths from them, as shown by the United States census for 1870, is 11,423, although an important item in our mortality list, conveys but a feeble idea of the amount of sickness, suffering, loss of time, of the impairment of health of body, of the enfeeblement of intellect produced by them.

Of the cause of periodic fevers we have had at different periods several given, to which my limits will hardly allow to allude. But in general terms, when the cause has been claimed to be gas, the objection of the law of gaseous diffusion has destroyed the claim. When it has been claimed to be produced by decomposition of animal matter, the extensive prevalence where there was no animal matter has destroyed the theory of animal decomposition. The theory of vegetable decomposition has shared nearly the same fate. The severe intermittents on the rocky shores of the Mediterranean, and on the sandy plains of Holland, have been cited as conclusive proof against it. In the more recent theories, the poison consists of low animal or vegetable organisms, a constant and indispensable condition for the growth of these organisms is moisture.

The supporters of these theories all tell us these organisms float, and are rapidly produced only "in moist air." To this theory is opposed several facts. Thus, Parks says: "It has generally been supposed that wearing flannel next the skin lessens the risk of malaria. As it is generally believed the poison of malaria enters either by the lungs or stomach, it is difficult to see how flannel next the skin can prevent its action, except indirectly, by preventing the chill in persons who have already suffered from ague. But the very great authority, Andrew Combe, drawn from experience at Rome, is in favor of its having some influence; and it has been used on the west coast of Africa with success."

Having given careful study and attention to this subject for more than thirty years, with constant association with many persons carrying so much fever tendency as to be good anemometers, and having taken their testimony as to the pernicious effects of moisture, I have been led to question all of the theories heretofore given us. I have noticed the beneficial effects of buffalo robes and overcoats during long night rides in ague districts. I have observed the occurrence of ague in fall and spring, in rooms without fires, while other inmates in other rooms of the same house, with fires, remain free; the fever only ceasing to recur on returning the stoves and warming the rooms. I have observed, too, many cases of fever caused by the dampness of newly-plastered walls, the lime and recent state of surroundings seeming to negative the supposition of either animal or vegetable production. These facts, and many more which might be cited, lead me to believe the disease dependent on moisture.

At the same time there is every reason to believe that animal or vegetable impurities in air or water are liable to undergo changes when combined with heat and moisture, and to become productive of many diseases, and to aggravate all others. It is equally probable that disintegrated tissue contained in the "twenty-eight miles" of tubing of the "seven million" sudoriferous glands, and walled in by moisture, would produce specific poison in those glands—a poison capable of producing ague, or any form of malarial fever. These fevers might be modified, like other diseases, by the quantity of the poison, by the constitution, and many other causes.

Draper cites authority for believing that a person may sleep with perfect safety in the center of the Pontine marshes, by having his room kept well heated by fire during the night. These, and other reasons to be hereafter cited, lead to the conclusion that it is not what we drink nor what we inspire that produces fevers, but that it is what we do not perspire. To illustrate: Let ordinary insensible perspiration equal "thirty-two ounces per day in dry air," and equal "three and one-half ounces in moist air." Then the difference—twenty-eight and one-half ounces—gives us a cause more real and tangible, by twenty-eight and one-half ounces, than any of the heretofore supposed malarious causes. For the most minute microscopic examination has failed to find any of the heretofore supposed causes in the eyelet.

The more carefully one will study the causes heretofore given, the more fully will he be satisfied that their beginning, middle and end is essentially moisture. They all require moisture and the necessary conditions of evaporation. Thus large bodies of water, that absorb the heat, prevent these diseases. Forests, the leaves of which detain and absorb the moisture, prevent them; while marshes, and all other

places holding moisture in the most favorable conditions for evaporation, produce them.

In conclusion, a belief in this theory would lead to improved hygiene and improved health, diminish the severity of periodic diseases, and the frequency of relapses. For when our whole force was properly directed and concentrated, we would accomplish more against moisture, considered as the cause, than when considered only as one of the conditions.

Glue as a Healing Remedy.

T. A. Field writes to the *Scientific American*: For the last twelve or fourteen years I have been employed in a shop where there are over three hundred men at work, and, as is the case in all shops of this kind, hardly a day passes but one or more of us cut or bruise our limbs. At first there were but few that found their way to my department to have their wounds bound up; but after a while it became generally known that a rag glued on a flesh wound was not only a speedy curative, but a formidable protection against further injury. I was soon obliged to keep a supply of rags on hand, to be ready for any emergency. I will here cite one among many of the cases cured with glue.

A man was running a boring machine, with an inch and a quarter anger attached; by some means, the sleeve of his shirt caught in the anger, bringing his wrist in contact with the bit, tearing the flesh among the muscles in a frightful manner. He was conducted to my department (the pattern shop), and I washed the wound in warm water, and glued around it a cloth, which, when dry, shrunk into a rounded shape, holding the wound tight and firm. Once or twice a week, for three or four weeks, I dressed the wound afresh, and it was well. The man never lost an hour's time in consequence. The truth of this statement hundreds can testify to. In case, of course, the best quality of glue.

SALT IN SICKNESS.—Dr. Sondder remarks: I am satisfied that I have seen patients die from deprivation of common salt during a protracted illness. It is a common impression that the food for the sick should not be seasoned, and whatever sloop may be given, it is almost innocent of this essential of life. In the milk diet that I recommend in sickness, common salt is used freely, the milk being boiled and given hot. And if the patient cannot take the usual quantity in his food, I have it given in his drink. This matter is so important that it cannot be repeated too often, or dwelt upon too long. The most marked example of this want of common salt I have ever noticed has been in surgical disease, especially in open wounds. Without a supply of salt the tongue would become broad, pallid, puffy, with a tenacious pasty coat, the secretions arrested, the circulation feeble, the effusion at the point of injury serous, with an unpleasant watery pus, which at last becomes a mere sanies or ichor. A few days of a free allowance would change all this, and the patient get along well.

A LECTURE was recently delivered before the society of Arts in London, by Mr. W. E. Newton, in which he attributed various virtues to peat and other vegetable charcoal. He stated that in the form of powder put upon polices, peat charcoal had been most beneficially employed in some of the London hospitals, especially in cases of offensive sores. It absorbed the putrid effluvia and was of great benefit in cancers, etc. In many cases when taken internally it was productive of good effects in disease of heart and giddiness. In all diseases of the chest, sore throat, diphtheria or bronchial affections peat charcoal has been found very useful. In France a scientific commission appointed by the government to investigate this subject has reported very favorably in regard to the usefulness of this substance for a great number of purposes.

STILL another mode of curing corns is offered. If a single one, of the thousands suggested, were really effective, we could dispense with the rest. But, so far as we know, going barefoot is the only sure cure. Dr. Barbier, says the *Lyons Medical Journal*, reports the cure of the most refractory corns by the morning and evening application, with a brush, of a drop of a solution of the per-chloride of iron. After a fortnight's continued application, without pain, a patient who had suffered martyrdom for nearly forty years from a most painful corn on the inner side of each little toe, was entirely relieved. Pressure was no longer painful, and Dr. B. believed the cure radical. Two other similar cases were equally successful.

CAMEL-HAIR BRUSHES FOR THE CLEANSING OF WOUNDS.—At a recent meeting of the Clinical Society of London, Mr. Callender brought to the notice of the society the methods he had adopted in his wards at St. Bartholomew's for the dressing of wounds. By the use of brushes, the cleansing of a wound is not a painful process. A further recommendation is that the employment of sponges and other materials commonly used for cleansing wounds, and which some eurgeneo believe to be a frequent cause of the passage of infectious material from one patient to another, is thus done away with.

To cure neuralgia, take the bark of the peach tree, pound it and steep in water. Hold the face over it, so as to thoroughly bathe it in the ascending steam. It is a certain cure.



W. B. EWER.....SENIOR EDITOR.

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San Francisco:

Saturday Morning, Mar. 7, 1874.

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Water for Mining Purposes.

There has been very little State Legislation on the subject of water rights for mining purposes; that is, leaving aside the legislation for the incorporation of canal companies, for conveying water through flumes, ditches and natural channels for mining purposes, as they prevent working peculiar to mining companies. Perhaps it has been just as well for the mining interests that no special legislation has been required, and that in all the disputes the courts have laid down the rules upon principles deemed proper at the time, and these have gradually become incorporated into the jurisprudence of the State, until they are as firmly established as the principles of law regulating any other species of rights.

A few days since, however, a bill was drawn up by Northcott in relation to water supplied for mining purposes in this State which is as follows:

- SECTION 1. Where water is sold for mining purposes there shall be a uniform system of gauges.
Sec. 2. The gauge-box for 200 inches of water shall have an aperture 12½ inches high and 12 inches wide, with 6-inch pressure-board above top of orifice.
Sec. 3. In all cases where more than 200 inches of water are used, there shall be a series of gauges placed side by side to conform in general construction to the form as presented in section two of this Act.
Sec. 4. Where water is sold in quantities less than 50 inches, the gauges may be constructed on a smaller scale, but must conform to section two of this Act.
Sec. 5. In all cases where gauges are set in the main ditch or flume, the box must be constructed one-third larger than the orifice of the gauge.
Sec. 6. All water companies selling water by the inch shall be at the expense of constructing the gauges for such purposes.
Sec. 7. All gauges shall be placed as convenient to the claim where water is used as the case will admit.

THE AURIFEROUS DEPOSITS of north-western Sonora which formerly yielded large amounts of gold are again to be worked. An American company is now building a ditch for working some of these placers.

QUICKSILVER.—A good ledge of cinnabar was struck in the Carrie mine, one and a half miles south-west of Cloverdale. The tunnel is sixty feet into the hill. The rock is soft and rich.

Mining Education in California.

If some of the gentlemen of this city, who have made such immense sums out of mining property, were to donate some of their surplus wealth to assist in building up a satisfactory Mining Department in the State University, they would not only benefit a deserving institution but the whole Pacific coast as well. There are thousands of young men on this coast desirous of obtaining a mining education, and thus far they have been unable to learn more than simple assaying, etc. There is no school or college on this coast which fits young men for this business, while there is much need for one. Mining in its various branches will be carried on among us for hundreds of years to come, and we should not be dependent on foreign institutions to furnish our managers, superintendents and experts. In fact, the mining community is rather prejudiced against graduates of these institutions, and many of them find difficulty in procuring suitable employment.

Young men fresh from Freiburg, come to this coast with the supposition that they will find situations immediately at large salaries; many of them, with a good theoretical basis for practical knowledge, find mining is carried on quite differently in its details from what they have learned. A year or two spent in hard work or close observation in different mining districts will, perhaps, give them more available knowledge than years of study would do; and those who have the moral courage to give up their bright anticipations for a time, generally succeed in the end. The majority of these gentlemen, however, on realizing the situation become discouraged, and take to some other business. We have in mind numerous instances of this sort.

Now we have at our State University a better chance to establish a practical and beneficial school of mines than anywhere in the world. We are surrounded with immense fields of mineral wealth of all classes and characters, as broad in extent as they are varied in material. Mines in all stages of development with machinery embracing all the latest improvements. Metallurgical processes of all kinds being carried on on a large scale, and added to these, untold quantities of mineral wealth waiting only to be developed. It is but natural that a large proportion of the youth of the State should desire an education which will fit them to take an active and useful part in the mining developments of the future.

The mining department of the University is at present in a condition not at all commensurate with the interests it represents. In fact, as far as we know, very little has been done to extend the branches of this department, or make it of a prominent or beneficial character. This, not so much from lack of energy as lack of means, and suitable appliances. Moreover, the University is, as yet, rather young to have established a school of mines which will compare favorably with those of similar institutions elsewhere. Still, this should be done; and we ought to inaugurate and build up the best school of mines in the world. To do this, however, money is needed; more professors; a good "plant" of the various kinds of mining machinery; the attendance of practical men to work them; a good collection of mineral specimens; a technical library, etc. The extensive collection of minerals made by the State Geological Survey, belongs to the University, and they should be properly displayed, serving as a nucleus for a still more valuable collection and as an assistance to the student in his labors.

It only needs the co-operation and support of one or two gentlemen of wealth to put this department on a proper footing and attract more attention to it, when it will receive more than one gift from other sources, and be not only a credit to those who benefit it but to our state as well. If donations of this character are made, as we hope they will, it would be very advantageous to set apart a fund to take the class into the mining regions once or twice a year. By this means they would be able to see mills and furnaces in practical operation on different classes of ore; mines of different minerals being worked on peculiar systems; compare the methods of mining and milling and their advantages; and the results could not fail to be of value not only to them but to the mining community, who are better workers than writers, as a general thing.

Here is a first-rate chance for some one or two of our millionaires who have made their fortunes in mining operations, to cause their names to be remembered with gratitude for all time to come, and to benefit the interests to which they owe so much. If some half dozen men we could name would donate their incomes from mines for only one month each, it would suffice to found a mining department at our University which would eclipse anything yet known. It is in the right place and has the right surroundings. There would be no lack of students if the opportunities for studying were such as they should be. Geological tours could be made here in the summer months in the mining districts and studies carried on in the winter. Machinery would be needed at the University and opportunities for testing and working various kinds of ore. They could get all of that they wanted free of cost, and the practical experiments they could make by comparing different methods would be of value. Of course the corps of professors would have to be enlarged and the facilities for pursuing this branch of study extended. Who will be

the first to help this cause along, and assist in establishing a department which will do credit to our State?

Ocean Depths.

The subject of ocean sounding and dredging is an interesting one, and with the improved appliances now in use the latter subject, especially, is furnishing plenty of work for scientific men. The soundings taken in the Atlantic ocean on the occasion of laying Telegraph cables give us a good idea of the contour of the bottom of that ocean, but as yet, no thorough work of this character has been accomplished in the Pacific. The U. S. Steamer, "Tuscarora," is, however, now engaged in this work, and was in Honolulu on the 2nd ult. The result of the soundings taken from that vessel will be of great interest when compared on charts with those of the Atlantic ocean.

In the neighborhood of the continents the seas are often shallow; thus the Baltic sea has a depth of only 120 feet between the coasts of Germany and Sweden. The Adriatic, between Venice and Trieste, has a depth of only 130 feet. Between France and England the greatest depth does not exceed 300 feet, while southwest of Ireland it suddenly sinks to 2,000 feet. The seas in the south of Europe are much deeper than the preceding. The western basin of the Mediterranean seems to be very deep. In the narrowest parts of the straits of Gibraltar it is not more than 1,000 feet below the surface. A little farther toward the east the depth falls to 3,000 feet, and at the south of the coast of Spain to nearly 6,000. On the northwest of Sardinia, bottom has not been found at the depth of nearly 5,000 feet.

In the open seas, however, much greater depths are found. Some 250 miles south of Nantucket 7,800 feet have been found, and in north latitude 78 degrees Capt. Ross found it over 6,000 ft. in Baffin's bay. In the Southern Atlantic the depths are great. West of the cape of Good Hope 16,000 feet has been reached; and it is stated that the plummet has not found bottom at 27,000 feet, west of St. Helena. In the Pacific, what soundings have thus far been made indicate great depths. They also show some unusual phenomena.

In the soundings made by the "Tuscarora" last year it was found that a sudden descent was met with down the entire coast, varying from 20 to 70 miles out. It slopes from the coast out from 100 to 400 fathoms, and then suddenly drops down into an immense depth. Near this point this great bench or plateau is reached a short distance from the Farrallone Islands, where the bottom suddenly descends to a depth of two miles. Off Cape Poul weather a precipitate descent from 400 fathoms to 1,500 fathoms is met with, when the plateau continues as level as a floor for hundreds of miles to the westward. Thirty miles from the Golden Gate the bottom is reached at 600 feet; at 55 miles it descends to 10,200 feet; and at 100 miles out the enormous depth of 15,248 feet has been measured without reaching bottom. In the sounding taken on the "Tuscarora" on her recent trip between this port and Honolulu, the greatest depth found was 13,324 ft., or about 3½ miles. This was near the Islands. Altogether 62 soundings were taken at an average of 40 miles apart. The quickest time made was in a sounding of 15,392 feet, in 1 hour, 28 minutes and 8 seconds. These soundings were made with an improved apparatus which brings up each time a specimen of the soil or the ocean bed.

At the last meeting of the California Academy of Sciences Professor Davidson, of the U. S. Coast Survey mentioned the fact, that the average depth of the Pacific ocean had been determined in 1855 by Professor Bache of the Coast Survey, from the discussion of the observation of the transmission of the great earthquake waves of December 1854. The subject is not new, but is worth repeating in connection with the present subject. The character of these earthquake waves being ascertained, and also the time of their transmission, the average depth of the ocean in their path can be determined.

The rate of motion of the crest of the wave from Simoda to San Diego was 370 miles per hour or 6.2 miles per minute.

To San Francisco it was 355 miles per hour or 6.0 miles per minute.

The duration of an oscillation on the San Diego path was 31 minutes; the duration of oscillation on the San Francisco path was 35 minutes. These data yield, for the length of the wave on the San Diego path 186 to 192 miles; and on the San Francisco 210 to 217 miles. Now a wave of 210 miles in length would move with a velocity of 6.0 miles per minute, in a depth of 2,230 fathoms; and a wave of 217 miles in length would move with a velocity of 6.2 miles per minute, in a depth of 2,500 fathoms.

In a similar manner was derived the average depth of 2,100 fathoms on the San Diego path.

THE WARING ROCK DRILL company are about introducing their improved drills in the mines of this coast, as will be seen by advertisement in our columns. The inventors of this drill claim for it economy, durability and comparative cheapness. We will shortly illustrate and describe it in detail for the benefit of our mining readers.

THE 1,500-foot level of the Crown Point mine gives promise of a very rich ore deposit.

Look out for Your Claims.

We desire to call the attention of our readers to the fact that in three months from now if the requisite amount of work has not been done on claims located prior to the passage of the act of May 10th, 1872, those claims will be open to re-location in the same manner as if no location had ever been made. We mention this at this date, that those of our mining readers who have neglected to make the necessary expenditures to hold their claims, may be prepared to do so in time to save their property from re-location. Before the time for this annual expenditure expired, and before the time was extended last year, a number of different parties had organized a regular crusade to take possession of claims upon which work had not been done, and we do not doubt but they are still on the lookout for such opportunities. In order that the matter may be well understood, we will quote what bears on this subject from Section 5th, of the Mining law of May 10th, 1872:

On each claim located after passage of this Act, and until a patent shall have been issued therefor, no less than \$100 worth of labor shall be performed, or improvements made during each year.

On all claims located prior to the passage of this Act, \$10 worth of labor shall be performed or improvements made each year for each one hundred feet in length along the vein, until a patent shall have been issued therefor; but where such claims are held in common, such expenditure may be made upon any one claim; and upon a failure to comply with these conditions, the claim, or mine, upon which failure occurred, shall be open to re-location in the same manner as if no location of the same had ever been made: *Provided*, That the original locators, their heirs, assigns or legal representatives, have not resumed work upon the claim after such failure and before such location.

The law then provides that if any one of the several co-owners fails to contribute his proportion of expenditures, upon certain measures being taken, he can be ousted from ownership.

After this law was passed it was found best to extend the time for the first annual expenditures upon claims located prior to the passage of the Act, and an amendment to the original bill was approved on the first of March, 1873, extending the time for the first annual expenditures, on claims located prior to the passage of the Act, to the Tenth Day of June, 1874.

By this it will be seen that if the work is not done, or begun, on or before the tenth of June, this year, the claims will be open for re-location, unless the original locators have resumed work on them. This being the case miners had better begin now to look out for their claims.

BOILERS AND TANKS.—A section of the new city charter process for the appointment of an Inspector of Steam Boilers and Tanks, to be appointed in July, 1874. The supervisors are required to publicly notify all owners, controllers or users of steam boilers or steam tanks in the city not subject to the United States Boiler Inspector, giving its location and full details of age, construction, capacity, etc. The Inspector must, once a year, and oftener if circumstances require, thoroughly examine each boiler and tank, and afterward, if the apparatus sustain unimpaired his tests, he is to issue an official certificate to that effect. He is to give five days' notice of his intention to make an examination; though the owner may waive the right of notice if he thinks fit. The Inspector will report quarterly to the Board. He must in each case carefully test the safety-valves and the weights thereof, and having done so, any person who shall thereafter increase any such weights so tested, or in any manner change them, shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than \$25 nor more than \$500, or by imprisonment for the term of not less than six months, or by both fine and imprisonment at discretion of the Police Judge. If the Inspector become satisfied that any gauge, pump, safety-valve, or other appurtenances of safety or indicator thereof, is not such as to warrant his issuing an official certificate, he must immediately notify the owner of the boiler or tank, or the person having control of it; after which notification, the boiler or tank is to be deemed unsuitable for use, until the change therein shall have been accomplished to the satisfaction of the Inspector. The use of a boiler or tank for which a certificate has been refused is made a misdemeanor, punishable as above stated, and each day's use is to be considered a separate offence. Owners or controllers of boilers and tanks are required to furnish at their own expense such assistance in effecting a test as the Inspector may require.

GUNPOWDER.—In our issue of January 17th, we mentioned some facts in connection with the expensive works of the Ladin & Rand Powder company, and also stated that Messrs. Kahath & Ladd had assumed the agency of the company on this coast. As will be seen by the advertisement published on another page of this issue, these gentlemen have just received a fresh supply of Eastern iron-grip powder, patent safety fuse, electrical fuse, rubber tubing, caps, connecting wire, etc. The blasting apparatus made by this company is especially worthy of examination by mining men.

Pipe-way Transportation.

Pipe-way transportation is coming into favor in the oil regions of Pennsylvania, to carry petroleum oil from the wells to stations on the railway. The longest pipe-way is 15 miles, overcoming 460 feet of elevation by steam pressure at the entrance to the tube. This system of transportation is so independent of weather and had roads, and so preventive of leakage, and gives so thorough satisfaction without any drawbacks, that public attention is directed to many other practical applications of the same system.

Twenty-five years ago, on the national road, between Cumberland and the bituminous coal-field beyond, we saw a small rivulet turned to similar account in the cheap transportation of coal. A zigzag, $\frac{1}{4}$ inch-board flume, followed the tortuous course of the petty stream and carried 6 inches depth of water and 12 inch surface. A dam collected water enough to make two runs of coal a day. Each run bore in its current 30 tons of coal, fed from a chute with a rake. The distance was under 5 miles; the fall was at least 20 feet to the mile. The coal floated along with ease, carrying with it chunks of slate and conglomerate rock. There were chutes for its reception on the turnpike. These had screens, over which the coal passed, being perfectly cleansed and polished before entering. All day long wagons were self-loading under these chutes. The cost of transportation over the water-way was merely nominal. It was an easy step for invention to suggest pipe-ways, for similar transportation of fluids; and for mails and packages, by pressures of condensed air, as now used in London.

It is not generally known that in France the pipe-way system has been used for ten years past in transporting beet juice from this field to the sugaries. The sugaries at Cambria work up annually 246,000 tons of beets; they are supplied with beet juice through 62 miles of pipes, now being extended to 100 miles, in many ramifications.

At points central to cultivation, works are erected for rasping beets and expressing the juice. Milk of lime is immediately added to prevent decomposition; and after inspection and measurement the saccharine stream is turned into the pipe-way and delivered at the terminal sugaries, the long contact with lime and the thorough agitation purifying the juices more perfectly than usual. It is estimated that during 1874 there will be a total length of such pipe-ways of 560 miles, doing service between the scattered beet fields and the condensed sugarie works of France.

The pipes are placed two feet eight inches below the surface, and steam engines compress the air as desired. All degrees of elevation are thus surmounted. The juice has a gravity of one degree Baumé on entering, and the same when discharged.

This pipe-way system so economises sugar-making that it wonderfully multiplies the sugaries. No investment excels that concerned in this production. Farmers find it far better than other crops. Pipe-way stocks are in high favor, and sugaries pay best of all.

If new industries are needful to this future progress of California, here is one that should be considered. It offers a wide field for expansion, without risk of oversupplies; and if the right soil be selected, the crop is sure, and the profits of sugar-making are more than usually reliable.

Improved Railroad Hand-Brake.

We illustrate herewith an improved form of railway hand-brake, which, it is claimed, saves fully two-thirds of the distance run and time occupied while setting brakes. It is also stated to be much safer in use than the ordinary "twist up" arrangement, as it is placed from three and a half to four feet from the end of the car roof, so that, in case of accident, there is less danger of the brakemen being thrown between the cars.

The device is quite simple, and consists of a bed plate, to which is pivoted, in lugs, a segment, A. On the latter is formed a hook, to which the brake chain is attached, and also a fork, B, for guiding the same. C is a wrought iron lever, connected with the segment and provided with a steel lip to engage in the teeth of the rack, D. The brake chain passes from the hook on the segment over a pulley, journalled in snitshle hearings cast with the bed-plate, and thence down under another pulley, secured as shown under the car, and so to the brake. The arrangement on the roof of the car is, secured by but two bolts; and having merely a single motion, can necessarily be quickly operated.

From our engraving, giving two perspective views of the apparatus, and also showing how it is applied, a clear idea of its construction will be obtained. It appears strong and durable, and according to the inventor, is not expensive. Patented by Mr. W. S. Foster, of Foster's Crossings, Warren county, Ohio; who may be addressed for further particulars.

BLUE-STONE AND ACID.—The Carson acid factory has been enlarged, and now runs 24 vats, turning out a ton of blue-stone per day. The Mint consumes about a ton of sulphuric acid daily, and will soon require half a ton more, and it was in order to meet this demand that the factory works were enlarged.

Tybo Mining District.

Its Mines and Mineral Resources—The Two G, Casket-Crosby and La Fayette Mines Sold to John B. McGee for Ninety Thousand Dollars. To be Stocked in London.

(Written for the Press by J. D. P.)

The mining district whose name heads this article lies 80 miles due south of Eureka, 12 miles south of Hot orsek and 35 miles south-east of Belmont, the county seat of Nye county, Nevada. It was prospected and organized as a mining camp about the latter end of 1855 or beginning of 1856, and was, besides, originally ambitiously dubbed Empire District. The dream of this far-seeing, though perhaps, as yet unrewarded prospector, who thus bestowed upon it the baptismal font, whose invigorating waters were drawn from its own everlasting hills, appears as though it was to be realized at last, for its mineral wealth will soon, no doubt, win for it in the near future the empire distinction he claimed for it then. But it is under its aboriginal appellation and not its Anglo-Saxon one that it will in future be known to mining men. Tybo will, therefore, descend to posterity through the mining annals of the

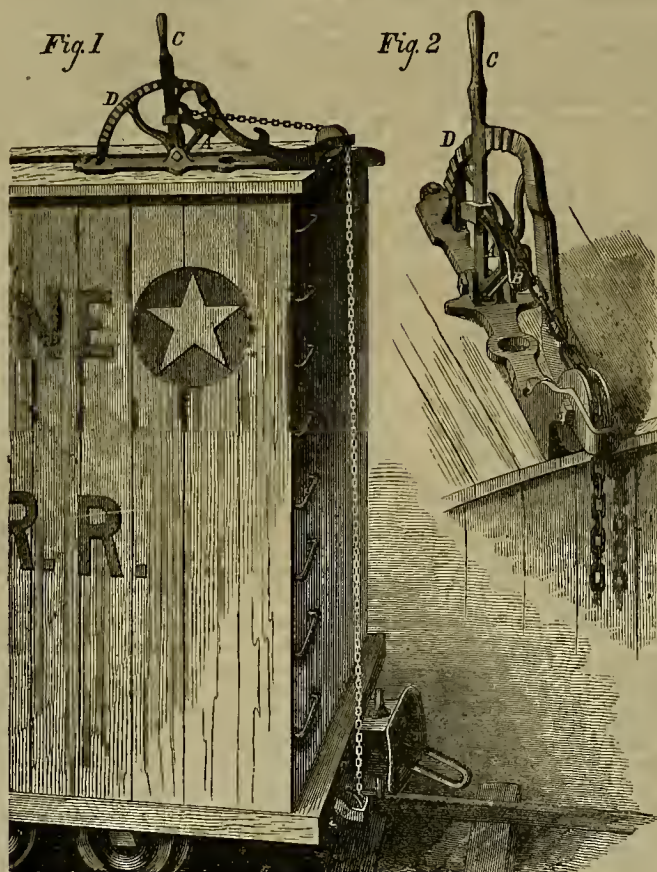
carrying some sulphurates, while the latter carry both sulphurets and lead, and of the latter, one of the four mines already mentioned will carry about 25 to 30 per cent. and will also yield sufficient iron to facilitate their being readily and profitably reduced in the furnaces. The extent and value of the ore deposits of these four mines are almost beyond computation though their measurement, by the usual method adopted by all experts to find the cubical contents of lodes and deposits of ores will, when applied by-and-by, give us some approximate figures upon which to base future calculations.

Ninety-Seven Thousand

Dollars is a large sum 'tis true, but though large, it is hardly an equivalent for the property for which it has been exchanged. Of this amount a trifle over one-fifth was paid down in hard coin at the bank at Belmont, while the remaining four-fifths (77,600) are to be paid on the 1st of next November. This is ample time in which to prove the value of the property, and to receive in return for it, a sum equal to the above amount with which to cancel it.

The Two G

Mine itself exhibits sufficient ore now to more than quadruple the above sum in that time, could it be extracted and reduced and turned into bullion. It contains 1,200 lineal feet; and



FOSTER'S RAILROAD HAND BRAKE.

State; while those swarthy children of the wilderness, to whose language it belongs, will have passed away before the superior civilization of their pale faced brothers. What is the origin or source from whence the name is derived, or what its correct meaning is, I have no means of knowing. It is likely enough a derivative contraction of some of the many euphonious Indian words, or names with which one meets with in the nomenclature of the out-of-the-way towns and camps of this land of sage-brush and silver. To miners, more than to all the other men in this State must be attributed this singular fertility of imagination in coining the new and expressive terms which they seem to delight in bestowing upon the mining claims, towns, and camps which everywhere spring up with mushroom-like rapidity, wherever they find the glittering ore in sufficient quantities to recompense them for their time and trouble in delving after it in the subterranean caverns they themselves have created.

Tybo.

Is segregated somewhere along the elevated chain, known as the Hot creek mountains, running south east of Belmont and about eighteen miles north of Reville District, and until quite recently did not begin to loom up above its own horizon. Now, however, it is about to obtain some prominence, the sale of the four mines cannot fail to attract to it, no small amount of attention from capitalists, during the coming summer. Active operations are to be commenced upon these mines by the first of May, for they are in the hands of the right sort of men to set them immediately in motion, and to commence without delay the construction of the necessary buildings and reduction works.

The Ores of the District

Are both milling and smelting, the former

The Assay Value.

Of the ores gives an average of \$100 per ton. Now if we assumed this standard of value to be reduced 30 per cent in the process of smelting, though it is a large reduction, still for illustration's sake we will adopt it as a rock upon which to rear our argumental figures, and try and prove, by them to our own, and the readers' minds, the vastness of the wealth lying within this walls, of these 3,300 feet of vein matter.

Therefore 40,000 tons of ore at \$70 per ton will give \$2,800,000. Deduct for extracting, reducing, coal, superintendency, etc., \$25 per ton, which will leave \$1,000,000, and we will have still a total of \$1,800,000 left, with which to pay for the property and construct the necessary buildings, engines and reduction works, and leave besides a princely sum to go in dividends to shareholders; and all this from only 1,200 feet long by four thick and 125 feet in depth. Say that these 40,000 tons will leave a profit of only \$20 per ton, and we have still the enormous figures of \$800,000 to laugh and grow fat on.

These figures will, I think, demonstrate to the thinking mind the magnificence of this property, which cannot fail to be highly remunerative to its English incorporators.

The Supineness of San Francisco Capitalists
When viewed in connection with this property is certainly singularly strange, to say the least. To have allowed it to remain there lying idle during the past six or seven years without making hardly an effort at negotiation, does not speak well for their sagacity and enterprise. We wonder what they will think of the shrewdness of their trans-atlantic cousins now, whom they have allowed to out-strip and out-wit them in the race for the possession of the above described mines. We say in the race, because we are well aware that a few San Francisco men were thinking of raising the mortgage that was on them when John B. McGee put in an appearance with the cash at Belmont last January.

That these mines will in a short time prove themselves to be the best in Eastern Nevada admits of no doubt whatever. Wood and water, two important elements to insure success, are largely abundant on this property. Millions of cords of the former are at present growing very luxuriantly on the slopes and crests of the adjacent mountains, thus affording an excellent chance for coal producers and others to make money. It is thought that charcoal can be profitably laid down at the furnaces for a maximum of twenty-five cents per bushel the year round, instead of thirty cents per bushel as it rates at here. The furnaces can be constructed at the tunnel's mouth and the ore run out through it and dumped into the ore bins ready for the feeders, thus effecting a saving of no inconsiderable sum annually in the mere matter of hauling and transportation expenses alone. The honor of the inauguration of this new and magnificent enterprise belongs exclusively to our worthy fellow townsman John B. McGee, of the Richmond. He it was who projected and consummated the purchase of these mines, and he it is who goes down there to take charge of them next April, to make them, it is to be hoped, what the Richmond is, the most incomparable mine in all of Eastern Nevada.

Eureka, Nevada, March 1, 1874.

PLACER MINING.—A correspondent asks us to give a description of the best-known processes of saving gold in California placer mining. He also wants information as to under-currents. We will shortly give a very exhaustive and fully illustrated article on the subject of hydraulic mining in California, which will answer the queries of our correspondent in full. It will, without doubt, be the most comprehensive article on the subject ever published, and is from the pen of a practical miner of twenty years' experience. We shall begin its publication within a few weeks.

A BAD FIRE.—The miners who have been for the last two months fighting the fire at the Empire mine, near Wilkesbarre, Penn., closed work on Monday, 2d inst., when a most extensive cave of the mine occurred, exceeding in extent the fall of the Baltimore mine a short time since. Great consternation prevails in the neighborhood, and families are preparing to leave. The fire has now free scope, and threatens to ruin utterly one of the most valuable mines.

THE SILVER CORD.—The Superintendent of this mine, which is in Idaho, writes that work in the mine is moving lively. They have contracted for the sinking of a main shaft 100 feet at \$13 per foot, and are getting down fast. They have contracted for work in the third drift at \$3.50 per foot, which is progressing rapidly, in a good character of rock, which will mill from \$90 to \$100 per ton. Within 35 days they will have the shaft down so as to begin running the 4th level.

We call the attention of those desiring to purchase the Selden direct-acting steam pumps, to the advertisement of the manufacturers, in another column. The proprietors assert that as a mining pump it is unsurpassed.

Those desiring the peculiar class of chemicals, etc., mentioned in the card of Dr. J. W. Feuchtwanger in our advertising columns will do well to correspond with that firm.

The Paymaster Mine—Peavine.

This mine is now regarded as the principal one in Peavine District, and as its future success or failure will effect the whole district, a review of it may be of interest to our readers. The ledge was discovered by an old prospector named John Poe, whose history since has been varied but little from that of most all prospectors. Upon the surface there is but little in the appearance of the rock to indicate the presence of mineral, and, in fact, the assays of samples from the surface were not very encouraging—the average being only \$11. In sinking upon the outcroppings a short distance water was met with, and people having no confidence in the ledge. Poe was unable to provide even the simplest and cheapest means of keeping the water out of the way of sinking, and he therefore commenced driving a tunnel to cut the ledge. After several months the tunnel was driven over 400 feet, and the ledge was cut at a depth of 45 feet. The walls are gneiss and porphyry. The ledge pitches to the west at an angle of about thirty degrees. The walls, where unbroken, are smooth and true, and there is upon the foot wall a stratum of clay and gang, which is always regarded as favorable in any mineral vein. The width of the ledge varies from two to ten feet so far as prospected, and a chimney of ore over 150 feet in length has been opened. A shaft was raised to the surface for air, and considerable ore taken out above the tunnel. Assays ranged from \$10 to \$1,100, but the average of the ore body was about \$65—about \$7 gold and the balance silver.

In the mean time a mill had been erected, and about the first of December last commenced crushing the ore. Although a very complete and substantial mill of its class, it was soon discovered that it was entirely inadequate to the working of the ore. The ore is quite base, carrying iron and sulphur, a small percentage each of lead, antimony, copper and zinc blend. Finding that the ore was not free milling, roasting in kilns in the open air was tried, but the process being very imperfect was also a failure. The mill was shut down, and samples sent to the Auburn Mills, near Reno, for working, where, by the Stedefeld process, 85 per cent. of assay value was saved, and the result was \$60 to the ton. Samples were also sent to a mill or furnace in Oakland, which worked it to 90 per cent., and returned \$67 per ton. These samples were a fair average of the ore body in the mine, at the present level of working. Before making any further improvements in the mill for working the ore, the company wisely concluded to prospect their ledge 100 feet deeper. A shaft is now being sunk for that purpose. A steam pump, supplied with steam by a pipe from the boiler in the mill, has been placed in the shaft, and sinking is now progressing favorably. Advances dated yesterday are to the effect that the foot wall has just been reached—that over five feet of rich black ore has been cut through, and no water to interfere with sinking has been met. If, when the next level is reached, a body of ore as rich as that at the present is found, and no experienced miner who has examined the ledge has any doubt of it, the proper additions will be made to the mill, and then another bullion-producing mine will be added to the list of the wonderful resources of the Silver State. The mine is owned by the Consolidated Poe Mining Company, whose office is at Reno. Mayor Joseph Brown, of St. Louis, is the President of the Board of Trustees; Wm. Duck, of the firm of Manning & Duck, Reno, is the Vice-President and in charge of the business management; Jas. H. Kinkead, the right man in the right place, is the Secretary, and Wm. B. Bourne, an experienced miner, is the Superintendent.—*Truckee Republican*.

THE KEARSARGE MINE.—The owners of this mine, who are principally Vallejoites, we are glad to say, have probably the richest quicksilver lead in the State. The ledge has been developed about sixteen feet in width and thirty-nine in length, laying bare a deposit of a very high grade of cinnabar. The rock which holds the metal is of a soft, clay-like substance, not unlike soapstone. Besides the cinnabar, the rock contains a large per cent. of native quicksilver; a person may take any piece of the ore and knock it against the table, and hundreds of minute globules of the liquid silver will jar out of it. The earth about the ledge is so rich that a pint of dirt will yield one ounce of quicksilver by the ordinary panning process. We understand that the ledge has been struck at a distance of 125 feet below the first level, which latter is about 35 feet from the outcroppings. We are pleased to chronicle such favorable developments, both for the sake of our townsmen who are interested and the interest of our neighboring county. These results have already set a tide of immigration into Lake county, and the city of Middleton, from which the Kearsarge is only three and a half miles, is beginning to assume the proportions of a city. The mine is now under the management of good men, who, as in everything else they undertake, mean business.—*Vallejo Chronicle*.

THE TUMSEH MINING COMPANY, of California, have received a United States patent for their mine and mill-site. The original location covers an area of 30 63-100 acres of ground, to which they have lately added, by purchase, 4,500 feet along the ledge, with additional mill-site locations on Gopher Creek.

The Almaden Mines.

The San Joss *Mercury* has the following interesting facts concerning the New Almaden mines:

"The working of the New Almaden mine of this county, was commenced in May, 1846, and, as appears by the facts developed in the course of the litigation, there was expended during the first few years in opening the mine, erection of reduction works and other buildings, the sum of \$978,114, during which time the product of the mine realized \$535,540, leaving a deficit of \$442,574. It afterwards paid to the parties then in possession a large annual revenue. The total production of quicksilver from the mines during the period of twenty-one years and three months, exclusive of the time the New Almaden was closed by injunction, has been as follows:

New Almaden, to October 30, 1863..... 314,276
 Escondido, 1860 to 1863..... 10,571
 New Almaden and other mines on the property worked by the present company from November, 1863, to December, 1873, inclusive..... 258,874

Total..... 583,729
 flasks of quicksilver of 76½ pounds each, or 44,654,656½ pounds. From July, 1850, to October 30, 1863, excluding two years and three months that the mines were closed by injunction, there was roasted in the furnaces 104,659,442 pounds of cinnabar ore. Percentage yield of quicksilver being for the first year of the working, 36.74, and for the last year of this period it was 18. The company now in possession took control of the mines in November, 1863, and for the first two years and two months of their working produced 94,130 flasks of quicksilver, the ore yielding 14 and 11 per cent. for the years respectively. During the total ten years and two months it has worked the mine there have been roasted in the furnaces 237,237,613 pounds of cinnabar ore. Percentage yield of quicksilver for the first year of their working being 14, and for the last year about 5. The product for 1864 and 1865 was distributed as shown below:

	Consignments,	Sales,	On hand, Dec. 31, '65,
China.....	27,200	9,350	17,250
Mexico.....	15,752	9,302	6,450
Chili.....	4,673	2,073	2,600
Peru.....	9,200	3,700	5,500
Australia.....	200	100	200
London.....	12,000	1,500	10,400
New York.....	8,000	4,500	3,500
Oregon.....	810	261	49
Nevada.....	12,740	12,740	.....
California.....	3,955	2,070	1,885
Totals.....	94,130	46,293	47,834

It will be noted that the sales in California were a mere bagatelle, and that nearly all the product was exported and brought money to the State from foreign sources. During these two years there was expended in this county and San Francisco, for mining expenses, payroll, supplies and improvements, \$1,887,383.89, besides large sums in settlement of old claims to the property and the payment of State and county taxes. The total expenditures in California, mostly in this county, for mining expenses, pay-rolls, supplies and improvements from November, 1863, to December 31, 1872, have been \$5,412,561. In addition, the sum of \$133,557 has been paid for taxes in Santa Clara county. The statistics furnished of the exports of quicksilver only date from 1852; from that time to the end of 1873, the exports by sea and railroad, other than to Nevada, show a total of 506,419 flasks, mostly sent to foreign countries. The mine, under the operations of its present owners, has paid its stockholders only one dividend, \$492,950 in 1865; and in 1870 it received from stockholders an assessment of \$214,565.

STICKEEN MINES.—A gentleman of this town, a few days ago, received letter from an acquaintance at Fort Wangle, at the mouth of Stickeen river, dated February 3d. The letter states that there is a great excitement about the mines on the Stickeen river, and that the general impression is that the diggings are rich and extensive. One hundred men left for Wangle for the mines the day the letter was written. Each man took four hundred pounds of tools and provisions. They go in canoes as far as the ice will permit, thence draw their packs on hand sleds to the mines. On last Tuesday another letter was received by the same person. In this last letter the writer states that a number of natives were recently employed to work on some of the claims from which from six to ten ounces per day to the hand were made last Fall. The receiver of the above letters, who has resided several years in that region, tells us that he would not advise a rush to that place; that nineteen out of every twenty who go there will surely be disappointed.—*Silver State*.

THE MINT APPROPRIATION.—The telegraphic report that the Secretary of the Treasury recommends that \$234,000, appropriated for the erection of the Mint in San Francisco, be made available, is explained by the fact that there is a general law which provides that money appropriated for public buildings shall revert to the treasury if not used within a limited period. The sum of \$1,500,000 was appropriated for the San Francisco Mint, and \$1,230,000 have been expended. The sum of \$1,266,000 in all has been used, as about \$36,000 is necessary to pay contractors, leaving \$234,000 of the original appropriation which cannot be used without an enabling act of Congress, the time having expired. The bill for this purpose has passed the House of Representatives.

El Dorado Mines.

A correspondent of the *El Dorado Republican* writes as follows from Georgetown: "Thinking that mining news from this quarter would be acceptable to you and your readers, I will say that the heavy rains this winter have furnished water for all to mine who wish, and mining operations have been active. The other day I heard the shrill whistle at the Taylor mine, and thought I would go down and see what our friend Burlingham was doing. Well, he just told me to get into the bucket and go down and look for myself. So down I went, and found the main shaft down about 350 feet, and sinking going on at the rate of about two feet per day. I found a well defined ledge at bottom of shaft, from four to five feet thick, showing well in free gold and sulphurets, with all the indications of a first-class mine. The shaft will be continued down until it is 408 feet deep, when a level will be opened each way from the shaft. They will also open a level at 200 feet. Levels have already been opened at one and two hundred feet, but so far no stopping has been done below the 100-foot level. So you see that when the shaft is completed, the company will have the mine in good shape for future operations, and the shaft in depth will be the second deepest in this county—the St. Lawrence being 670.

The Taylor Mill & Mining Co. have a 30-horse power engine, and suitable hoisting works, and 6 inch Cornish pump; they have a mill of five 700 pound stamps, with frame and cam shaft and cams, all complete, for another battery of same size, which will be set up by the time the shaft is completed; and as soon as the mine is opened at the three and four hundred feet levels, ten more stamps will be set up, making a No. 1 20 stamp mill. No one now has any doubt about the future success of this mine; depth is what was wanted.

After making an examination of the Taylor, I took a walk about four miles due southeast along the line and croppings of the ledge, which brought me to the celebrated St. Lawrence mine. Here I found 25 stamps pounding away night and day, and the main shaft down 670 feet, and going down at the rate of ten feet per week. When completed, the shaft will be 820 feet. The ledge in the shaft varies from 5 to 7 feet. As soon as the 400-foot level is opened the sinking will be continued, and the 100-foot level will be reached during the year 1874. It is needless for me to say anything about the yield of this mine, the regular shipment of bullion speaks for it. A mine with anything in it must pay with such an able Superintendent as Rodda. He is the right man in the right place, and feels deeply interested in the success of the mines in our county. I think it would be well for you to urge, through your paper, the importance of sinking deeper down on our quartz mines, for now that the St. Lawrence and Taylor have depth, justice has at length been done to our county.

MINING ACTIVITY.—On all sides are heard the notes of busy preparation among our mining population, and active operations will be commenced on an unusually large number of mines as soon as the weather will permit. Notwithstanding the very unfavorable weather which has long prevailed, much work is being done even now on what are generally spoken of as "outside mines." No fair day is lost; and, where the works are sufficiently advanced to afford shelter to the workmen, work progresses steadily, storm as it may. The prospecting that will henceforward be done in this vicinity will be of the most thorough and substantial character—no mere surface scratching. The day of such superficial prospecting is past. If mere tickling the surface would find ore, there would now be seen scores of paying mines on every hill. This has been thoroughly tried, and the result has been pretty much the same as though an "ore witch" had walked over the country, twirling his forked stick; nothing more has been discovered than appeared upon the surface. In this region, the superficial appearance of the country is much the same in one place as in another. A man might a thousand times walk over and view the ground immediately over where the Belcher, Crown Point, Consolidated Virginia, Ophir and other companies are delving in their richest ores, and he would observe nothing different to what is to be seen above the Mother Goose, the Flying Jackass, and other mines, the hidden wealth of which remains to be revealed. What is now to be done, is to locate upon the mineral range and go down at once to such a depth as to pass below all surface disturbances, and reach a zone in which veins are liable to be found, in place in the firm foundations of the hills. Even then, paying veins may not be found, but if to scratch the surface were all that is required to find mines, there would now be no need of doing any more work, as the whole country has been very thoroughly scratched.—*Enterprise*.

TO DEODORIZE COCOANUT OIL.—The following has been recommended: To one pound of the oil add one ounce of freshly-calcedined bone-black and half an ounce of calcined magnesia. Let it stand in a warm place, with frequent agitation, during three days. Allow it to settle down or filter through paper in a funnel provided with a double jacket holding warm water. During the maceration with bone-black the oil must be kept just warm enough to remain in the liquid state.

HYDRAULIC MINING is on the increase in Little York Township, Nevada county.

The Swock River Mines.

From the letter of a correspondent of the *Walla Walla Union* we make the following extracts:

The news from the Swock is meagre. There are men who have been at work all winter, when the weather was favorable, but there has been, during the month, much unpleasant weather—snowing or raining nearly every day. One who has been there all winter informed me that there was but little time that he could do anything. A company of Frenchmen most of them from Montana, have been doing considerable work opening up claims, by cutting drain races. They have spent much time on the lower fork, called Williams creek, and have not found anything to encourage them to remain there. It is too deep to the bed-rock, which seems to be very smooth. They have gone down 18 to 24 feet. They say if there is any pay on that creek it is very spotted. They have now gone to work on the Swock proper, and have got 10 claims to open up on shares, making 2,000 feet on the creek. They are at work now cutting a drain the whole length of their ground. Here they will have less work as the bed-rock is only 6 to 7 feet deep. The discovery party have been at working this winter, making from \$5 to \$10 a day. Sometimes they had to heat the water from the rooker. They are now fixing their sluices in position to go to work on an improved scale. There are other parties who have been at work this winter sawing lumber for sluice boxes, and fixing otherwise to commence work when the weather shall have settled, but in a mountainous district like this there is likely to be much rough weather for the next two months. The Swock has been prospected for a distance of 15 miles above the discovery with encouraging results. But no work has been done at the head of it to prove its value. As yet it is all a matter of conjecture and hope. The latter, all know, very often enters largely into calculations that are greatly spoiled by actual experiment. Ledge hunters will start out as soon as the spring weather will warrant, to hunt up the spot where this gold has broken off. The belief is strong that there is a ledge of great value where this gold came from. It is to be hoped they will find it, and in less than twelve months there will be many fortunate possessors of competency from these mines.

THE NEW GEYSER BASIN.—That a new and most important geyser basin has been discovered in Eastern Montana, seems now unquestionable. It was visited last fall by the well known mountaineers Jack Baronett, John Dunn and John Allen. It is represented as much more extensive than any of the already explored basins, and to contain geysers of much greater force and volume than any yet described by tourists. One of these newly discovered geysers is estimated to throw a volume of water forty feet in diameter over five hundred feet high, and to continue in eruption from ten to fifteen minutes. It is also reported that in this newly discovered basin there are "mud volcanoes" far surpassing in volume and eruptive force those on the Upper Yellowstone. This unexplored spot of the most wonderful of all our national wonders is about twenty-five miles southeast of the summit of Mount Washburn, from which point the greater geysers, when in action, when the air is clear, are visible to the naked eye.—*Avant Courier*.

MEXICAN GRANT VS. RAILROAD GRANT.—Judge Wheeler has decided that a patent from the United States Government for lands held under a Mexican grant is superior to a Congressional grant of the same land to a railroad company. The case in point is entitled *W. S. Bailey against the Central Pacific Railroad Company*. The action was brought to quiet title to lands in Sacramento, Amador and San Joaquin counties, and within the Arroyo Seco Rancho Grant from the Mexican Government. This grant was confirmed by the Land Commissioners and the Federal Courts. Plaintiff derived his title through a patent issued by the government. The railroad company claim each alternate section along the line of the road, by an Act of Congress. The question was, if the rights of the company are superior to those of the grantee? and the court decided that they are not.

DEEP SNOW.—The *Walla Walla Union* says: "In all directions we hear of very deep snows in the mountains. There has already more snow fallen this winter than in any other preceding one for many years. And thus far there has been no thawing in the mountains, all the snow that has fallen still lying there. Not a week passes but that more is being added. The prospects now are that when the snow on the headwaters of the large streams begin to melt, there will be very high waters soon after. Portland will need to move her cellars back on higher ground before the 10th of June. But the pleasing feature of all this is that there is a better prospect for a good mining season, and a heavier yield of gold than we have had for a long time."

ALL the miners in the employ of the Arizona Association, says the *Winnemucca Register* of February 20th, have been discharged, and the mine shut down. In consequence thereof all the mills in the place are closed except one.

PLASTERS.—Mustard plasters should be mixed with the white of an egg, and they will burn without blistering.

A REPORT is enrent at Coos Bay that the Pacific Mail Steamship Co. is negotiating for the purchase of the Blue Mountain Coal company's mine.

THE SPRING VALLEY Co. at Cherokee Flat, Butte county, has made another clean up and sent down three bricks valued at over \$73,000.

1840. 1874.

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After a thorough trial by innumerable living witnesses, has proved itself THE MEDICINE OF THE AGE. It is an internal and external remedy. One positive proof of its efficacy is that its sales have constantly increased and wholly upon its own merits. The effect of the

Pain-Killer

Upon the patient when taken internally, in case of Cold, Cough, Bowel Complaint, Cholera, Dysentery and other affections of the system, has been truly wonderful, and has won for it a name among medical preparations that can never be forgotten. Its success in removing pain, as an external remedy, in cases of Burns, Bruises, Sores, Sprains, Cuts, Stings of Insects, and other causes of suffering, has secured for it such a host of testimony, as an infallible remedy, that it will be handed down to posterity as one of the greatest medical discoveries of the nineteenth century.

The Pain-Killer

Derives much of its popularity from the simplicity attending its use, which gives it a peculiar value in a family. The various diseases which may be reached by it, and in their incipient stages eradicated, are among those which are peculiarly fatal if suffered to run; but the curative magic of this preparation at once disarms them of their terrors. In all respects it fulfills the conditions of a popular medicine.

Be sure you call for and get the genuine Pain-Killer, as many worthless nostrums are attempted to be sold on the great reputation of this valuable medicine.

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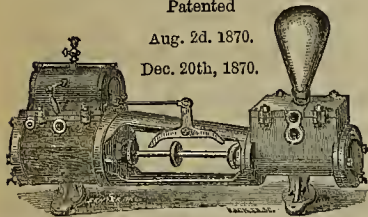
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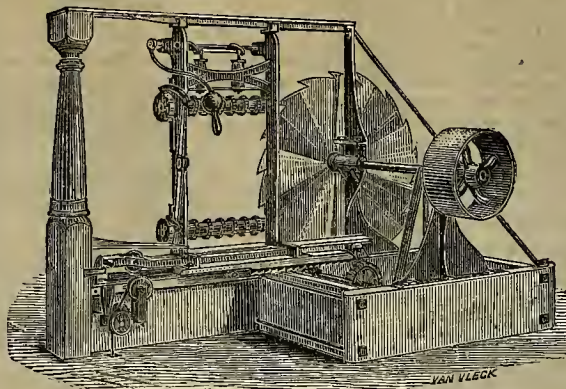
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PUBLISHERS OF TREATISES ON GEMS,
SILEX AND FERMENTED LIQUORS.

10v28-3m

REMOVAL.
FARWELL & CO.,
IMPORTERS & DEALERS IN
SHIP CHANDLERY,
HAVE REMOVED TO
105 and 107 California Street,
SAN FRANCISCO.
W. H. FARWELL, [ur7im] JNO. O. HANSCOM.

HUNTINGTON'S PATENT SHINGLE MACHINE.

They are now used by all the PRINCIPAL MILLMEN ON THE PACIFIC COAST.



MANUFACTURED AND FOR SALE BY

F. A. HUNTINGTON, 143 and 145 Fremont Street,
SAN FRANCISCO.

Price, Complete, with one Saw, - - - - - \$450.00.

The inventor refers to the following parties who have these machines in use:

Macpherson & Wetherbee.....	San Francisco.	Harrington & Co.....	Pescadero.
Pope & Talbot.....	San Francisco.	Burch & Co.....	Pescadero.
Hanson & Co.....	Redwood City.	A. Saunders.....	Point Arena.
Rice & Halliburton.....	Woodside.	A. H. Davis & Son.....	Carson City, Nev.
	S. P. Pharis, Woodside.		

STEAM ENGINES, SAWMILLS, PLANING, LATH AND PICKET MACHINES, etc., made to order at short notice.

F. A. Huntington's Portable Saw Mill.

The mills are built in the strongest, most durable and workmanlike manner, and are capable of driving any size saw up to 64 inches. They are furnished with improved friction feed and gig back, both being operated by the same lever, no belt being used to gig back.

They are Capable of Cutting from 8,000 to 12,000 feet per Day.

Saw Mill Machinery of all descriptions furnished to order.

GLOBE IRON WORKS,

143 and 145 Fremont street, San Francisco.

WARING ROCK DRILL COMPANY.

SOLE PROPRIETORS AND MANUFACTURERS OF

WARING'S IMPROVED SELF-FEEDING

Rock Drill,

BY FAR THE MOST

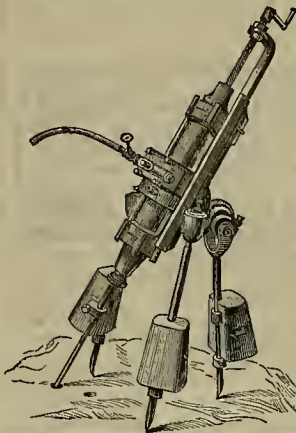
Simple and Effective Machine

FOR ALL DESCRIPTIONS OF

MINING, RAILROAD AND QUARRY WORK

Office, 835 Broadway, Cor. 13th street,

NEW YORK.



10v28-6m

GIANT POWDER.

Patented May 26, 1868.

THE ONLY SAFE BLASTING POWDER IN USE.

GIANT POWDER, NO. 1,

For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

GIANT POWDER, NO. 2,

For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc. Its EXCLUSIVE use saves from 30 to 60 per cent. in expenses, besides doing the work in half the time required for black powder.

The only Blasting Powder used in Europe and the Eastern States.

v22-8m16p

BANDMANN, NIELSEN & CO.,

General g nts, No. 210 Front Street.

MAGAZINES.	P. An.	W. E. LOOMIS, News Dealer AND STATIONER, S. E. corner of Sansome and Washington streets, SUPPLIES ALL Eastern Periodicals, BY THE Year, Month, or Number
Harper's.....	\$4 00	
Atlantic.....		
Godsey.....		
New York Ledger.....		
Blackwood.....		
Hours at Home.....		
Good Words.....	3 00	
Petersen's.....		
Arthur.....		
Lady's Friend.....		
Harper's Weekly.....	5 00	
Chimney Corner.....		
Literary Album.....		
London Society.....	6 00	
The Year Round.....		
London News.....	15 00	

No LIFE INSURANCE COMPANY has a better record or more permanently popular reputation than the CONNECTICUT MUTUAL LIFE INSURANCE CO. J. B. Roberts, 315 California Street, San Francisco, is general agent for this Coast. Send to him for circulars and information of this reliable, first-class company.

THE PACIFIC REDUCTION WORKS, GUIDO KUSTEL, Sup't.

Will purchase Gold and Silver Bearing Ores; also, Cuperiferous Silver Ores and Gold Sulphurets, etc., at the highest rates, or work the same for owners' account. The works will commence operations on or about the 1st of April. Sampling Assaying of all kinds of ore, and working of small lots of ore in any desired way will be promptly attended to and reliable results returned. Office, 210 Front street, S.F. 10v28-3m

Information Wanted of Ezra S. Gaver.
When heard from last, ten years ago, was at Pikes Peak, Colorado. Any information of him, or his fate, w l be thankfully received by his brother, JOHN GAVAR, at 1309 Vallejo street, San Francisco. 25v27-3m

PURCHASERS please say advertised in Scientific Press.

W. T. GARRATT & CO.

CITY

Brass and Bell Founder,

Corner Natoma and Fremont Streets,
MANUFACTURERS OF

Brass, Zinc and Anti-Friction or Babbet Meta.

CASTINGS,

Church and Steamboat Bells,

TAVERN AND LAND BELLS, GONGS.

FIRE ENGINES, FORCE AND LIFT PUMPS.

Steam, Liquor, Soda, Oil, Water and Flange Cocks,

and Valve of all descriptions, made and repaired.

Hose and all other Joints, Spelter, Solder and Cop-

per Rivets, etc. Gauge Cocks, Cylinder Cocks, Oil

Globes, Steam Whistles. HYDRAULIC PIPES AND

NOZZLES for mining purposes. Iron Steam Pipe fur-

nished with Fittings, etc. Coupling Joints of all sizes.

Particular attention paid to Distillery Work. Manufo-

turer of "Garratt's Patent Improved Journal Metal."

Highest Market Price paid for OLD BELLS, COP-

PER and BRASS. 6-1f

W. T. GARRATT, JAMES HILLMAN, W. T. LITTLE.

N. W. SPAULDING,

Saw Smithing and Repairing
ESTABLISHMENT.

Nos. 17 and 19 Fremont Street, near Market.



MANUFACTURER OF

SPAULDING'S

Patent Tooth Circular Saws.

They have proved to be the most du able and economi-
cal Saws in the World.

Each Saw is Warranted in every respect;

Particular attention paid to construction of

Portable & Stationary Saw Mills.

MILLS FURNISHED AT SHORT NOTICE

At the lowest Market Prices

ATTENTION, MINERS!

THE

Lafin & Rand Powder Co.

HAVE ESTABLISHED

THEIR AGENCY IN SAN FRANCISCO.

THE BEST GUNPOWDER

Manufactured in the U. S. or elsewhere.

THE LARGEST POWDER COMPANY

In the World.

Producing Yearly from 500,000 to 700,000
Kegs of the Very Best

Blasting, Mining & Sporting Powder.

Ten Powder Mills, two Iron Keg Factories, one Wood-
en Keg Factory, factory for manufacturing the ELEC-
TRICAL BLASTING APPARATUS (one of the greatest
inventions of our age, discharging simultaneously any
amount of blasts). Besides employing some ten other
factories manufacturing exclusively for them SAFETY
FUSE and other articles pertaining to the Powder
trade; such as RUBBER TUBING, all kinds of CAPS,
LEADING and CONNECTING WIRES, etc.

KABATH & LADD,

224 Sansome Street, SAN FRANCISCO,

Will be happy to furnish interested parties with all
the information in their possession. 3v28-16p-3m

STICKEEN MINES.—A party of 300 miners left Fort Wrangel on the 10th inst. on their way to the Stickeen mines. We mentioned in a previous issue that parties going thither should be careful not to overload themselves with provisions, etc., as the overland route is a hard one. The Portland Bulletin, in speaking of the party referred to above, is reliably informed that they found large quantities of provisions scattered along the road, thrown away by overloaded "sledgers." The weather had been cold, but nothing like as severe as they had been led to expect, and it was then raining. Men who had been at the mines and wintered at Fort Wrangel, gave new comers better encouragement than they had received before leaving home. All were in excellent spirits, and had high anticipations for the future, which we hope may be fully realized.

ARE YOU OPEN TO CONVICTION? If so, you cannot doubt, from the testimony laid before the public, that *Hale's Henry of Hockwood and Fur* will cure coughs, colds, and all controllable diseases of the lungs and throat, when all other pulmonals have failed. Crittenton's, No. 7 6th Avenue. Sold by all Druggists. *Pike's Toothache Drops* cure in 1 minute.

PATENTS & INVENTIONS

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., Mar. 3d, 1874.

For WEEK ENDING Feb. 17, 1874.

LAMP BURNER.—Welcome Hathaway, Ophir, Cal.

WATER-CLOSET REGULATOR.—John Marquis, S. F., Cal.

TREATING ORES.—Charles H. Aaron, Benton, Cal.

REISSUE.

ENAMELING PHOTOGRAPHS.—Nathaniel Weston, S. F., Cal.

—The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest time possible.

SAN FRANCISCO METAL MARKET.

WEDNESDAY M., March 4, 1874.

The market for Iron and Steel is depressed, but a better feeling is looked for with the opening of the regular spring trade. Quicksilver is as firm as ever.

Scotch Pig Iron, 10 ton	\$32 00	@	—
White Pig, 10 ton	32 00	@	—
Refined Bar, bad assortment, 10 lb	—	@	4
Refined Bar, good assortment, 10 lb	—	@	4 1/2
Bolton, No. 1 to 4	—	@	—
Plate, No. 5 to 9	—	@	—
Sheet, No. 10 to 13	—	@	—
Sheet, No. 14 to 20	—	@	—
Sheet, No. 21 to 27	—	@	—
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	—	@	—
Norway Iron	—	@	—
Roller Iron	—	@	—
Other Irons for Blacksmiths, Miners, etc.	—	@	—

COPPER.			
Braziers	—	@	37
Copper Tin, 10 lb	—	@	50
O. M. S. Pat.	—	@	—
Sheeting, 10 lb	—	@	25
Sheeting, 15 lb	—	@	25
Sheeting, Old Yellow	—	@	10 1/2
Composition Nails	—	@	25
Composition Bolts	—	@	25

TIN PLATES.			
Plates, Charcoal, 10 lb box	—	@	16 00
Plates, 10 Charcoal	12 00	@	14 00
Roofing Plates	13 00	@	13 50
Banca Tin, 10 lb	—	@	40
Sheeting—English Char.	20 00	@	25 1/2
Drill	18 00	@	22
Flat Bar	18 00	@	22
Plough Point	—	@	—
Zinc	9 00	@	10
Zinc, Sheet	9 00	@	10
NAILS. Assorted sizes	5 1/2	@	8

LEAD.			
Pig, 10 lb	—	@	5
Sheet	—	@	9
Pipe	—	@	8 1/2
QUICKSILVER, per lb	5 1/2	@	1 1/2

LEATHER.

SAN FRANCISCO, Wednesday M., March 4, 1874. There is no news in regard to the Leather market. Trade is very slack, and much complaint is made by dealers that so little is doing.

City Tanned Leather, 10 lb	25 00	@	29
Santa Cruz Leather, 10 lb	25 00	@	29
Country Leather, 10 lb	24 00	@	28
Stockton Leather, 10 lb	25 00	@	29
Jodot, 8 Kil, per doz	50 00	@	54 00
Jodot, 12 to 15 Kil, per doz	60 00	@	65 00
Jodot, second class, 12 to 15 Kil, per doz	55 00	@	60 00
Cornellian, 12 to 15 Kil, per doz	60 00	@	65 00
Cornellian Females, 12 to 15 Kil	60 00	@	64 00
Cornellian Females, 12 to 15 Kil	60 00	@	64 00
Beauverville, 10 lb	55 00	@	60 00
Simon, 10 Kil, per doz	61 00	@	63 00
Simon, 20 Kil, per doz	65 00	@	67 00
Simon, 24 Kil, per doz	72 00	@	74 00
Robert, 10 Kil, per doz	55 00	@	60 00
French Kips, 10 lb	1 00	@	1 15
California Kip, 10 lb	40 00	@	45 00
French Sheep, all colors, 10 lb	9 00	@	10 00
Eastern Oak for Backs, 10 lb	1 00	@	1 25
Sheep Roams for Topping, all colors, 10 lb	9 00	@	10 00
Sheep Roams for Lining, 10 lb	5 50	@	6 00
California Rubber, 10 lb	5 00	@	5 25
Best Jodot Cal Boot Legs, 10 lb	4 00	@	4 25
Good French Cal Boot Legs, 10 lb	4 00	@	4 25
Harvest Leather, 10 lb	4 00	@	4 25
Fair Bridle Leather, 10 lb	45 00	@	47 00
Skirting Leather, 10 lb	34 00	@	37 00
Wolf Leather, 10 lb	30 00	@	32 00
Buff Leather, 10 lb	19 00	@	20 00
Wax Side Leather, 10 lb	17 00	@	18 00
Eastern Wax Leather, 10 lb	—	@	—

Notice.—The Annual Meeting of the Cordillera Gold and Silver Mining Company, Chihuahua, Mexico, for the election of Trustees and other business, will take place on Monday, the 15th inst., at 3 o'clock P. M., at the office of the Company, No. 321 Washington street, San Francisco, Cal.

HENRY R. REED, Secretary.



PROTECT YOUR BUILDINGS

Against Fire and Water;

PREVENT DAMPNESS FROM PASSING THROUGH BRICK WALLS; STOPS ALL LEAKS IN SHINGLE, TIN, FELT OR IRON ROOFS, AND IS

Only 80 cents a Gallon—Ready for Use.

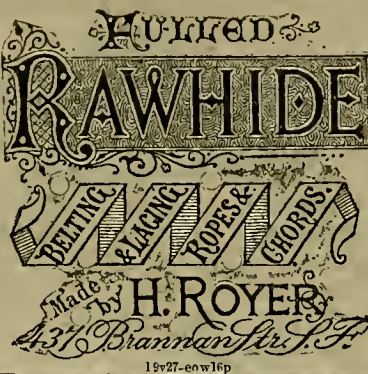
AGENTS WANTED IN EVERY TOWN.

1 gallon and can, boxed	\$1 50
10 " " "	9 50
20 gallon, one-half bbl.	16 00
1 barrel	30 00

Remittances, or N. Y. reference, MUST accompany all orders. Send for testimonials and FULL particulars to our office, 9 Cedar street, N. Y. P. O. Box 1701.

N. Y. Slate Roofing Co.

121-1m-bp



Mining and Other Companies.

Due to the time necessary to mail the present large edition of the M. & S. Press, we are obliged to go to press on Thursday evening, which is the very latest hour we can receive advertisements.

Buena Vista Petroleum Company—Location

Location of principal place of business, San Francisco, California. Location of works, Kern county, California. Notice is hereby given that at a meeting of the Board of Directors, held on the 24th day of January, 1874, an assessment, (No. 22), of one dollar per share, was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 430 Jackson street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 14th day of March, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the thirtieth day of March, 1874, to pay the delinquent assessment together with costs of advertising and expenses of sale. By Order of the Directors, L. AGUAYO, Secretary.

Office No. 430 Jackson street, San Francisco, Cal. 17

Enterprise Consolidated Mining Company,

Location of works, West Point, Calaveras county, California. Principal place of business, San Francisco, Cal. Notice is hereby given that a meeting of the Board of Directors of the Enterprise Consolidated Mining Company will be held at the Company's office, 234 Montgomery street, San Francisco, California, on Tuesday, the 11th day of March, 1874, at 3 o'clock P. M. of that day. Said meeting is called for the purpose of adopting a code of By-Laws for the government of said corporation.

P. E. MORRIS, Acting President.

San Francisco, March 5th, 1874. mr7

Geneva Consolidated Silver Mining Company

Principal place of business, City and County of San Francisco, State of California. Location of works, Cherry Creek Mining District, White Pine County, State of Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 14th day of February, 1874, an assessment of twenty-five (25) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at his office, room 14, 302 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the eighteenth day of March, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 18th day of March, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. I. T. MILLIKEN, Secretary.

Office—Room 14, 302 Montgomery street, San Francisco, California. feb14-w

Germania Mining Company—Location

Principal place of business, San Francisco. Location of works, Tintic District, Utah county, Utah.

Notice is hereby given that at a meeting of the Board of Directors, held February 24, 1874, an assessment, (No. 1), of fifty cents per share, was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 408 California street, Room 16, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 14th day of March, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 14th day of April, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

By order of the Board of Directors, J. W. TRIPP, Secretary.

Office, 408 California street, Room 16, San Francisco, California. feb7

Hudson Gold Mining Company—Principal

place of business, San Francisco, State of California. Location of works, Cherokee Mining District, Plumas Co., Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 24th day of February, 1874, an assessment of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at his office, 113 Leidesdorff street, Room 10, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 30th day of March, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 29th day of April, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office—Room 10, 113 Leidesdorff street, San Francisco, California. feb7

Jeinsen Lubricator Company—Principal

place of business, San Francisco, California. Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 30th day of January, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
M. J. McDonald	26	250	\$62 50
D. L. McDonald	27	100	25 00
Wm. J. Campbell, Trustee	31	15	3 75
Wm. J. Campbell, Trustee	32	15	3 75
Wm. J. Campbell, Trustee	33	30	7 50
Wm. J. Campbell, Trustee	34	50	12 50
Wm. J. Campbell, Trustee	35	50	12 50
Mark L. McDonald	50	200	50 00
McDonald & Whitney, Trns.	52	1000	250 00
Louie Visaria	53	500	125 00
Wm. J. Campbell	54	20	5 00
Wm. J. Campbell, Trustee	55	100	25 00
Wm. J. Campbell, Trustee	56	50	12 50
Wm. J. Campbell, Trustee	57	25	6 25
Wm. J. Campbell, Trustee	58	25	6 25

And in accordance with law, and an order of the Board of Directors, made on the 30th day of January, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the Company, No. 600 Montgomery street, San Francisco, on the 25th day of March, 1874, at the hour of 12 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. CALEB T. FAY, Secretary.

Office, room 23, No. 600 Montgomery street. mr7

Keystone No. 1 and 2 Gold and Silver

Mining Company. Location of principal place of business, 347 Montgomery street, San Francisco, California. Location of works, Wallis District, Mohave county Arizona.

Notice.—There are delinquent upon the following described stock, on account of assessment No. two, (2), levied on the tenth day of January, 1874, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J. L. Clark	2	100	\$25 00
J. L. Clark	3	100	25 00
J. L. Clark	4	100	25 00
J. L. Clark	5	100	25 00
J. L. Clark	6	100	25 00
J. L. Clark	7	100	25 00
J. L. Clark	9	100	25 00
J. L. Clark	10	100	25 00
J. L. Clark	11	100	25 00
J. L. Clark	12	100	25 00
J. L. Clark	15	250	62 50
J. L. Clark	18	250	62 50
J. L. Clark	17	50	12 50
J. L. Clark	19	50	12 50
J. L. Clark	20	50	12 50
J. L. Clark	21	50	12 50
J. L. Clark	22	50	12 50
J. L. Clark	24	50	12 50
J. L. Clark	26	25	6 25
J. L. Clark	27	25	6 25
J. L. Clark	32	20	5 00
J. L. Clark	35	10	2 50
J. L. Clark	38	18	4 50
William Callon	89	250	62 50
William Callon	89	100	25 00
William Callon	95	25	6 25
William Callon	96	25	6 25
William Callon	114	100	25 00
William Callon	115	100	25 00
William Callon	116	100	25 00
Henry Raymond	121	300	75 00
Henry Raymond	122	300	75 00
W. H. Stark	131	1000	250 00
W. H. Stark	132	1000	250 00
W. H. Stark	137	25	6 25
W. H. Stark	138	25	6 25
W. H. Stark	139	25	6 25
W. H. Stark	140	25	6 25
W. H. Stark	141	10	2 50
W. H. Stark	143	10	2 50
W. H. Stark	146	25	6 25
W. H. Stark	147	25	6 25
W. H. Stark	148	25	6 25
W. H. Stark	149	25	6 25
W. H. Stark	150	37	9 25
William Washburn	201	50	12 50
William Walsh	152	50	12 50
William Walsh	153	50	12 50
T. E. Jewell, Trustee	157	72	18 00
W. H. Smith	158	150	37 50
S. W. Huntington	187	100	25 00
S. W. Huntington	188	50	12 50
W. H. Stark	192	100	25 00
W. H. Stark	193	100	25 00
W. H. Stark	194	100	25 00
W. H. Stark	197	100	25 00
W. H. Stark	198	100	25 00
W. H. Stark	199	100	25 00
W. H. Stark	200	100	25 00
W. H. Stark	201	100	25 00
Sarah Brands	205	30	7 50
Matthew O'Connell	206	200	50 00
D. C. Bates	209	5000	1250 00
J. C. Clem Hill, Trustee	210	1600	400 00

And in accordance with law, and an order of the Board of Directors, made on the tenth day of January, A. D. 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, No. 607 Montgomery street, San Francisco, California, on Tuesday, the tenth day of March, A. D. 1874, at the hour of 12 o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

T. E. JEWELL, Secretary.

Office, 507 Montgomery street, San Francisco, California.

Land Purchasers' Association—Office, No.

425 Kearny street, San Francisco, Cal.

Notice is hereby given, that at a meeting of the Directors, or Trustees, of this corporation, held on the 17th day of February, 1874, an assessment of ten dollars per share (being the 9th monthly installment on the subscription to the stock) was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at No. 425 Kearny street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 23rd day of March, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 14th day of April, 1874, to pay the delinquent assessment, together with costs of advertising and expense of sale.

By order of the Board of Directors, C. S. WRIGHT, Secretary.

Office, No. 425 Kearny street, San Francisco, California.

Manhattan Marble Company of Califor-

nia—Principal place of business, San Francisco Cal. Location of works, Oakland, Cal.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 24 day of February, 1874, the several amounts set opposite the names of the respective shareholders as follows:

J. Clem Uhler, Treasurer.	210	3600	1280 00
And in pursuance of the law, and in order of the			490 00
Board of Directors made on the tenth day of January,			
A. D., 1874, so many shares of each parcel of said			
stock as may be necessary, will be sold at public auction			
at the office of the Company, No. 507 Montgomery			
street, San Francisco, California, on Tuesday, the			
tenth day of March, A. D., 1874, at the hour of			
12 o'clock m., of said day, to pay said delinquent assess-			
ment thereon, together with costs of advertising and			
expenses of sale.			
T. E. JEWELL, Secretary.			
Office, 507 Montgomery street, San Francisco, California.			

Machine Builders.

ESTABLISHED 1851.

PACIFIC IRON WORKS,

First and Fremont streets,

SAN FRANCISCO.

IRA P. RANKIN, A. P. BRAYTON,
GEO. W. FOGG, Superintendent.

Steam Engines and Boilers,

MARINE AND STATIONARY,

IRON AND BRASS CASTINGS

Mining Machinery of Every Description,

And all other classes of work generally done at first-class establishments, manufactured by us at the lowest prices, and of the best quality.

Particular attention paid to Jobbing Work and Repairs.

Sole Agents for sale of HUNTOON'S CELEBRATED PATENT GOVERNOR.

1872-3m

GODDARD & CO.

FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

TEAM ENGINES.

Quartz, Flour and Saw Mills,

Wey's Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard street, San Francisco. 3-47

THE RISDON

Iron and Locomotive Works.

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....\$1,000,000.LOCATION OF WORKS:
Corner of Beale and Howard Streets,
SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Oams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors: Joseph Moore, Jesse Holladay, O. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS B. MEAD.....Secretary
2417-07

PACIFIC

Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of
RAILROAD AND OTHER IRON
—AND—
Every Variety of Shafting,Embracing ALL SIZES of
Steamboat Shafts, Cranks, Pistons and Connecting Rods, and Locomotive Axles and Frames.

HAMMERED IRON

Of every description and size.

Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention.

The highest price paid for Scrap Iron.

SACRAMENTO FOUNDRY,

N. E. corner N and Front streets.....SACRAMENTO,

Steam Engines—all kinds of Mining Machinery.

SHIP, AGRICULTURAL, STOVE, RANGE AND HOUSE CASTINGS.

Iron Railings and Ornamental Work of every description

At the Lowest Rates.

13727-1y

WM. GUTENBERGER.

THOMPSON BROTHERS,

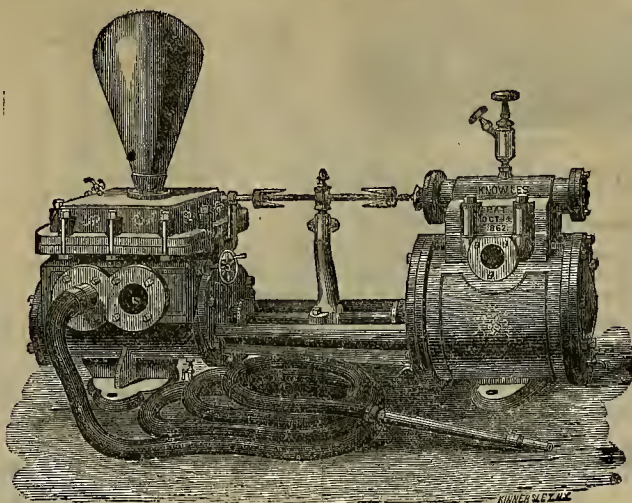
EUREKA FOUNDRY,

129 and 131 Beale street, between Mission and Howard, San Francisco.

LIGHT AND HEAVY CASTINGS,

of every description, manufactured, 2416qr

KNOWLES' PATENT STEAM PUMP.



It has no Cranks or Fly-Wheel, and has no dead points where it will stop, consequently it is always ready to start without using a starting-bar, and does not require hand-work to get it past the center. Will always start when the steam cylinder is filled with cold water of condensation.

CENTRAL PACIFIC R. R., OFFICE OF THE GEN'L MASTER MECHANIC, SACRAMENTO, CAL., January 14, 1874.

A. L. FISH, Esq., Agent of the Knowles Steam Pump, San Francisco—Dear Sir: In reply to your inquiry as to the merits of the Knowles Steam Pump, in use upon this road, I will say that it gives me great pleasure to report that they have performed their work well whenever called upon. In no instance have they failed. We have now over 30 of them in use on this road as fire engines, and pumping water for shop and station use. I consider the Knowles Steam Pump the best in use, and prefer it to any other. Yours truly, A. J. STEVENS, General Master Mechanic.

A. L. FISH, Agent Knowles' Steam Pump—Dear Sir: In answer to your inquiries, we state that the highest award for Steam Pumps at the Eighth or last Mechanics' Fair in San Francisco, was a FIRST PREMIUM and Diploma, awarded to the Knowles Patent Steam Pump, as published in the Official List September 24, 1871. A. S. HALLIDIE, President Board of Managers. W. H. WILLIAMS, Sec'y Board of Managers Eighth Industrial Exhibition, M. I.

WE BUILD AND HAVE CONSTANTLY ON HAND

The Largest Stock of Pumps in the World,

And for Every Conceivable Purpose.

SOLE AGENT ON THE PACIFIC COAST FOR THE

CLAPP & JONES SUPERIOR STEAM FIRE ENGINE,

Challenging the World!

THE CELEBRATED BOOMER PRES,

For Wine, Cider, Lard, Paper, Wool, Hops, Hides, Tobacco, Rage, etc.—the Most Powerful in Use.

A. L. FISH, Agent,

Nos. 9 and 11 First Street, San Francisco, Cal.

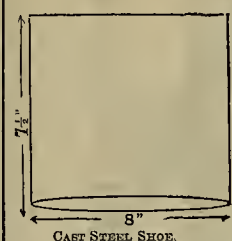
P. S.—All kinds of new and second-hand Machines on hand.

10v28-lambp

CAST STEEL SHOE AND DIE COMPANY,

OFFICE—Room 28, Hayward's Building, 419 California St.,

SAN FRANCISCO.

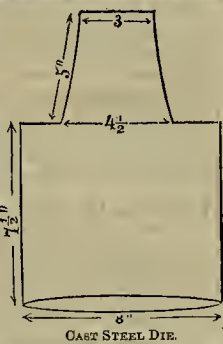


CAST STEEL SHOE.

PATENTED CAST STEEL SHOES AND DIES for Quartz Mills.

Price, 20 cts per Pound.

An improvement greatly needed—being stronger, more durable and economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as bar steel.

—ALSO—
Cast-Steel Tappets, Cams, Hammers, Gearing and Castings OF ALL KINDS, A SPECIALTY. It takes forty days to fill orders.

CAST STEEL DIE.

UNION IRON WORKS,

Sacramento.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS,

CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets.

SACRAMENTO CITY.

OCCIDENTAL FOUNDRY,

137 and 139 First street.....SAN FRANCISCO.

STEIGER & BOLAND,

IRON FOUNDERS.

IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Rolling Pan and Callahan Grate Bars, suitable for Burning Screenings.

NOTICE.—Particular attention paid to making Superior Shoes and Dies. 20v26-3m

CALIFORNIA BRASS FOUNDRY,

No. 125 First street, opposite Minna, SAN FRANCISCO.

ALL KINDS OF Brass, Composition, Zinc, and Babbitt Metals. Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Knicker Braces, Hinges, Ship and Steamboat Bells and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all size and patterns, furnished with dispatch. PRICES MODERATE. 20v26-3m

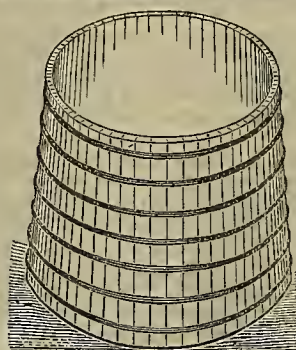
Dunn & Kewin, Pattern and Model Makers, Globe Iron Works, Nos. 143 and 145 Fremont street, between Mission and Howard, S. F. 1728-6m

Miners' Foundry and Machine Works,

CO-OPERATIVE,

First Street, bet. Howard and Folsom, SAN FRANCISCO

Machinery and Castings of all kinds.



WATER TANKS of any capacity, made entirely by machinery. Material the best in use; construction not excelled. Attention, dispatch, satisfaction. Cost less than elsewhere. 3v28-3m-sa

MECHANICS' MILLS, Cor. Mission & Fremont Streets.

Consolidated Reforma Lead and Silver Mining Company.

Location of Mines, Mulaga District, Lower California.

OFFICE, ROOM 10, No. 605 CLAY STREET.

Correct information from the Mines of the Company can always be obtained by application at the office.

LAST ASSAY, \$263 PER TON IN SILVER.

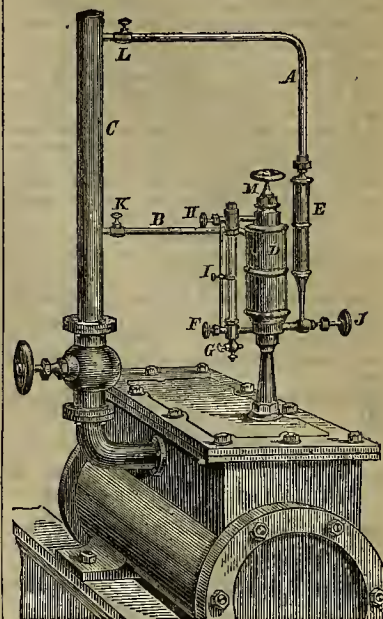
JACOB SCHREIBER, President.

A. D. CARPENTER, Secretary.

7v28-3m

Machinery.

N. Seibert's Eureka Lubricators.



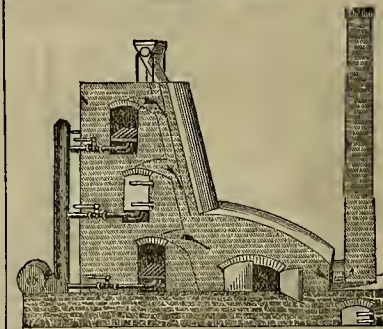
THE HIGHEST PREMIUM

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, adding gauge; K, valve to shut off when engine stops; H, F, valve to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Made by California Brass Works, 125 First street, S. F. 24v23tf

EAGLE IMPROVED CHLORINIZING AND DESULPHURIZING FURNACE.

(Patented July, 1873.)



The Cheapest and Most effective Furnace now in use. Parties desirous of building above furnace, or for any information on same, address,

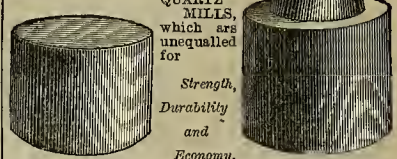
I. T. MILLIKEN,

Ja31-2tam No. 302 Montgomery st., room No. 14, S. F.

STEEL SHOES AND DIES

FOR QUARTZ MILLS,

Made by our improved process after many years of patient research and experiment. We have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for



Strength, Durability and Economy.

Will wear three times longer than any iron Shoes.

BUILDERS AND CONTRACTORS

Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and general Mining Machinery in all its details and furnishes of Mining Supplies. All orders promptly filled.

MOREY & SPERRY,

88 Liberty St. N. Y.

Examination solicited.

9v28-1y

THEODORE KALLENBERG,

MACHINIST,

and Maker of Models for Inventors. All kinds of Dies, Stamps and Punches made. Also, all kinds of Small Gear Cut.

Repairing done on very Reasonable Terms and in the best manner. No. 32 Fremont street, S. F. 19v23-3m

BUY BARBER'S BIT BRACZ.

TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

All persons infringing on either of these patents

WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under Craig's, Rice's, Macey's and Hoekin's patents.

I Guarantee Full Indemnity to all my Customers.

Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy on Improved LITTLE GIANT.

For further particulars apply to

R. HOSKIN, Dutch Flat,

Or R. R. & J. CRAIG,

Room 6, 240 Montgomery St., S. F.

WILLIAMSON & CORY, Marysville.

Dutch Flat, August 10, 1873.

Agente.

6v27-2m

CROCKER'S PATENT
TRIP HAMMER QUARTZ BATTERY.

This machine, complete, weighs 1,500 lbs. Has an iron frame, five steel arms with stamps weighing 17 lbs. each, which strike 2.0 blows per minute, in a mortar provided with screens on both sides, and crushes FINE 600 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$400.

G. D. CROCKER,

315 California Street, San Francisco.

17v26-tf

TO MINING COMPANIES.

THE SUBSCRIBER HAVING HAD EXPERIENCE

—IN—

Rock Tunneling by Machinery,

Is ready to take Contracts for Tunneling at reasonable rates. Can be seen for a few days at the office of Col. J. O. Zahriske, 822 Washington street, Room No. 14.

128-1t

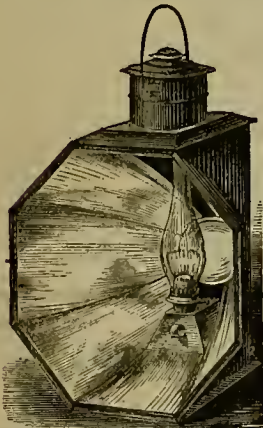
THOMAS CUMMING.

STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

J. BENDY, No. 32 Fremont Street.

PACIFIC LAMP MANUFACTORY.



New Mining & Mill Lights.

C. L. GILLER,
SEAL ENGRAVER AND DIE SINKER,

The Best SEALS, MONOGRAMS, BOOK DIES, and General Engraving done in the city, at the most Reasonable Prices.

No. 430 Montgomery Street, San Francisco.

6v28-3m

Metallurgy and Ores.

JOHN TAYLOR & CO.,

IMPORTERS OF AND DEALERS IN
ASSAYERS' MATERIALS

Chemical Apparatus and Chemicals.

Druggists' Glassware and Sundries,

PHOTOGRAPHIC GOODS, ETC.,

512 and 514 Washington street, SAN FRANCISCO

We would call the special attention of Assayers, Chemists, Mining Companies, Milling Companies, Prospectors, etc., to our large and well adapted stock of

ASSAYERS' MATERIALS

—AND—

Chemical Apparatus,

Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.

Our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for computation of assays in Grains Grammes, will be sent free upon application.

7v25-tf

JOHN TAYLOR & CO.

Varney's Patent Amalgamator.

These Machines Stand Unrivaled.

For rapid pulverizing and amalgamating ores, they have no equal. No effort has been, or will be spared to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits. They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows:

The pan being filled, the motion of the muller forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference before. Thus it is constantly passing a regular row between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.

Settlers made on the same principle excel all others. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely amalgamated.

Mill-men are invited to examine these pans and settlers for themselves, at the office, 229 Fremont Street, San Francisco

Important to Miners and Mill Men.

Silver-Plated Copper Amalgamating Plates, for Saving Gold.



Of all sizes and in any quantity, furnished on order. Full instructions sent for operating. Particular attention given to plating goods for Builders, Plumbers, etc. Hotel and Restaurant work replated.

SAN FRANCISCO GOLD AND SILVER PLATING WORKS,
655 Mission street, San Francisco.

2v25-3m E. G. DENNISTON, Proprietor.

CHARLES F. KIRCHNER,

Sampler and Crusher of Ores,

NO. 11 DRUMM STREET,

San Francisco.

ORE BAGS FOR SALE

IN QUANTITIES TO SUIT.

Apply to

CROSS & CO.,

315 California street, San Francisco.

Richardson & Co., Copper Ore Wharves,
SWANSEA.

RICHARDSON & Co. have been for thirty years established in Swansea as Agents for the preparation, Sampling, Assaying, and sale of Copper, Silver, Gold, Lead, Zinc, and all other Ores and Metals, for which they have extensive Warehouses and Wharves under cover, 1,000 feet of Quay Frontage within the Floating Dock, and the most complete Machinery and Appliances. They are also prepared to make advances against Ores in anticipation of realization, and to guarantee all payments when required.

2v25-1y

RODGERS, MEYER & CO.,

COMMISSION MERCHANTS,

ADVANCES MADE

On all kinds of Ores, and particular attention

PAID TO

CONSIGNMENTS OF GOODS,
4v16-3m

O. W. STRONG.

W. L. STRONG.

STRONG & CO.,

Metallurgical Works,

No. 10 Stevenson Street, near First, SAN FRANCISCO.

We purchase high grade Gold and Silver Ores, Bullion, Etc. Ores worked and tested with care; also, Ore Assays of Gold, Silver, Copper, Lead, Tin, Iron, Manganese, Cinnabar, Nickel, Etc.

LEOPOLD KUH,

(Formerly of the U. S. Branch Mint, S. F.)

Assayer and Metallurgical
CHEMIST,

No. 611 Commercial Street,

(Opposite the U. S. Branch Mint,

SAN FRANCISCO CAL.

7v21-3m

ANDREW CRAIG,
Pres't,
A. C. PUTNAM,
V. Pres't.

JAS. W. WHITLATCH,
Supt.
JNO. L. MURPHY,
Sec'y & Treas.

CALIFORNIA

Quartz Crushing & Ore Sampling
MILLS.

Nos. 413 & 415 Mission st., bet. First & Fremont, S. F.



Ours is the OLDEST, LARGEST and MOST EXTENSIVELY KNOWN establishment of this kind on the Coast.

Our mills are under the direct supervision of one of the most experienced Samplers and Millmen in the country, and we purpose carrying on the business upon a scale commensurate with the wants of the mining public.

We have the best facilities for Crushing, Sampling and Pulverizing all classes of Gold, Silver, Copper and Lead Ores and other minerals.

We also crush and pulverize all kinds of Marble, Fire-Clay, Bricks, Coke, Cement, etc., upon the shortest notice, for which we have special mills.

Reliable information furnished to miners and ore dealers concerning shipments, freights, prices, etc.

Prompt execution of all orders. Faithful attention to business entrusted to us.

Abundant storage room without extra charge.

3a31-tf

"JIM" WHITLATCH, Sup't.

E. N. RIOTTE, JAS. L. BEYEA, S. O. BROWN.

AUBURN MILL COMPANY,

Reno, Nevada.

Purchase Silver Ores in quantities of ten tons and upward, delivered on board the cars at San Francisco or Oakland at the annexed Net Rates, WITH NO CHARGE FOR SAMPLING OR REDUCTION. On lots of less than 10 tons, freight to Reno will be deducted.

Special Rates for Gold Ores.

On Gold contained in Silver Ores to the amount of \$30 and upwards, 65 per cent. will be paid. When less than \$30, and above \$10, the amount will be added to the Silver value. Sacks promptly returned free of charge. Ores sampled by Battery or Sampling Mill as shipped may elect, and returns made promptly by cheque on San Francisco.

Rates:

Value	Per Cent.	Value	Per Cent.	Value	Per Cent.	Value	Per Cent.	Value	Per Cent.	Value	Per Cent.	Value	Per Cent.	Value	Per Cent.
\$60	25	\$90	38	\$125	47	\$160	57	\$200	65	\$250	75	\$300	80	\$350	85
\$65	27	\$95	40	\$130	49	\$165	59	\$205	67	\$255	77	\$305	82	\$355	87
\$70	28	\$100	42	\$135	50	\$170	60	\$210	69	\$260	79	\$310	84	\$360	89
\$75	30	\$105	44	\$140	52	\$175	62	\$215	71	\$265	81	\$315	86	\$365	91
\$80	31	\$110	46	\$145	54	\$180	64	\$220	73	\$270	83	\$320	88	\$370	93
\$85	33	\$115	48	\$150	56	\$185	66	\$225	75	\$275	85	\$325	90	\$375	95
\$90	34	\$120	50	\$155	58	\$190	68	\$230	77	\$280	87	\$330	92	\$380	97
\$95	35	\$125	52	\$160	60	\$195	70	\$235	79	\$285	89	\$335	94	\$385	99
\$100	36	\$130	54	\$165	62	\$200	72	\$240	81	\$290	91	\$340	96	\$390	100

And on intermediate values in proportion.

C. A. LUCKHARDT, Agent.

21 First St., San Francisco.

S. O. BROWN, Manager,

Reno, Nevada.

3v28-6m

Nevada Metallurgical Works,

21 First street.....San Francisco.

Ores worked by any process.

Ores sampled.

Assaying in all its branches.

Analysis of Ores, Minerals, Waters, etc.

Plans furnished for the most suitable process for working Ores.

Special attention paid to the Mining and Metallurgy of Quicksilver.

E. N. RIOTTE,

C. A. LUCKHARDT,

Mining Engineers and Metallurgists.

Morris' Settler and Amalgamator.

An important improvement in milling. Cheap, light, efficient and durable. Gains Quicksilver on working tellings. Is discharged from the surface in the center instead of the side, by means of a Syphon which extends to near the center of the Settler. Heaviest casting weighs only 135 pounds. The sides and bottom of the Settler are made of wood, as also Mullers, placed vertically—the friction of which highlights the quicksilver. One of these machines is in daily operation at No. 616 Merchant street, (basement), San Francisco. Parties desiring information as to rights of use, purchase, etc., can address,

FREDERICK MORRIS,

616 Merchant St., S. F.

Ores Assayed and Amalgamated.

PLATINUM

Vessels, Apparatus, Sheet, Wire, Etc., Etc.

For all Laboratory and Manufacturing Purposes

H. M. RAYNOR,

25 Bond street, New York.

Platinum Scrap and Native Platinum purchased.

The Phelps' Manufacturing Co.,

(Late S. F. Screw Bolt Works.)

MANUFACTURERS OF ALL KINDS OF

Machine Bolts, Bridge Bolts, and Ship or Band Bolts.

13, 15 and 17 Drumm Street, San Francisco. 4v241y

WATER PIPE.

FOR SALE CHEAP.

WE HAVE ON HAND

5,000 FEET OF 4-INCH PIPE,

5,000 FEET OF 5-INCH PIPE,

Made of No. 16 Sheet Iron, which we will sell at a very low price.

3a24-tf

FRANCIS SMITH & CO.,

180 Beale street.

The California Powder Works

No. 314 CALIFORNIA STREET.

SAN FRANCISCO.

Manufacturers and have constant on hand

SPORTING,

MINING,

And BLASTING

POWDER,

Of SUPERIOR QUALITY, FRESH FROM THE MILLS. It being constantly received and transported into the interior, is delivered to the consumer within a few days of the time of its manufacture, and is in every way superior to any other Powder in Market. We have been awarded successively

Three Gold Medals

By the MECHANICS' INSTITUTE and the STATE AGRICULTURAL SOCIETY for the superiority of our products over all others.

We also call attention to our

HERCULES POWDER.

Which combines all the force of other strong explosive now in use, and the lifting force of the BEST BLASTING POWDER, thus making it vastly superior to any other compound now in use.

A circular containing a full description of this Powder can be obtained on application to our Office.

16v20-3m

JOHN F. LOHSE, Secretary.

BLACK DIAMOND FILE WORKS.



TRADE MARK.

G. & H. BARNETT,

Manufacturers of Files of every Description,

Nos. 39, 41 and 43 Richmond street,

Philadelphia, Pa.

Sold by all the principal hardware stores on the Pacific Coast.

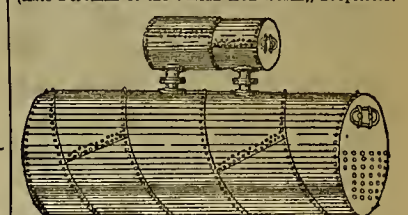
18v25-1y

San Francisco Boiler Works,

123 and 125 Beale Street.....SAN FRANCISCO

F. I. CURRY,

(Late Foreman of the Vulcan Iron Works), Proprietor.



High and Low Pressure Boilers of all Descriptions.

SOLE MANUFACTURERS OF THE CELEBRATED SPIRAL BOILER.

SHEET IRON WORK of every description done at the Shortest Notice.

All kinds of JOBBING and REPAIRING promptly attended to.

17v25-3m

Steam Boiler Manufactory

—OF—

JAMES H. SHANLEY, Successor to D. McDonald,

Oregon street, below Front, San Francisco.

All Sorts of Steam Boilers Made to Order

and Repaired.

Also, all kinds of Sheet Iron Work done promptly,

and at prices to suit the times.

1v27

McAFEE, SPIERS & CO.,

BOILER MAKERS

AND GENERAL MACHINISTS,

Howard st., between Fremont and Beale, San Francisco.

SHEET IRON PIPE.

THE

N. J. KABATH.

GEO. S. LADD.

KABATH & LADD,

IMPORTERS AND DEALERS IN

Mine and Mill Supplies.

AGENCY OF THE

LAFLIN AND RAND POWDER COMPANY,

224 SANSOME STREET,

(P. O. Box 522.)

SAN FRANCISCO.

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LAFLIN AND RAND POWDER COMPANY,

224 SANSOME STREET,

(P. O. Box 522.)

SAN FRANCISCO.

KABATH & LADD,**224 Sansome Street, . . . San Francisco.**

HAVE JUST RECEIVED PER "CLEOPATRA,"

A FRESH SUPPLY OF EASTERN IRON KEG POWDER,

MANUFACTURED BY THE WORLD-WIDE KNOWN

LAFLIN & RAND POWDER COMPANY,

PATENT SAFETY FUSE, ELECTRICAL BLASTING APPARATUS, ELECTRICAL FUSE,

RUBBER TUBING, LEADING AND CONNECTING WIRE CAPS, ETC.,

AND EVERYTHING IN THE LINE OF

MINE AND MILL SUPPLIES.

SEND FOR FURTHER INFORMATION.

N. J. KABATH.

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KABATH & LADD,

IMPORTERS AND DEALERS IN

Mine and Mill Supplies.

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SAN FRANCISCO.

MINING AND SCIENTIFIC PRESS

An Illustrated Journal of Mining, Popular Science and Progressive Industry.

BY DEWEY & CO.,
Patent Solicitors.

SAN FRANCISCO, SATURDAY, MARCH 14, 1874.

VOLUME XXVIII
Number 11.

Mine Ventilating Machine.

In our issue of the 28th ult., we spoke of having seen an improved machine for ventilating mines, the invention of Capt. W. Williams, of this city. The accompanying cut shows a sectional view of this machine, which is quite simple in construction and operation. The moving parts are enclosed in a large upright box, made in different sizes to suit the requirements of particular mines. Within this box a cup-shaped cylinder is placed, swimming in water, and the motion of the piston rod, actuated by steam power, produces a strong current of air at both its upward and downward stroke. By referring to the cut, the operation of the machine will be easily understood.

The dotted lines at the lower part of the cut indicate the water, which is placed in the machine for the purpose of cooling the air before it is forced into the mine. The cup-shaped piston, *B B* is moved up and down through this water by means of the piston rod *C*, and draws in and forces out the air. *D* is the receiving valve, *F* the discharge valve of the upper part of the machine; *d* is the receiving valve, and *f* the discharging valve for the lower part. *H* and *G* are the discharging and receiving pipes, of the upper and lower portions respectively. When the piston is drawn up, the air enters from the surface through the pipe *M*, and valve *d*, into the receiving pipe *G*, and through the passage *E*, into the interior of the machine. On the down-stroke the valve *d* is closed, and the air is forced down on the water, through the passage *E*, and out of the valve *f*, into the mine. At the same down-stroke air is drawn through the pipe *M*, valve *D*, and passage *H*, into the upper part of the machine *A*, and on the piston being raised to draw the air into the lower part of the machine through the valve *d*, it, at the same time forces a current out of the upper portion of the machine through the valve *F*, into the mine. By this means it will be seen that the machine is double acting, taking in and forcing out air at every stroke, whether up or down.

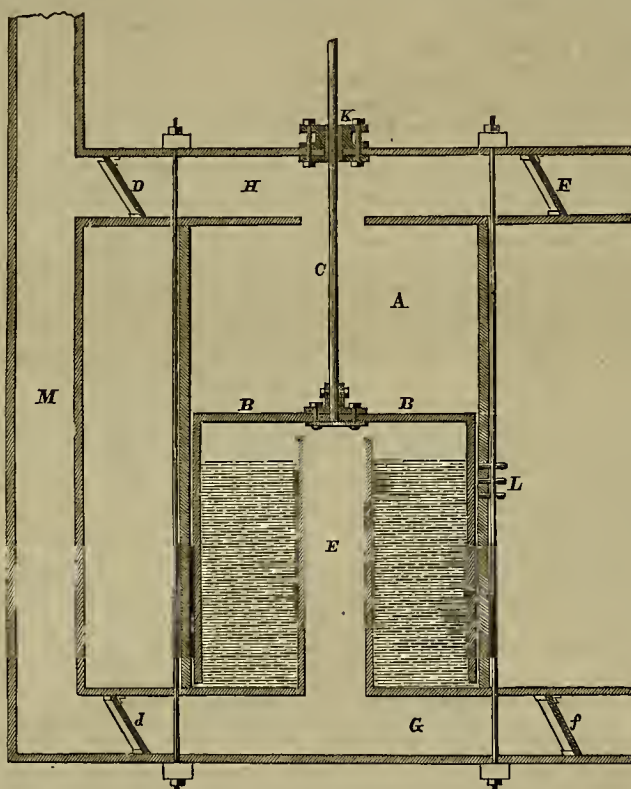
This machine can be placed at any required depth in the mine and at the same time receive its full supply of air from the surface through the pipe, *M*. No grease or oil is used, thus preserving the air in its pure state. There is at all times about six feet of water in the under portion of the machine, and the up-stroke of the cup piston going to the top of the machine, with the water running down on the sides, keeps the inner part of the machine deglued with water, by which means the air is cooled before it is delivered into the mine. Should the supply of air be taken from the surface in the extreme heat of summer it would be cooled below a temperate heat while passing through. The piston fits closely to the sides of the box, so that when it is raised considerable water follows it, and running down the sides cools the air in the upper as well as the lower part. Capt. Williams originally invented the single acting machine, and used it practically with great success in England; his late improvement has doubled its capacity and otherwise perfected it, as the water is used not only for cooling the air but as a packing for the piston. The single machine giving a six-foot stroke, 30 strokes a minute, the size of the model we saw (three feet square, surface) would deliver 2,799,360 cubic inches of air per minute, and by the inventors' improvement the same stroke, double-acting, would force 5,598,720 cubic inches of cool air into the interior of the mine in one minute. Capt. Williams is sure that he can deliver from 7,000 to 8,000 cubic feet of air per minute into any part of a mine with a machine requiring two horse power to run it.

A great advantage in a machine of this class is that it can be constructed by any carpenter and put up at a mine with very little labor or expense. The power required to run it is very small indeed, as compared with other machines in use for ventilating mines. It may be attached to the pump-rod of the mine or run by any other convenient means. The power required is in fact very little as the mechanism is quite simple and there is very little friction. A man with a windlass crank can work it if necessary. Different sizes of this machine are made to suit the requirements of different

mines. A model of this ventilator can be seen in operation at No. 13 Drumm street, in this city, or Capt. Williams, the inventor can be addressed No. 420 Jackson street by those desiring further information concerning it.

New Lard Package.

Mr. John Molloy, provision merchant at No. 54 Clay street in this city has shown us a rather unique package for holding lard, which he is now using in his business. The package is simply the bladder of a hog, cleaned and prepared until it is like so much satin paper. It looks rather



WILLIAMS' MINE VENTILATING MACHINE.

like adding insult to injury to kill a hog for his meat and fat, and then use a part of his internal organization for the purpose of carrying the fat around in; but when we consider the number of hogs slaughtered every year, we can understand what a saving it would be to pork packers and the public if this method of packing lard were adopted. This package does not cost one-third the sum that ordinary wooden or tin packages cost, and being so very much lighter is an advantage to the consumer, on whom all packages are weighed.

The principal reasons to recommend the new package is, as we are informed, that no adulterated lard can be put up in it without at once being perceived, as the prepared bladder is quite transparent. Mr. Molloy informs us that in the Eastern States, what is left of the lard after the oil is pressed out, is largely adulterated with water, over ten per cent of which is often driven in by hydraulic pressure, and put on the market as pure lard, in nice pails or tins. This it would be utterly impossible to do with these packages as the lard is put in in such a manner that it will admit of no water being introduced, and other foreign substances can be seen through the package. These packages can be bought for one cent each in Chicago, St. Louis, or any of the large pork packing cities, and taking into consideration their cheapness, convenience, and saving in weight, will meet with general approval. As the mouth of the bladder is tied up with a string and can easily be opened, the package can be used more than once if necessary.

Speedy Method of Working Quartz.

A portion of the Sierra Nevada mine in the Comstock is to be worked in a way which will strike most quartz miners as rather peculiar. A drain or chute tunnel has been commenced just below the Geiger grade, a little north of the mill. This tunnel is intended to penetrate the rim rock of the hill, and will, at a distance of about eighty feet from the mouth, enter the old upper surface workings, where the hydraulicking was done in 1860, which paid so immensely with only a few inches of water. The Gold Hill News states

The Hale & Norcross Mine.

The past year has not been a profitable one for the stockholders of the Hale & Norcross Mining Co., as the President plainly states in the annual report of the company just published. The hopes expressed at the last annual meeting of this company, as regards finding pay ore on the 1,700-ft. level, have not been realized; and an additional level 200 feet below, making 1,900 feet from the surface, has since been opened, without realizing any benefit therefrom. Indications, however, on this last level, lead to the belief that a body of ore will be developed on the next level below—the sinking for which has been already commenced, and the depth of 2,000 feet will be reached in sixty days, when further prospecting will be carried on at that depth. The President of the company J. C. Flood, calls the attention of stockholders to the very heavy expense incurred in carrying on mining operations 1,900 feet below the surface and refers with confidence to the economical administration of the affairs of the company.

The Superintendent says that during the past year 28,645 tons of ore have been extracted, and 28,966 tons reduced, the principal portion of which was the product of the old upper levels; and there is now in the ore-house 1,689 tons valued at \$57,823. During the year the main incline has been sunk from the 1,700 to the 1,900-foot level. At the last mentioned depth the horizontal drift from the incline has been continued in the vein to the northern boundary of the mine. Three cross-drifts have been driven through the vein from the east to the west wall, at regular intervals. Another drift has been advanced on this level to a distance of 140 feet south from the incline, at which point a cross-cut has also been run from the east to the west wall. In the various openings thus far made at this depth two narrow seams of ore of good quality have been encountered, which, although continuous so far as explored, have not yet developed to a sufficient width to permit of the profitable extraction of the ore therefrom.

The vein on this level is of much greater width on the 1,700-ft. level above; the formation is much softer, and the general appearance of the vein matter is greatly improved. The ore thus far disclosed is of good quality, and is of unbroken continuity. The vein has now well defined east and west walls, and its characteristics are identical with those of the ore producing levels above. The main incline is already sunk 40 feet below the lowest level, and within 50 days from the present date the 2,000-ft. level can be reached. Judging from the indications shown by the latest explorations, this level will be ore producing. Meanwhile the 1,900-ft. level, which is as yet but partially opened, will be thoroughly explored. The shaft, incline, and all of the hoisting and pumping machinery are in good condition.

From the Secretary's report we gain the following information: The receipts from assessments have been \$233,577 and the receipts from bullion \$544,865. On mine account the sum of \$327,675 has been disbursed; for taxes \$4,892; on machinery account, \$1,625; on team account, \$2,266; on general expense account, 42,059; assay office account, \$8,164; on ore account, \$347,599 this latter item being the cost of working 28,966 tons of ore. It cost the company for extracting the ore, \$3.67 per ton; the cost of prospecting was \$219,950.

During the past year the average assay value of the ore was \$27.42 per ton, of which \$9.08 was in gold and \$18.34 in silver. The actual yield, however, was \$18.81, of which \$6.46 was in gold and \$12.35 in silver. In all 68½ per cent was extracted, 71 per cent of the gold and 67 per cent of the silver. The total yield was, therefore, \$544,865, of which \$187,254 was gold and \$357,611 silver. The loss from actual working as compared with assay value was altogether \$249,434 or a total of 31½ per cent. The average loss was \$8.61, of which \$5.99 was in silver and \$2.62 in gold per ton. During the past eight years the total yield of the mine has been \$7,546,655, and the average yield per ton has been \$38.27.

Ten thousand tons of Coos Bay coal were shipped to San Francisco during February.

THE EL DORADO water and deep gravel mining company, intend taking steps in the spring towards saving a larger and more permanent supply of water from the lakes at the head of their system of ditches.

THE large inverted siphon of the Virginia and Gold Hill water company which carries the water across Washoe Valley, and which we described in detail not long since, is proving a grand success.

CORRESPONDENCE.

Mining in Sierra and Plumas Counties. No. 3.

[By our Special Correspondent.]

The mines in Plumas and Sierra have as yet been scarcely developed. The same will in all probability be said of them fifty years hence and will apply as well to all that vast belt of mineral country lying west of the Mississippi river. I will hardly be able to mention all the little mining camps in the county, in these letters, as they would become tiresome to your many readers; still places of so much importance as the following I cannot omit mentioning. At

Washington Hill.

The diggings are drift, but if water could be obtained for hydraulicing it would enhance the value of mining property to a wonderful extent. At Franklin Hill there are without doubt rich mineral deposits, and, with the limited means at their command at present, the miners are doing well; or rather will do well when water takes a start seaward. I wish to remark here, that in speaking of those two methods of mining—hydraulic and drift diggings—I do not desire your readers to misinterpret my meaning and give to the former a decided preference, for such is not the case. Hydraulic diggings are only adapted to placer mining. There is not to-day any drift diggings in the State that can surpass those of Plumas county. At

Winter's Creek

We find another fine hydraulic flat, owned by the Metcalf Brothers of Sawpit Flat. The owners of this claim have a splendid prospect ahead for reaping a rich reward for their labor and industry.

Campbell's Diggings

I am informed are owned by San Francisco capitalists. They will hardly get opened this coming season, but look out, ye owners, when they open up, for if I mistake not you will be astonished at their great mineral wealth. The diggings at Davis Point are not being worked at present. J. H. Thomas of Laporte is the owner of these claims, and intends to open them as soon as he can obtain a sufficient supply of water for hydraulicing.

The Mountaineer company, at Onion valley have their tunnel in some 1,900 feet, and are taking out fine pay dirt. This claim is in the same range as the Buckeye and Monitor, and can be classed among the best drift claims of Plumas county.

Moroville Ridge

Is an entirely new mining camp. But little can, as yet, be said of the diggings in this vicinity; still it is the general supposition that they are not only rich, but extensive. I have nothing further to say of these mines as I will only speak of what I know to be facts; yet I believe this ridge will make in the future a record of prosperity for itself. At

Barnard's Diggings

The Excelsior company, owned by San Francisco capitalists, have got their claims in fine working condition, and will give a good account of themselves this season.

Spanish Flat

Early and company are well prepared for the coming water season. There is not a doubt but that this company will make a big clean up when the water begins to fall next summer.

Secret Diggings

About one mile from Laporte are, I am informed, owned by San Francisco capitalists. T. Early Esq. is Superintendent of the company, and one more qualified to fill the position could not have been selected. The old original channel is supposed to have been worked out in this mine, but there is enough good paying ground left to last the company for years. They will have an abundant supply of water, when the snow commences to melt, to last until September.

Laporte

At one time paid tribute to Sierra, but being considered by the neighboring towns "a corner lot" it received but a small share of public favor in the distribution of public offices in the county. Laporte applied to the Legislature to be set off into Plumas county to fill the same position in that county—that of "a corner lot." It was granted; and Sierra lost her best town outside of the county seat. Laporte in its "palmy days" was one of the liveliest mining towns in the State. Then its streets were thronged with hardy and industrious miners who spent their money freely. Those were what is called now "the flush days of Laporte." But few, if any, towns have suffered as much by fire, and still as fast as the fire king lays it in ashes the persevering energy of its citizens rebuilds it again.

But, like all its sister towns in the mountains, it has sown its wild oats, and has settled down to a steady life. The gaming table is a thing of the past; while the pistol and bowie-knife no longer hold sway. The old landmarks we once knew, are still there; but most of the old familiar faces of by-gone years have departed from our gaze. Prominent among those still remaining are John Conely, President of the Bank of Laporte. I believe he is a resident of your city, although his interests in Laporte, make him seem identical with those still remaining. Thomas Wheeler, Esq., is another of the "old residents," and occupies

the position of cashier, in the Bank of Laporte; is also Welle, Fargo & Co's agent, and Superintendent of the American Hydraulic Mining company, at Morrystown. T. H. Thomas, the life and head center of the town, still remains. You will see by my letters that Mr. Thomas is largely interested in the development of some of our best mining districts. Mrs. O'Rourke still attends to the wants of the traveling public, at the Washington Hotel, (now the Stage House), and it seems like old times, when I gaze upon those old familiar faces. Goslarde can still be seen at his old place in the Lafayette Restaurant; while Harry Buckley attends to the wants of his customers at Buckley's Hotel. There are many other old residents I might mention, but want of space prevents. Laporte is still the center of those mining towns that surround it; and will, at no distant day, become the liveliest mining town in Plumas county.

The Clay-Blank Tunnel

is in about 1,900 feet. They have recently struck some very fine gravel, and soon expect to show up a good record for themselves; and, from present indications, I believe they will.

The Bald Mountain company are in 1,400 feet with their tunnel, and have a fine prospect ahead.

Conely & Gowell are fully prepared for the spring campaign, as soon as they are re-inforced by water for hydraulicing. Their claims are considered among the best in the county. Immediately above Conely & Gowell's, and adjoining their claims, are the hydraulic claims of Garde & Orr. This company is also fully prepared for attacking the mighty banks of earth, with their "giant" pipes, soon as water makes its appearance. These claims are like Conely & Gowell's, very rich in their mineral deposits. I have not time or space to enter into details concerning the great Slate Creek Basin, but will make that the principal subject for my next letter. MAXIMILIAN, Gibsonville, March 6, 1874.

The Laws the Miners Want.

ENRONS PRESS.—Much has been published concerning the proposed changes in the Mining laws; the Ward hill and Sargents's hill have each been thoroughly digested by the various journals of the Pacific slope. While any amount of opposition to certain portions of these bills has been exhibited, yet scarcely anything in their stead has been suggested. The miner, although knowing that the law of 1872 is unfair and not what it ought to be, yet prefers to rest arms on that, rather than run the risk of trying to change it for the better, and since the introduction of Ward's bill he is shown that his fears are well-founded. That

The Government

Would willingly or knowingly do anything to injure the miner, we do not believe; but it is very evident that men may legislate on matters they know too little about. President Grant—who is familiar with the Indian trails of this section, and thereby knows the almost inaccessible places that the miner has penetrated in search of hidden treasure, driving from his lair the grizzly, both intruder and the intruded-upon, nearly famished and equally ready to devour each other—will be the last to permit this; for we cannot believe that the man who successfully measured swords with the brave Lee, would sign a bill, an insult to the miner and deadly to the mining interest of our coast.

What has not the miner suffered? Hunger is a myth in his catalogue of hardships and sufferings. And would a government that has grown fat and reaped its hundreds of millions, directly traceable to the toils of the miner, enter the ring and join against the miner in his battle with almost unendurable hardships and privations and give a thrust below the belt? Heaven forbid that any government, civilized or uncivilized, should commit such an unholy deed. "Let us have peace." Let the government either not meddle with the present mining law, or do something to recuscitate the languishing condition of the

Mining Interests of the Foot-hills.

The mining interests of the foot-hills must be encouraged, or in ten years they will only be known to herds of goats and sheep. To be convinced of this, one only need to hear the ranchers complain that they cannot make this or that crop pay, and that it is cheaper to buy; and this in the face of the fact that the year through we, in the foot-hills, have to pay the San Francisco prices, plus the freight from that city to the foot-hills, which is generally one cent per pound upon the potatoes, onions, beans and bacon, butter and cheese and all we consume. A comparison of the published market reports of the two sections prove this fact. If the miner leaves, as leave he must if wise laws are not passed, where will the rancher find a market for his scanty produce? He, too, will then have to leave. Let us, then, encourage and

Sustain all our Industries,

Legislating against none, but in aid of all. The question of title in the foot-hills has not, as some claim, acted against the interests of the agricultural producers. They have had control and undisturbed possession of generally twice, and often thrice, the 160 acres they were supposed to pay taxes on, and yet the miner has had to depend on San Francisco for his eatables. There are

Provisions which might be Enacted

That would injure no interest, but benefit all. If we are to have a new law, let us have the following provisions:

1st. No one shall be required to apply for a patent until the net proceeds of his mine shall exceed all costs and expenditures by \$500.

2d. Two hundred dollars worth of labor, or a shaft 40 feet in depth on the vein, or a tunnel tapping the vein at a depth of not less than 40 feet from the surface, and secured against caving by timbering or otherwise shall entitle the owner to apply for a patent. In all cases the labor must have been done by the applicant or his grantor.

3d. A claim shall not be subject to re-location or jumpable as long as the number of hundreds of dollars of bona fide labor equals or exceeds the number of years since located; that is \$200 shall hold a claim two years, \$300 three years, \$400 four years, \$500 five years, etc., but in no case shall a claim hold good seven years without labor.

4th. Of the \$100 required to hold a claim one year, \$10 may be used to pay for assays of ore from such claim.

5th. No district laws shall require work upon a claim for specified months after the \$100 for that year has been expended.

6th. Priority of record of location shall have no weight if recorded within ten days after location.

7th. The County Clerk's office shall be the legal recording place of all notices of locations.

What the Miners Think.

These provisions I have shown to many old miners, and every one has heartily endorsed them. In regard to the first provision it is evident that it is a benefit to the Government to have a mine developed, it certainly is bad policy to cripple the ones engaged in doing so, for the party prospecting a mine generally needs more capital than he possesses.

In regard to the second provision, it is plain that a party should not be compelled to expend \$500, as the law now requires, before he can apply for a patent if he chooses.

In regard to the third provision it is wrong for the government to require a party to extend his expenditures through a series of years if he chooses to do the same amount of labor in one year, or less time. For instance, \$300, expended in one season will prospect a mine more than \$100 a year for three years. It may also be much more convenient for a party who lives a long distance from his mine, to do more in a season and thus save him the expense of a yearly trip to the mine.

4th. In regard to the fourth provision, it is palpable that a miner cannot in many cases, know the value of his rock without assay.

In regard to the fifth provision, the argument used to sustain the third provision will apply with greater force.

The sixth provision is generally a part of all mining laws. Ten days gives a party time, however distant from the recorder.

The seventh provision is of the most vital importance. It is well known that the miner has already, in many cases, resorted to the county clerk's office to get his location recorded, and often without the sanction of the district laws.

There are many reasons to prove the Correctness of this Provision.

I will only mention a few of them. The district recorder often follows some business that requires him to be absent from home, and a person may be compelled to make several visits to his place before he can get his location recorded. The county clerk's office is always open. Again, the duly elected recorder may move out of the district, and no one being elected to fill his office, the records are, perhaps, handed over to an irresponsible person. The county clerk gives bonds. Again, hundreds of thousands of dollars may turn upon the record of a location. Then, how all-important it is that these records should not only be in safe hands, but also in a safe place. Yet it is seldom, if ever, a district recorder has a safe and fire-proof building, while on the other hand the county clerk's offices are always provided with a safe, and that is generally kept in a fire-proof building.

The miners are almost universally opposed to the mineral land being put into market without restrictions.

I send you these suggestions, knowing you to be the miner's friend, and if you deem them worthy of a place in your columns, you are welcome to use them.

JULIUS S. LLOYD.

San Andreas, March 3, 1874.

ACCORDING to M. Cailletet, a film of liquid carbonic acid, one twentieth of a millimetre in thickness, will prevent the passage of a current of electricity. This liquid acid will not dissolve common salt, eodic sulphate, or calcic chloride. Potassic carbonate in it forms a bicarbonate which precipitates. Sulphur and phosphorous are insoluble in it. Iodine dissolves to a slight extent. Petroleum and ether dissolve considerable quantities of the liquid acid.

A VERY delicate piece of work was accomplished at the South Wheeling, Ohio, glass works a short time ago. Several scientific gentlemen desired a glass tube for experimenting in acoustics. A tube was blown thirteen feet in length and two and a half inches in diameter, with not even an air bubble to mar its surface. The glass is not thicker than common window glass.

The Taylor Mine.

Last week a rumor was circulated broadcast that a very rich strike had been made at the Taylor mine. A correspondent living in Georgetown immediately went to the mine to ascertain the facts of the case. The correspondent introduced himself to Mr. Burlingham, the superintendent of the mine, and the latter kindly spent a couple of hours in showing the correspondent through the mill and mine. In the first place there had been no rich pocket struck, in fact, no pocket struck at all, nor has any rich strike been made. The case was just this: The character of the rock had been improving for the last two weeks, but in the twenty-four hours before the rumor of the rich strike had been started, the rock had improved wonderfully. On the dump were about one hundred and fifty tons of ore (perhaps more) which had been assorted into first and second-class ore. In the latter pile there was no difficulty in finding shining specks of gold; indeed one or two pieces of rock in this pile would have made very fair specimens. The first-class ore was much better. Mr. Burlingham ventured that out of three pieces of rock taken at random, one of the pieces would show gold. The experiment was tried, and in nearly every case two of the pieces were auriferous. The color of the rock is something like iron-grey and is quite uniform in appearance. There is considerable sulphur found in the rock which the Supt. thinks will pay to reduce. The mine at the time of the visit was 343 feet in depth and was sinking at the rate of a foot and a half to two feet per day. The ledge inclines eight or ten degrees from a perpendicular and is encased on the upper side by a soft "gongee" and on the under side by a hard brittle wall rock. When the shaft was first started, it was started on a pitch which inclined a little too much and consequently the shaft gradually left the ledge, and the latter not being very well defined near the top, it was thought by many that the mine would not pay for working.

Under the management of Mr. Burlingham affairs have improved decidedly. The direction of the shaft was changed until the ledge was found, and at a distance of 343 ft. from the top the ledge is clearly and distinctly defined. At this depth the ledge is from four to four and a-half feet in width. When the newspaper man found himself at the bottom of the mine, he was able to decide in an instant that the specimens shown him at the top were not rich specimens "found on the dump" for that particular occasion, for the ledge down in the mine appeared much better than the ore at the top. There was plenty of gold to be seen sparkling from the sides of the ledge, but there were no "solid walls of gold," as has been asserted by a county paper. The superintendent of the mine complained, and justly too, that the mine had been misrepresented by enthusiastic reporters and correspondents in search of "items," and also by persons inimical to the Taylor. In this article the correspondent has endeavored to give the exact status of the mine. He examined the ledge from top to bottom, and in the 100 and 200-foot levels. The rock is ordinary at the 30-foot level, good at the 200-foot level and very rich at the 343-foot. The rock that has been taken out will yield \$30 per ton at a low estimate. The correspondent does not venture to make any comparison between this mine and the Cederberg, as has been done, for there is no similarity between the two claims, except that both are gold-bearing. The mill is intended for ten stamps, but there are only five at present. One engine of about sixty horse-power does the hoisting, pumping and crushing. No crushing will be done until the 400-foot level is reached. The timbering of the mine is especially commendable.—*Mountain Democrat.*

MINING AT SHOSHONE.—It may be remembered that we spoke of a visit paid some time ago by John Whitehill, a mining gentleman of considerable experience, to Shoshone district, situated some 120 miles in a southerly direction from this place, and his subsequent departure for Salt Lake. Mr. Whitehill passed through on Thursday last on his return to the mines spoken of, his friends having effected a purchase of the property known as the Indian series, and informs us that men, tools and provisions are en route from Salt Lake to the scene of operations. The President of the company, who made the purchase, is George Atwood, formerly interested in this district, and his associates are English gentlemen of means. Being near the direct line of communication to Pioche, Hamilton will be the point where the business of the company will be done. Shoshone District was discovered and located some years ago, at the time Pahranaagat attracted so much attention, and the mineral found there is milling in its character and remarkably high grade. We are promised fuller information concerning this enterprise shortly, which we will lay before our readers.—*White Pine News.*

MINING TOWNS IN SAN JUAN.—The San Juan Prospector says: Three towns have been located in the mining region; one in Baker's park, near the Little Giant mine, and two others in the Animas valley about forty miles distant from that mine. Of the two last one is called Hermosa, (the first named is known as San Juan City), and the other Elbert. A number of improvements have been made at each place.

MECHANICAL PROGRESS.

Single Rail Railways.

The engineer-in-chief to the Ottoman Government, Mr. J. L. Haddan, has addressed a communication to the *Engineer*, describing his proposed system of cheap transportation over difficult countries. The "Pioneer" system is on the same principle as that of the Mont Cenis and Mount Washington railways; obtaining a secure hold upon a central rail by gripping wheels. But in the new invention the usual side rails are dispensed with, and the center rail alone carries the train. The system also differs from the Georgia single-rail railway almost as widely. After describing the very rugged nature of the country where the trial is to be made, and the disadvantages of the ordinary railway appliances, Mr. Haddan says:

Alt such objections have been carefully met in designing the Pioneer, which the author considers peculiarly suitable for Turkey, the colonies, and even the mountainous portions of our own country. The Pioneer, or steam caravan, has its origin in a wooden post-and-rail railway, erected some thirty years since, at Posen. It worked for many years drawn by horses, and later on, by a stationary engine; but locomotive steam traction could not be made use of, owing to the fact that weight was, in those days, necessary for obtaining power in the locomotive, a burden which the wooden fence could not stand. Many engineers have since attempted to overcome this difficulty; but it seems to me that the Fell horizontal grip, where limited adhesive power can be obtained, quite irrespective of the weight of the engine, is the only practical means of overcoming the difficulty. The permanent way of the Pioneer consists of a wall of a minimum height of 2ft. 3in. and 14in. thick, enmounted by a single rail and sleeper, which simply consists of a 1½in. plank, laid on edge in cement, and tipped with thin half-round iron strips. The wall rarely exceeds 2ft. 3in. in height, because the gripping powers of the locomotive allow the gradients to be traced nearly coincident with the natural surface of the ground, that is to say, with its grosser features. Of course, little dips are not gone into, and ravines are made light of and spanned by sandwich arches in masonry, or with a single iron girder of but a few inches in width.

The locomotive and rolling stock are, so to speak, "twin," and mount astride the wall like a man on horseback, or rather like the panniers on a donkey. The carriages are thus double, one-half on either side of the wall, the roof being common to both; there is a space of about 18 in. in width between the two halves, forming as it were, a passage between them, in the upper part of which are situated the single wheels which are to run on the summit of the wall; the lower part of the passage is open from end to end to allow the carriage, when hung on the wall, to hang down to a depth of 2 ft. 3 in. on either side. The locomotive is purposely extended as much as possible and is articulated; water in one section, fuel in another, boilers in another; by which means its weight per meter does not exceed that of the carriages or wagons when laden. The weight per meter run is about 8 cwt. The total length is 24ft. 8 meters, and its power is sufficient to take 100 passengers up an incline of 1 in 10 at a speed of 15 miles an hour. The great economy manifested in the construction of the Pioneer permanent way, is owing to nine major points and divers less important ones:—(1) The load is spread out over as great a length as possible, and concentration of weight is carefully eschewed. (2) The load or weight of the train is evenly distributed throughout. (3) No hanks or cuttings are required, owing to the special powers of the locomotive enabling the train to follow the natural surface of the soil. (4) No transverse leveling of the soil is required, because the train does not run on the ground, but on the top of the wall. (5) The size of the rolling stock is reduced to the minimum, sufficiently large to accommodate passengers almost singly and goods piecemeal, whereby the size and cost of tunnels and under-bridges are reduced to a mere trifle. (6) The light weight of the Pioneer permits rapid travelling even over the roughest ground. (7) The time of construction may be measured by months instead of years, an important economical item where interest on money is so high as in Turkey. (8) When constructed in iron the whole is transportable. (9) The Pioneer, owing to its climbing powers, can follow a cove line more nearly, and can open up hitherto inaccessible positions; and, moreover, can follow up the rivers (in their beds, if necessary), which frequently form the only means of communication in most mountainous countries.

The locomotive is fitted on its underside with two pairs of horizontal wheels covered with leather, which grip the wall on either side with any desired force. Owing to the constant changes of gradient, incidental to following the natural surface of the ground, the intensity of the grip should constantly vary, which is effected by a screw and lever arrangement acted upon by the draw-bar, which attaches the engine to the train. Thus, as the inclines are steep or moderate, so does the pull on the draw-bar vary, and by its action on the horizontal driving-wheels open or close their full embrace, moderating the adhesion or grip precisely in

the proportion that the gravity of the train varies in its ascents and descents. Thus the whole weight of the train is secured for adhesive purposes.

The equilibrium of the locomotive is maintained by the grip of its horizontal wheels. The train is composed, firstly, of a locomotive, then of a caravan of articulated carriages, each articulation being about 7 ft. long, the whole concluding with a brake-van, fitted, like the engine, with four horizontal wheels. The whole mass is attached together by rigid couplings, which, while freely permitting articulation, do not allow of the smallest lateral motion; that is to say, that no single carriage can lose its balance, upheld as it is by its two companions fore and aft; and as the whole train is continuous, the horizontal wheels of the engine at one extremity of the train and those of the brake-van at the other, effectually maintain the equilibrium of the whole train, and prevent all oscillation whatsoever. A train of twenty-four of our basket-carriages, capable of accommodating ninety-six passengers, will measure in length about 50 metres, and will weigh about 20 tons = 8 cwt. per metre run. Each double carriage contains four passengers, two on either side of the wall and facing each other. The seats are composed of slung strips of carpet-like American chairs—the balance of the passengers is consequently always preserved, even on the steepest inclines.

In conclusion, Mr. Haddan claims that the cost of constructing a railway on this plan will be one-tenth of the expense necessary to fit out a common, broad-gauge road, that is, such as are used in England and on the Continent. The gain over our roads, and even narrow-gauge roads, would be, of course, much less, but still very great. Any system which will prove itself effective and yet be materially cheaper than those heretofore planned, will be a great boon to California, where cheap transportation is so pressing a need. We regret that our space is inadequate to a more full resume of Mr. Haddan's interesting paper.

Improved Seeders.

In a new form of seed planter, invented by a Mr. Koeller, of Illinois, the bottom of the seed box is formed with a circular recess in its center, in the sides of which are formed slots to receive the sliding bar, by the movements of which the dropper is operated. To the center of the bottom is attached a projection which passes up through the sliding bar and forms a pivot for a star wheel, which is made with seven rays, the outer ends of which are made more inclined upon one edge than the other, so that the point or extreme end of the arms may lie at one side of the radius passing through the center of the said arms. To the upper side of the sliding bar are attached two wedge-shaped projections, which fit into the space between the rays of the star wheel, and which alternately strike an arm of the wheel and turn it through have the space of one arm. The dropping plate is made in the form of a circle with its middle part cut away, and is carried around by and with the star wheel. In the dropping plate, near its outer edge, are formed fourteen holes, arranged in a circle and at equal distances apart, which receive the seed from the hopper and carry it to the discharge hole through the bottom, through which it falls into the guide spout that conducts it to the ground. Upon the lower side of the sliding bar is formed a projection which works in a slot in the bottom, and to the end of which is pivoted the end of a bar, the other end of which is pivoted to a bar, which is in turn pivoted to the conductor spout so as to detain the corn in the conductor spout. This is operated at each movement of the sliding bar to allow the corn to drop to the ground.

Another new machine, a grain drill, is described as follows: A long grain hopper extends across the front portion of the machine with a chamber into which the grain escapes through the passage, which is regulated by a gate. The side of this chamber is made to fit nearly half around a small dropping roller containing pockets, opposite which there are slots, through which the grain passes into the pockets. The roller has as many pockets as there are to be drills in the machine, and each pocket discharges into a spout for sowing in drills. The drill stocks may be readily released for adjustment or removal. The dropping spouts terminate over the drill tubes, and have, when the machine is to be used for ploughing, a gate or valve closing against the lower end by a spring shank to retain the grain until it should fall into the hill.

NEW SURGICAL DEVICES.—Two great surgical novelties have lately been introduced into European hospital practice. The first is the aspirator, originated by Dr. P. Smith, which has been extensively employed by Dr. Dieulafoy, of Paris. By this instrument fluids can be extracted from formations at some distance from the surface with safety and certainty. The second novelty is the introduction of a bloodless method of amputation and other operations on the limbs, by means of a compressing bandage, by which the limb is blanched by a circular elastic cord, which compresses both the arteries and veins of the limb. This plan, proposed by Professor Esmarch, has been adopted by many hospital surgeons. It remains to be seen whether there are any drawbacks to this system, and especially whether, in certain cases, embolism is likely to result from displacement of clot, which may have already formed in the veins of a damaged limb.—*Scientific American*.

SCIENTIFIC PROGRESS.

Vivisection.

The dissection of living animals for scientific purposes, is at present the subject of warm debate in England. On the one hand it is maintained that vivisection is not justified by any requirement of science, and on the other, that the reasonable hope of the smallest addition to our stock of physiological facts, fully warrants even the most severe torture inflicted upon helpless brutes. Both these views are extreme. "When man's convenience, health, or safety interfere, his rights and claims are paramount, and must extinguish theirs," said the sensitive, sometimes even morbidly sensitive, Cowper. But to what extent "man's rights and claims" may justify him in inflicting pain upon lower animals, is a question not always easy to decide. That many of the most important acquisitions to physiological science, could hardly have been achieved without experiments upon living animals, no one will venture to deny; and that the pain inflicted is, when the end to be attained bears a reasonable proportion to the brute agony inseparable from the investigation, fully justifiable, will be granted by all in whom sentimentalism does not reach the degree of mental weakness. But, while the investigations of a Harvey, a Bichat, or a Brown-Séquard, involving more or less animal misery, ought not to be, and cannot be reasonably condemned, it does not follow that their experiments are to be repeated by every student, or for the edification of every class of students who may find it necessary to be informed of the facts which the leading scientific investigators have brought to light. A renewal of Harvey's experiments, for instance, is not necessary to the understanding of the laws of the circulation of the blood; neither would a promiscuous slashing and mutilating, either with the hope of stumbling upon some new fact, or merely for the purpose of witnessing, at first hand, phenomena already known and described, be anything more or less than diabolical cruelty.

In short, there is no well-defined dividing line between what is allowable and disallowable here, more than in the treatment of animals in their general use by man. The only correct criterion is the motive which actuates the man in his treatment of the animal. If the act, whatever it may be, taken in connection with its attendant circumstances, indicates a pleasure in the infliction of pain, or even an indifference to the suffering of any living thing, it betrays a character which is execrable. But, on the other hand, a hyper-sentimentalism which would place the lower animals nearly on a level with man, and condemn any pain or even discomfort to them, no matter what human interests may be at stake, is an extreme equally to be avoided. The castration of male animals, and to some extent, the spaying of the female, and the cutting off of the tails of lambs—operations of constant and universal occurrence—can hardly be regarded as less painful than most of the vivisections; probably very much more painful than some, have never been very extensively condemned. The only question is, are we enough benefitted by the result to justify the infliction of pain? Stripped of the sanctions of custom, and regarded in its true light, there is more genuine barbarism in the chase of a poor hunted hare; reared for this express purpose, by a pack of hounds and a troop of English hunters, than in all the vivisections that have ever been performed. Let vivisections be performed humanely, that is, only with a view to ascertaining facts not otherwise accessible, and by persons who will seek to deprive them of pain, so far as consistent with the nature of the investigation. Such experiments are not pleasant to contemplate even in imagination; but the knowledge gained by them results in the general amelioration of the condition of both man and beast, and on this account alone are they allowable.—*Artisan*.

COLOR-CHANGING IODIDES.—Some time ago M. Meusel announced the discovery of two new double iodides of mercury, silver, and copper, which were of especial interest in virtue of the property of changing color upon the application of heat. The first of these new compounds is prepared by adding a solution of silver nitrate to one of mercuric iodide in potassium iodide, and is of a bright, lemon yellow color, changing under the influence of heat below 212 deg. to a rich orange, and regaining its original tint when cooled. The second is prepared by adding to a warm solution of mercuric iodide, in potassium iodide—first, copper sulphate, and then sulphurous acid. Its color is carmine, becoming black, however, at a temperature of 158 deg. Fahr., but restored on cooling. When mixed with gum-water and applied to paper, these bodies exhibit their color-changes in a most striking manner. Especially interesting, however, is the fact that Professors Barker and Mayer have suggested and patented the application of the carmine compound to the hearing portions of machinery in motion, which are frequently difficult of access, to determine whether they are heating. An inspection of the paint would determine the fact without the necessity of actual examination.

A New tubular wicked petroleum lamp has been contrived. It consists of ten small circular wicks in place of a large one. They are arranged in a circle and are attached to a frame movable by a single rack.

A New Acoustic Pyrometer.

It will be remembered that, some time ago, we gave an account of an acoustic pyrometer, devised by Professor Mayer, of the Stevens Institute. The principal on which the instrument is based is the variation of the length of a sonorous wave in air, when the temperature of the latter is changed.

M. Chantard states, in *Les Mondes*, that in his opinion the method proposed by Dr. Mayer is difficult in application, and he suggests the following arrangement as more suitable for practical requirements:

The sound is produced by the aid of an organ tube, Ut 4, for example, disposed with reference to a resonator which is put in relation with the two branches of a König improved interference apparatus. To the moveable branch is attached a long tube of copper, which enters the furnace or other locality, the temperature of which it is desired to determine. The tube returns on itself and communicates with a small manometric capsule. The fixed branch of the apparatus is terminated by another capsule, which, like the first, is in relation with the same source of heat. The arrangement is completed by a revolving mirror, in which the state of the flame is seen.

Thus disposed of, if the pipes which separate the resonator from the capsules each contain an equal number of half wave lengths, the flame will be edentulated; in the contrary case the indentations will diminish, and this is as much more as the difference of length of the tubes is more nearly equal to an unequal number of half wave lengths. In the latter event the flame takes in the mirror, the aspect of a ribbon; and by noting the changes in its appearance the calorific state of the air in the tube in the furnace is determined. If the temperature is elevated, the length of wave augments and a clearly defined interference is shown by the flame in the mirror. If, during the continuance of the experiment, the moveable tube be gradually elongated, it will be easy to bring the flame back to its primitive state, that is, to cause the indentations to re-appear. Then, by the aid of a scale previously determined and empirically translated into thermometric degrees, the degree of temperature in the tube can be easily noted.

Effects of Heat on Textile Fabrics.

Recent experiments on disinfection by means of heat, made by Dr. Ransom, of Nottingham, show that white wool, cotton, linen, silk, and paper may be heated to 250° F., for three hours without apparent injury; although the wool will show a faint change in color, especially when new. The same may be said of dyed wools and printed cottons, and most dyed silks; but one kind of white silk easily turns brown by this heat, and pink silks of some kinds are also faded by it. The same temperature will, if continued for a longer period, slightly change the color of white wool, cotton, silk, paper, and unbleached linen, but will not otherwise injure them. A heat of 295° F., continued for about three hours, more decidedly singes white wool, and less so unbleached; and white cotton and white silk, white paper, and linen, heth unbleached and white, but does not materially injure their appearance. The same heat, continued for about five hours, singes and injures the appearance of white wool and cotton, unbleached linen, white silk and paper, some colored fabrics of wool, or mixed wool and silk. It is noteworthy that the singeing of any fabric depends not alone upon the heat used, but also on the time during which it is exposed. In these experiments the heat was obtained by burning gas with smokeless flames, and conducting the products of combustion, mixed with the heated air, by means of a short horizontal flue, into a cubical chamber through an aperture in its floor, and out of it by a smaller aperture in its roof. Fixed thermometers showed the temperature of the entering and outgoing currents, which represented the maximum and minimum temperatures of the chamber. A self-acting mercurial regulator maintained the temperature of the entering current at any required degree.—*Jour. of Applied Science*.

THE HEAT OF THE MOON.—The Earl of Rosse, in a recent lecture before the Royal Institution, gave some interesting information concerning the various experiments heretofore made to detect the heat of the moon, and then described his own efforts in this line, which are the latest that have been made known. By means of a specula-mirror, a thermo-pile, and a pair of reflecting galvanometers, made on Sir William Thompson's plan, such as are used for sending messages through the Atlantic cable, the Earl was enabled to demonstrate the presence of heat from the moon, but the temperature of the lunar surface still remains far from being determined. My calculations, he says, lead me to estimate the heat from the moon as the eighty thousandth part of that from the sun. Bouguer's experiments give the brilliancy of the full moon as the 300,000th part of that of the sun. Wollaston gives it as the 80,172d; Zöllner as from 618,000th to 619,000th; and Bond as the 470,980th. The maximum of the lunar heat appears to be a little before full moon; this unequal distribution of its mountains and plains, perhaps, goes to explain this phenomenon.—*The Engineer*.

A Wisconsin man claims to have invented a machine with which wagon and buggy wheels can be made in fifteen minutes.

MINING EXPEDITION FORBIDDEN.—The Secretary of War has written to the Governor of Montana, saying that the proposed mining expedition from a point in that Territory, alluded to in circulars recently forwarded by General Custer to the War Department, will not be permitted to move. The reason for opposing it is because of the great probability which would attend it of seriously aggravating the Indian troubles now in existence.

<i>Company.</i>	<i>Location.</i>	<i>No.</i>	<i>Amt. Levied.</i>	<i>Delinq'nt.</i>	<i>Sal.</i>	<i>Secretary.</i>	<i>Place of Business</i>
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Company.	Location.	No.	Amt.	Levied.	Delinq't.	Sale.	Secretary.	Place of Business.
Alps S M Co	Ely District	6	25	Feb 2	Mar 13	April 6	C F Balcom	426 Montgomery st
Americo Flat M Co	Gold Hill	1	50	Feb 11	Mar 16	April 6	G W R King	434 California st
Amador Tunnel & M Co	Ely District	2	10	Feb 5	Mar 12	April 1	L Kaplan	Merchants' Ex
Andes & S M Co	Yuba	1	50	Mar 2	April 12	April 22	C T Wickers	215 Sansome st
Arizona and Utah M Co	Gold Hill	8	75	Mar 11	April 16	May 1	J Macuire	419 California st
Baltimore Cons M Co	Nevada	5	150	Jan 31	Mar 7	April 2	W H Watson	302 Montgomery st
Bellevue M Co	Cal	1	25	Feb 11	Mar 7	April 2	E E Ferdinand	409 California st
Caledonia S M Co	Gold Hill	7	25	Feb 2	Mar 13	April 2	C T Wickers	414 California st
Caroline M. Co.	Ely District	4	100	Jan 17	Feb. 27	Mar 20	R H Brown	402 Montgomery st
Chief of the Hill	Ely District	4	50	Mar 7	April 15	May 7	C S Neal	419 California st
Crown Point S M Co	Ely District	1	25	Feb 2	Mar 13	April 2	W Willis	240 Montgomery st
Excelsior M Co	Nevada	3	100	Feb 26	Mar 31	April 25	D T Bagley	401 California st
Globe M Co	Gold Hill	10	300	Feb 9	Mar 13	April 2	J Nagurs	419 California st
Gould & Curry S M Co	Gold Hill	6	75	Mar 11	April 16	May 1	T J Owens	215 Sansome st
Hale & Norcross M Co	Washoe	42	500	Jan 20	Feb 24	Mar 17	J F Lightner	438 California st
Hahn & Hun' S M Co	Ely District	9	30	Mar 5	April 16	April 22	T L Kimball	409 California st
Ida Klumors M Co	Idaho	12	50	Feb 12	Mar 13	April 11	T J Willis	419 California st
Iron Mountain S M Co	Ely District	8	100	Feb 2	Mar 13	April 2	G T Grimes	240 Montgomery st
Julia M Co	Washoe	17	100	Feb 10	Mar 16	April 4	A Nosl	419 California st
Kentucky G. S. & M. Co.	Ely District	7	25	Jan 3	Mar 16	April 6	R Goldsmith	513 California st
Knickerbocker M Co	Gold Hill	8	150	Feb 2	Mar 13	April 2	Henry Boyie	Stevenson Building
Langdon G. S. & M Co	Idaho	1	50	Feb 5	April 7	April 27	T J Owens	215 Sansome st
Mint G & S M Co	Washoe	6	100	Feb 13	Mar 13	April 2	D A Jennings	401 California st
Newark S M Co	Ely District	6	100	Feb 13	Mar 25	April 15	D T Bagley	401 California st
New York Cons M Co	Gold Hill	8	100	Feb 23	Mar 29	April 16	T L Kimball	419 California st
North Star M Co	Washoe	28	100	Feb 19	Mar 26	April 14	Joseph Marks	419 California st
Pigs & Panosa S M Co	Ely District	5	50	Jan 19	Feb 24	Mar 16	L Kaplan	Merchants' Ex
Pioche S. M. Co.	Ely District	6	100	Jan 19	Mar 5	Mar 26	C E Elliott	419 California st
Rock Island & S M Co	Ely District	6	100	Feb 2	Mar 13	April 6	T J Willis	419 California st
Rye Patch Cons M & M Co	Nevada	2	100	Feb 25	April 2	April 24	J W Clark	418 California st
Savage M Co	Washoe	5	50	Mar 5	April 8	April 29	D F Verdenal	409 California st
Silver Peak M Co	Ely District	4	75	Feb 23	Mar 19	April 12	E B Holmes	419 California st
Spring Mt Tunnel Co	Idaho	9	200	Feb 24	Mar 30	April 27	Frank Swift	419 California st
St. Laurence M & M Co	Ely District	9	15	Jan 24	Mar 2	Mar 20	J M Buntington	Merchants' Ex
St. Lawrence S M Co	Placer Co	4	50	Mar 2	April 1	April 20	R B Noys	411 1/2 California st
Union Cons M Co	Idaho	1	50	Mar 2	April 1	April 29	C O Palmer	419 California st
Virtue M Co	Orson	4	100	Jan 20	Mar 5	April 6	R H Brown	402 Montgomery st
War Eagle M Co	Idaho	1	100	Jan 17	Feb 23	Mar 14	L Kaplan	Merchants' Ex
Washington & Orsols M Co	Ely District	1	100	Feb 3	Mar 14	April 4	E D Cleary	Merchants' Ex
Wellington M & S Co	Idaho	4	25	Feb 17	Mar 24	April 4	R Wessner	414 California st
Woodville M Co	Gold Hill	6	100	Mar 9	April 13	May 2	A Nosl	419 California st
Yellow Jacket M Co	Washoe	17	500	Feb 10	Mar 14	April 15	G W Hopkins	Gold Hill

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.									
Atlantic & Pacific Cons M Co	Cal	7	6	Jan 24	Feb 26	Mar 16	A Nosl	419 California st	
Anhrnri G M Co	California	6	50	Nov 17	Feb 24	Mar 17	R Wessner	414 California st	
Black Mountain Coal M Co	Cal	3	3	Feb 25	April 6	May 4	F N Wells	402 Montgomery st	
Cedernburg 1st N Extension M Co	Cal	4	10	Mar 7	April 10	April 29	J N Webster	507 Montgomery st	
Cerbat Cons Cons M & S Co	Arizona	1	50	Dec 22	Feb 23	Mar 26	J M Buntington	Merchants' Ex	
Commercial Coal M Co of S F	Cal	38	33 1/2	Feb 25	Mar 10	April 5	S B Hanson	402 Montgomery st	
Dry Creek T & Flumining Co	Nevada	4	50	Jan 23	Mar 10	April 14	Walter Turnbull	415 California st	
Eureka & Consolidated	Utah	1	50	Feb 15	Mar 25	April 15	J T Miller	411 1/2 California st	
Gensva Cons M Co	Nevada	1	25	Feb 10	Mar 18	April 6	J W Tripp	408 California st	
Globe Consolidated M Co	Gold Hill	1	75	Jan 11	April 16	May 4	J T Milliken	302 Montgomery st	
Gould & Curry M Co	California	6	75	Jan 15	Feb 17	Mar 10	J Macuire	419 California st	
Great Blue Gravel Range Co	Cal	5	100	Feb 12	Mar 19	April 10	J F Lightner	438 California st	
Green Horns G M Co	Cal	3	100	Feb 9	Mar 18	April 9	J F Lightner	438 California st	
Hall & Van Dyke Cons Coal Co	Washoe	9	25	Feb 2	Mar 12	April 7	G R Spinney	419 California st	
Hale & S M Co	Nevada	3	30	Feb 9	Mar 12	April 7	G R Spinney	419 California st	
Highland Cons M Co	Nevada	1	25	Feb 2	Mar 13	April 11	R H Brown	402 Montgomery st	
Josephine Quicksilver M Co	Cal	1	200	Feb 25	April 6	April 23	G Snaack	305 Sansome st	
Lyle Bryan M Co	Nevada	1	50	Feb 2	Mar 9	April 5	F Swift	419 California st	
Mountain Building & S M Co	Cal	1	50	Mar 9	April 17	May 12	J S Lutz	507 Montgomery st	
Mout St Helena G M & S M Co	Cal	1	10	Mar 10	April 14	May 12	A Radlam	418 Montgomery st	
North Blomfield Gravel M Co	Cal	30	100	Feb 16	Mar 23	April 10	T Derby	320 Sansome st	
Phoenix Tunnel M Co	Utah	20	20	Feb 8	Mar 23	April 24	O S Healy	Merchants' Ex	
Plymouth Rock M Co	Utah	2	7	Feb 9	Mar 23	April 24	E Chatten	442 California st	
Pacific Borax Co	Nevada	7	75	Jan 26	Mar 2	Mar 29	S Pattie	210 Battery st	
Sanderson G M Co	Celavassco	3	25	Feb 11	Mar 10	Mar 31	Wm Stewart	113 Leidesdorff st	
Santa Cruz Coal M Co	California	5	5	Jan 5	Mar 2	Mar 29	R K Burt	Merchants' Ex	
Sierra S M Co	Nevada	49	6	Jan 29	Mer 2	Mar 23	F S Elmkrak	53 Wash Market	
Silver Cord M Co	Idaho	2	75	Feb 14	Mar 25	April 21	J W Clark	418 Clay st	
St John G M Co	California	4	5	Dec 28	Mar 25	Mar 28	R B Holmes	419 California st	
St King M Co	Nevada	5	25	Feb 20	Mar 26	April 14	L Kaplan	Merchants' Ex	
Tebama Cons M Co	White Pins	4	500	Jan 30	Mar 12	April 13	Joseph Marks	413 California st	
Vally Copper M Co	Cal	12 1/2	Mar 19	April 3	May 5	W H Martin	514 California st		
Wyoming G M Co	Nevada Co	Cal	25	Feb 19	Mar 29	April 18	W J Gunn	410 Montgomery st	

MEETINGS TO BE HELD.									
Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.				
Alps S M Co	Ely District	C F Balcom	426 Montgomery st	Annual.	Mar 16				
Bellevue M Co	Cal	Called by Trustees	409 California st	Special.	Mar 14				
Daney G & S M Co	Washoe	Geo R Spinney	215 Sansome st	Annual.	Feb 3				
El Dorado North M Co	Nevada	O S Healy	Merchants' Ex	Special.	Mar 23				
Equitable Tunnel & M Co	Cal	George Snaack	305 Sansome st	Annual.	Mar 21				
Josephine Quicksilver M Co	Cal	C F Schaefer	426 Montgomery st	Annual.	April 6				
San Marcell S M Co	Nevada	David Wilder	Merchants' Ex	Annual.	Mar 17				
Starlight G & S M Co	Nevada	T B Wingard	318 California st	Annual.	Mar 12				
Virginia Consolidated M Co	Washoe	Called by Trustees	Merchants' Ex	Annual.	Mar 17				
War Eagle M Co	Idaho	Called by Trustees	416 Davis st	Special.	Mar 23				
Whicott Consolidated		Called by Trustees		Special.	Mar 16				

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.									
Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.				
Black Bear Quartz M Co.		W. L. Oliver.	316 California st.	25	Feb 20				
Belcher M Co.		H. O. Kibbe.	419 California st.	5 00	Mar 10				
Cedernburg G. M. Co.	California.	D. M. Boker.	420 Montgomery st.	50	Feb 3				
El Dorado N. Co.	Cal.	B. E. Latbam.	402 Montgomery st.	50	Mar 9				
Crown Point M Co	Washoe	C E Elliott	414 California st	3 00	Mar 12				
Diana M Co		N. C. Fasset.	229 Clay st.	1 00	Jan 28				
Eureka M Co.	Grass Valley, Cal.	C F Wagner.	414 California st	50	Dec 17				
Eaststone Quartz M Co		L Vlesaria		50	Feb 10				
Monitor-Belmont M Co	Nevada.	B. E. Minor.	411 1/2 California st.	50	Dec. 5				
Providence G. & S. M. Co.		J. M. Buntington.	Merchants' Ex.	1 00	Nov. 11				

Weekly Stock Review.

THURSDAY, March 12th, 1874.

Stocks continue dull and prices low. There has been very little animation in the stock market for several weeks past, notwithstanding that the work of development and ore production goes on as steadily as ever, especially in the Washoe mines. The continued bad weather has prevented the usual quantity of ore being sent to mill in some localities, but generally news from the mines is pretty good. The annual meeting of the Hale and Norcross Co. was held this week, and the report of the officers submitted; it is referred to at length in another column.

The Consolidated Virginia is yielding 200 tons of ore daily, and this amount will be considerably increased as soon as the roads are sufficiently in order to permit the transportation of ore to the mills. On the 3d inst. \$45,646 in bullion was shipped from the mine. A 20-stamp mill will be erected by the Globe Consolidated Mining Co., Washoe, at the mouth of their tunnel, thus enabling them to work with profit the body of low-grade ore developed in the upper portions of the mine. This company is made up of the Arizona and Utah and Globe mining companies, which were consolidated on the 14th of last month.

A set of Burleigh drills is being set up for use in the Gould & Curry mine. The air pipes are being carried down the shaft and everything put in readiness for starting the com-

The water on the 1,500-ft. level of the Crown Point is rapidly diminishing in volume, and it is expected that the level will soon be drained.

The Belcher is looking well throughout, and the mills are running up to their full capacity. F. T. Smith, lately of the Consolidated Virginia, has been appointed superintendent of the Justice mine.

During the week the fluctuations have been about as follows: Alpha has varied between \$11 and \$13 1/4; Belcher between \$80 and \$89; Caledonia, \$28 1/2, and \$31 1/4; California, \$34 1/2, and \$37 1/4; Chollar \$62 and \$66; Cons. Virginia \$67 1/2, and \$69 1/4; Crown Point, \$89 and \$95; Gould & Curry \$18 1/2, and \$20 1/4; Hale and Norcross, \$43 and \$48; Justice, \$8 and \$9 1/4; Ophir, \$22 and \$26; Savage, \$73 and \$86; Seg. Belcher, \$87 and \$91; Union Cons. \$13 1/2, and \$16; Yellow Jacket, \$61 and \$65 1/4; Raymond & Ely, \$26 and \$29; Chariot Hill, \$4 1/2, and \$6; Golden Chariot, \$16 and \$19 1/2; South Chariot \$22 1/2, and \$24; The prominent advances and declines for the week are as follows: Best and Belcher shows a falling off from last week's highest price of \$3 1/4; Chollar, \$5; Exchequer, \$3; Gould & Curry, \$2 1/4; Hale & Norcross, \$13 1/4; Ophir, \$9; Overman, \$10; Savage, \$14; Seg. Belcher, \$4; Yellow Jacket, \$4 1/4; Raymond & Ely, \$4. The advances are few and small. Caledonia shows an advance of \$2; Crown Point, \$1, and Sierra Nevada, \$1.

As we hear nothing more of the late rich strike at Silver City, the presumption is that the mass of rich gold-bearing quartz struck upon was but a pocket, and a small one at

The following Companies have filed certificates of incorporation in the County Clerk's office, San Francisco:

BAY STATE M. Co. — March 9. Location: Amador County, Cal. Capital stock, \$5,000,000. Trustees — Donald McDonald, J. L. Hohart, Wm. H. Dunbar, Wm. T. Henson, A. P. Cox, W. S. Lyle, Charles McGuire.

PACIFIC HYDRO-CARBON Co.—Merch[il]. Object: To carry on the business of distilling coal tar with the patent apparatus of H. H. & C. J. Eamee and to sell the products. Capital stock, \$50,000. Directors—H. H. Eamee, R. D. Walbridge, S. C. Young, William L. Werd and D. N. Henshaw Ward.

EL MADRE QUICKSILVER M. Co.—March 11. Location: Nepe Co., Cal. Capital stock, \$5,000,000. Directors—Adam Grant, E. Greens, A. H. Harrie, R. E. Brewster and A. R. Preston.

IRVING CONE. M. Co. — Merch 11.—Location: Gold Hill, Nev. Capital stock, \$3,000,000. Directors — M. D. Townsend, Thos. Cole, R. L. Tracey, Robert N.

THE FINE MOUNTAIN QUICKSILVER M. Co. filed its certificate of incorporation at the office of the Secretary of State, at Sacramento, on the 16th inst. Location: San Louis Obispo county, Cal. Capital stock, \$1,000,000, in shares of \$500 each.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

Q-15

ALPINE COUNTY.
MOUNTAIN MATTERS. — *From M. & E. J. A. Co.*

MINING MATTERS.—*Miner*, March 7: In the Silver Glance mine the main shaft measured 143½ ft. on March 2d, and the work of sinking is being steadily pushed forward. The rock last up from the bottom presents fine specimens of quartz carrying good-looking sulphurets.

The ponderous and worthless furnace has been removed from the M. & N. W. mill, and other alterations will soon follow.

It is rumored that work will commence on several abandoned claims as soon as the weather will permit.

At Silver mountain the Exchequer mill is working. The continued severity of the weather, with almost constant storms, has prevented much activity.

PHOENIX GOLD MINE.—The new shaft on this mine is now down 700 ft. and levels have

commenced therefrom north and south. The vein in the bottom of the new shaft is from three to four feet thick. The south shaft has also reached 700 feet in depth, with a level driven south 125 ft., and north from the shaft

90 ft., the ledge in the drifts being from 3 to 4 ft. thick. The level north is being driven to connect with the 700-ft. level running south

from the new shaft; the ledge in this level will average over 30 ft. in width, and all the rock in the 700-ft. level will pay \$12 per ton by mill process. Distance from north to south

shaft along the course of the vein, 235 ft. The fine mill connected with the mine is kept steadily employed. The ditch that supplies

the mill with motive power has been greatly improved, rendering the flumes of a permanent character, and far less expensive than the

frame-work plan of supporting them. The ditch now has sufficient capacity to float from the head, or from any intermediate point, all

timbers, lagging or material of that nature, required by either mill or mine. This will be a very great saving in the delivery of all re-

quired timber material at the mine. An immense reservoir has been constructed some distance above the mill, and intended to fur-

distance above the dam, and intended to furnish the ditch when the river supply becomes scarce; this reservoir when filled will cover 160 acres, and a considerable portion of it to the

acres, and a considerable portion of it to the depth of 25 ft., thus affording abundant supply of water for all purposes of mill and mine throughout the driest summers. The Phoenix

throughout the driest summers. The Llaneta mine will always rank as one of the first-class mines of the county.

CALAVERAS COUNTY

Mining Items.—*Chronicle* March 7th: The gulch claim belonging to Mr. S. S. Moser, is

being worked with profit to the owner. An immense quantity of tailings have been "run down," and the bottom of the gulch reached

DURYEA is cleaning ledge. He has run two

tunnels into the high bank, towards Stockton ridge, in which he intends setting off heavy blasts.

EVANS & McCANN have run their tunnel 300 feet through the hardest kind of bedrock and are still driving ahead.

VEITH & Co. had just cleaned up, after a two weeks' run, taking out something over \$1,800. Cook & Co. are still engaged piping surface,

BRACKETT & Co. have not yet struck gravel exactly to suit them and are prospecting for

EL DORADO COUNTY.

RICH STRIKE.—Mountain Democrat, March 5: Another rich strike in the Ida Mitchell mine was made on Saturday last. On discharging a blast, a seam of rock about the thickness of a man's hand was displayed, which was so yellow with the precious metal as to seem, almost solid gold. The extent of this vein, is of course not known, though it may be safe to say, from what is already in view, that startling developments may be looked for when the next crushing is made, which will be in a few days.

ITEMS.—Republican, March 5th: At the "Excelsior" gravel mine, the whole winter has been spent in clearing out debris, building flames, etc., and the mine is now in a splendid condition to work.

The Ledge recently developed in the old "Oregon" is daily becoming better defined, and its richness and permanency are almost absolutely assured already. The owners of the mine would not take less than \$100,000 for it to-day, and there is little doubt that in six months it will be practically demonstrated to be worth double that sum.

Work on the Gross ledge is progressing slowly. There is now out about 80 tons of pay ore, much of which is very rich in sulphurets and free gold. This mine has been sufficiently developed to warrant the erection of a mill.

The shaft of the St. Lawrence mine is down 715 feet, and that of the Taylor mine is down 365 feet.

MENDOCINO COUNTY.

West Coast Star, Mar. 7: The excitement in Anderson Valley, regarding cinnamon mines still continues, and several rich leads are said to have been discovered.

NEVADA COUNTY.

NEW YORK HILL. Tidings, March 7:—This mine, one of the oldest locations in the district, is on the Massachusetts Hill range, and was long held in high estimation here. From 1852 to '67, it is estimated that not less than half a million in gold was taken out, and about as much more since that. Like all our early best paying mines, the New York Hill passed under a cloud some years since; changed ownership and was finally sold out under the hammer. A. Delano, Esq., "Old Block," of this place, became the owner, and like a prudent business man, has been for sometime past carefully feeling his way in the line of opening up the mine, and we are pleased to learn, with bright prospects of seeing it at no distant day assume its place as one of our best paying enterprises. It is already self-sustaining, the ore from the upper tunnel turning out sufficient clear profit to keep the lower tunnel running. This tunnel, now in over 300 ft., must soon from all indications, tap the ledge, when a large amount of "backs" will be at hand and ready to turn out milling rock. Probably no mine in the county is being worked with more economy in all departments than this.

KENTUCKY.—The water in this mine has been too much for the pump during the past few weeks, and very little work has been done. No one conversant with the former results of working ore from the upper levels, or who has seen the fine appearance of the ledge below, doubts the ultimate great value of this mine. The Trustees will meet this evening and consider the future course of operations.

The Magenta mine has over one hundred tons of good ore on the dump and more coming out. The third level is now being sunk and good prospects are shown on all hands.

INABO.—A dividend of ten dollars a share, aggregating \$31,000, was declared by this company on Monday last, payable at the banking house of Findley & Co., in this city.

NEVADA CITY ITEMS.—Transcript, Mar. 5: At Canada Hill, R. G. McEntchin is making from \$15 to \$20 per day to the hand, and Sharp and Kellogg are making \$8 per day to the hand. The gravel lead abounds in coarse gold, pieces weighing \$30 or \$40 each. The lead runs under Canada Hill and has been traced to Banner Hill.

Roberts & Co., owners of the Manzanita claims, have purchased the ravine diggings extending from the lower end of their claims to Deer creek, of B. Locklin. The tailings running over this ground have paid big wages in years past.

The Old Harvey ledge, situated below Nevada City, on Wood's ravine, is again being worked. The ledge has shown in former times rich in free gold. The ledge is about 2½ ft. thick.

Baldwin & Sons are working (by sluice process) their claims near the branch of Wolf creek. These claims have not been worked before in 15 or 20 years. During the past few weeks they have made big wages in working, and considerable coarse gold has been found. There is a good gravel lead in that vicinity, and before many years have elapsed, an immense amount of mining will be done in that locality.

NAPA COUNTY.

QUICKSILVER.—Reporter, March 7: The quicksilver excitement at the Pine Flat mining region continues unabated. There is much excitement in locating and recording claims, and much travel to the district. Many fortunes are (in supposition) being made daily. Some of the claims are being actively worked, and are yielding well.

THE MINES.—The Knoxville mines continue to pour a steady stream of quicksilver from their retorts. The Redington is averaging about 400 flasks per month and the Reed mine about 100 flasks.

SUTTER COUNTY.

OCAL IN THE BUTTES.—Banner, March 7: It was our pleasure to visit the Buttes and pros-

pect the coal indications on Moody's and Krattly's lands in the Buttes, of which mention has been made in this paper. The coal is found in quite a number of the small gulches among the bald hills, lying in thin layers between strata of clay, from one to several inches in thickness, and on a considerable slant. Some of these streaks contain fine specimens of bituminous coal. These indications appear to extend through the hills between the outcrops, as the seams are to be seen on either side. In two or three places an apparent seam of coal was found on the bed of the gulch several feet in width, which, on being opened to a depth of a few feet, were found to be limited in thickness, but extend either way to an unknown distance; however these seams are much decomposed, and mixed with clay. In prospecting one of these in the side of the bank, we came upon a lot of fine, very black, pure coal, which resembled powdered charcoal. It is our opinion that these strata are little arms extending from coal beds lying under the large hills near by. The proper method of prospecting for a coal bed in that locality is to bore for it. Undoubtedly more or less coal underlies the valley along the base of the Nevada from Placer to Tehama.

TRINITY COUNTY.

WEST WEAVER DITCH.—Journal March 7th: During the past week Messrs. Loveridge, Atkins and Paulsen, of this place, returned from San Francisco; Col. A. F. Williams, of Oakland, and Mr. Geo. W. Cox, of Howland Flat, Sierra county, arrived Wednesday evening. These gentlemen are all interested in the West Weaver Ditch and Oregon Gulch Mountain Mine enterprise, and express a determination to enter upon the work at once and forward it with all possible dispatch. Mr. D. W. George the Company's superintendent, is expected to arrive here this (Friday) evening. Work will probably be commenced within the next two weeks, as it is intended to have the ditch completed and the claim in full running order by the first day of May next. Results are expected from this mine which will "astonish the natives," and give to Trinity an enviable reputation as the richest hydraulic mining county in the State. There can be no doubt as to the success of this enterprise.

LEWISTON.—As in all other districts, the miners in and about Lewiston are busily engaged separating the dirt from the gold, and generally find a fair proportion of the latter. Olney Phillips recently made a large clean-up and is said to be well pleased with his claim. Olney says he wouldn't take a thousand dollars for his Little Giant, if he couldn't get another.

GOON WORK.—Louis Lautier, who works in Chapman & Fisher's lower claim, tells us that they have averaged about 1,200 feet of bed-rock per day this season. Although their upper claim is being run on a larger scale the lower one is paying well. Between \$2,000 and \$3,000 was taken out at a recent clean-up.

FIXING UP.—Atkins & Lowden are preparing the Frey mine, on Grass Valley creek, for sluicing, as fast as possible, and before many weeks expect to have it in complete running order. We expect to hear of a big thing from that quarter shortly after they get to work. The gold is there and they intend to find it.

CANON CREEK.—Miners on this stream are hard at work and all reported to be making money. Many of the claims there have heavy gravel and big rocks to contend with; but, as coarse gold is quite liberally distributed among the boulders, the boys don't mind turning a few of them over occasionally. Canon creek is one of the richest mining sections of this county, and it is about time we were hearing of some rich clean-ups in the claims there.

DOING WELL.—Douglas city miners are just now engaged in demonstrating that the mines in their particular locality are not yet worked out. Mr. J. C. Mason informs us that the Union Hill claim last week cleaned up their five head-boxes, after a run of only eight days, and realized \$950. Also that Trotter & Smiley cleaned up \$1,600 from a run of thirteen days in their claim. Other mines in that vicinity are also doing well.

Nevada.**WASHOE DISTRICT.**

SIBERIA NEVADA.—Gold Hill News, March 5: Sinking the new shaft is making steady progress. The ore body in the old upper working is widening out, and bids fair to prove an extensive deposit. The ledge is becoming more solid; in fact, a large proportion of it is now hard blasting quartz.

GOULD & CURRY.—The main east drift on the 1,500-ft. level is still driven ahead, the face in quartz. The main north drift on this level is also making good headway, the face in quartz and low grade ore. The main east drift on the 1,700-ft. level is pressed steadily ahead to reach the east ore vein, the face in porphyry. The main north drift on this level is still following the west ore vein, the face in quartz, giving low assays. For the past two weeks there has been a strong flow of hot water from the face of this drift, but which has almost entirely ceased within the past two days.

HALE & NORROSS.—Four crosscuts have been run between the main incline and the Savage, three of which have penetrated the ledge to the west wall, and the fourth, which is on the north line, to within about 15 feet of the wall, none of which have developed any considerable body of ore. A crosscut has been started 100 ft. south of the incline, to prospect the ledge at that point, which shows a number of cross streaks of ore, but nothing that will pay. Daily yield, 40 tons of ore, from the old

upper workings, which are still as promising as ever.

CROWN POINT.—Daily yield, 450 tons, from the 1,200, 1,300 and 1,400-ft. levels. The north winze on the 1,400-ft. level, has attained a vertical depth of 47 ft., all the way in rich ore. Some high-grade ore has also been encountered in the crosscutting on the same level. Car samples taken from the north winze, day before yesterday, ranged in value all the way from \$90 to \$145 per ton. Are now running south, on the 1,500-ft. level, following along the foot-wall in order to make a connection with the winzes which are being sunk on the 1,400 ft. level.

LARY BRYAN.—This old-established and much misused and abused mine is about being re-opened and worked in a more effective and systematic manner than ever before. A large, new working shaft is to be sunk a short distance east of the old one, and hoisting works of the most effective character, capable of sinking to the depth of 1,800 or 2,000 ft. will be erected. A splendid hoisting engine for this purpose, of 100 horse power, and a huge new boiler, 20 ft. long by 60 inches in diameter, is already shipped to the mine from San Francisco. There is plenty of good pay ore in the mine yet, and the company are going after it.

BEICNER.—Daily yield, 525 tons ore. The ore stops are all looking well and yielding finely. The south winze, on the 1,300-ft., is down 180 ft. In a day or two this winze will have made connection with the main south drift on the 1,400-ft. level, which will give a much needed circulation of good air, and thus greatly facilitate the work in that part of the mine. The north drift from the incline on the 1,100-ft. level, which is following the west wall of the ledge, is in 213 ft.

JUSTICE.—Main incline down 47 ft. below the 400-ft. level. The sinking is good, the machinery works well, and good progress is steadily made toward another level. The Justice mine never has been worked below the 400-ft. level in depth, although it has yielded a large amount of pay ore; but this incline is being sunk for the purpose of deeper, and very possibly, more lucrative explorations.

CONSOLIDATED VIRGINIA.—The main shaft is down 20 feet below the 1,400-ft. level, in good sinking ground. Opening the 1,400-ft. station is making steady headway. The north winze from the 1,300-ft. level is down to within 10 ft. of the 1,400-ft. level, the bottom still in ore. All the ore stops on the 1,300-ft. level are looking and yielding finely, as are also those on the 1,200 ft. level.

DAYTON.—The Woodworth and Devil's Gate mills are kept steadily running on ore from this mine, crushing at the rate of 90 tons per day. Ten tons of the rich ore, which works about \$150 per ton, is also shipped daily to the Auburn mill for reduction. It is expected that the Briggs mill will also be added to the crushing capacity of this mine during the coming week, which will give a total reduction of about 130 tons of ore per day. The mine is looking splendidly throughout.

SAVAGE.—The main west drift, at the 1,900-ft. level, is making steady progress, the face in hard blasting ground. The south drift, on the same level, is making slow progress on account of the intense heat, which is perfectly suffocating to the workmen.

OPHIR.—The main south drift on the 1,700-ft. level is making rapid progress. The bottom of the winze on the 1,465-ft. level is still in ore, though the quality is not so good as at our last report. This poor streak is undoubtedly the same as that cut in cross-cut No. 2, on the 1,300-ft. level, just before reaching the rich west ore body. The bottom of the winze from the 1,300-ft. level shows considerable improvement in the quality of ore. Cross-cut No. 2, on the 1,300-ft. level, also shows great improvement.

OVERMAN.—Sinking the winze from the 1,000 ft. level is making steady progress. The west drift on the 1,200 ft. level is making the usual good progress. The air compressor and other machinery for operating on the lower levels, is now expected daily to arrive at the mine.

TYLER.—The west drift at the first station continues to show excellent prospects of a body of ore. There is considerable flow of water from the face of this drift, but not enough to impede the progress of the work. As soon as the new boilers are ready for use, sinking the main shaft for a new level will be resumed.

YELLOW JACKET.—The main incline is down 125 ft. below the 1,500 ft. level; the sinking is making rapid progress.

GLOBE CONSOLIDATED.—The face of the main west drift at the 400 ft. level, is in quartz of an extremely hard and tough character, making the progress very slow. Every preparation for the extraction of ore from the up-raise from the tunnel level is being rapidly completed.

SILVER HILL.—The body of ore at the second station, north of the shaft, near the Justice winze, continues to improve in both looks and quality as the work progresses.

NEW YORK CONSOLIDATED.—Sinking at the bottom of the shaft is suspended for the present. About 120 ft. of the upper part of the shaft is to be re-timbered, and meanwhile two more boilers and some additional machinery will be procured, so that when sinking is resumed, which will be in about six weeks, much better and more effective work will be done. The prospects at the bottom are of a highly encouraging nature, fully warranting the additional expense and preparation for deeper working.

IMPERIAL EMPIRE.—The ground in the face of the main east drift, at the 1,850 ft. level,

which has been extremely hard, appears to be softening, and shows indications of a near approach to the ledge.

FLORIDA.—In the crosscut north, which is being made at an eligible point in the main tunnel, some very fine prospects are being met with. Ore resembling that of the Ophir is found in spots and streaks, giving good assays.

KEYSTONE.—This mine, adjoining the Justice on the north, is soon to be brought more prominently into notice. The company will, as soon as expedient, commence operations for the systematic development of their mine.

SOUTH COMSTOCK.—The station at the 150-ft. level being opened, and cross-cutting east through the ledge commenced at that point, its width and value will soon be better understood. The drift has already cut into four feet of good milling ore, and the face is still in it. At the surface the ledge is twelve ft. wide, and corresponds in general character with the rock now found 150 ft. below.

LEO.—Main tunnel still following the ore vein into the hill. The ledge is now large and the ore more in bunches. It prospects well. The up-raise above the main tunnel is still in good ore, which is being stoped out and piled on the dump for milling.

UTAH.—The ground in the face of the west drift, at the first station, is quite soft, with a steady though slow decrease in the flow of water. The body of water in the old shaft has been lowered a distance of 224 ft., and is still gradually subsiding.

CHOLLAR-POTOSI.—The daily yield has been increased to 90 tons per day, the assay value of which is \$29 per ton.

ALHAMBRA.—As rapid progress is being made in the erection of the new works and other surface work as the extremely rough state of the weather will permit. As soon as the roads will permit, the new hoisting machinery recently purchased from the Suro Tunnel company, will be moved on the ground and erected.

BALTIMORE CONSOLIDATED.—Sinking the main shaft has been again resumed, the pumping machinery is all in fine working condition down to the 600 ft. station.

SURO.—Still driving the north drift from the main west tunnel, which is now in a distance of 160 ft., the face in very favorable looking quartz. The flow of water is rapidly decreasing. Sinking for the purpose of opening a new level will be commenced as soon as decrease of the water will permit.

KNICKERBOCKER.—The water tanks at the different stations have all been repaired and everything put in good working condition to the 550-ft. level. The snmp is now being cleaned out, and sinking will be resumed in two or three days. The new hoisting and pumping machinery works to perfection.

BUCKEYE.—The main east drift, at the 450-ft. station, cut the ledge during the week, at the distance of 20 ft. from the shaft, developing a large body of white quartz very much resembling the barren quartz of the Comstock ledge. This body of quartz so far as yet developed will not pay for reduction.

LARY WASHINGTON.—Considerable water to contend with, but good progress continues to be made.

SUCCESS.—The little shaft in the Cañon is now completed to the depth of 300 ft., and yesterday and to-day the work of opening a station at that point has been engaged in for a drift to the ledge. The sinking of the new shaft the other side of the hill is progressing as usual, without material change.

JULIA.—The ore body developed at the 1,000-ft. level continues to show improvement in both quantity and quality.

NEVADA.—Running the south drift is resumed, the face showing 2 ft. of the ore vein, which will be followed to ascertain its extent and value in that direction. The cross-cut east is in twelve feet in good ore all the way and no sign of east wall as yet.

CHAPIN AND EAST COMSTOCK.—The machinery of the new hoisting works has been started into operation. The work of clearing the shaft of water is commenced to-day.

EUROPA.—Main west tunnel has cut through over 120 ft. of vein matter without reaching the west wall. The ore in the face of the tunnel still gives encouraging assays.

ALPHA.—The main north drift on the 1,500-ft. level from the Imperial shaft is still driven ahead, following the streak of ore found, which remains unchanged in both appearance and quality.

DANEY.—New shaft to-day down to the depth of 335 feet. The rock is hard and blasts well, and there is little or no water to interfere with the good progress made.

SEGREGATED ROCK ISLAND.—Cross-cutting the ledge will soon be commenced.

MONTEZUMA.—The streak of ore developed in the bottom of the shaft appears to be widening out as the sinking progresses.

MINT.—The frame of the new hoisting works building is up, and the erection of the machinery making steady progress.

WOONVILLE.—Sinking the main incline is making rapid speed.

FATMOUNT.—The north-east drift from the main tunnel is still driven ahead, the face in low grade ore.

CROWN POINT EXTENSION.—The shaft is being cleaned out preparatory to resuming work at the bottom.

KOSUTH.—The main west drift at the 220-ft. level is still advancing in low grade ore.

ROCK ISLAND.—Sinking the new shaft is making steady and favorable progress.

MONOC CHIEF.—New tunnel in 39 feet, and good progress continues to be made.

Bingham Canon Mines.

A correspondent of the Salt Lake Tribune writes as follows from Bingham Canon: All honor and praise to the resident patriots of this camp, for their persistent faith in the ultimate successful development of the immense bodies of wealth which lie entombed on every side; hidden from only those whose general cussedness forbids the encompassing of any knowledge beneficial to mankind.

First Discovery of the Mines.

Eleven years ago this winter a band of sturdy miners, contending against almost insurmountable difficulties, entered this canon, and amidst a blinding snow storm planted their stakes and camped. It was indeed a dreary and most uninviting place.

On the 17th day of the following September, they organized the West Mountain mining district, and elected Archibald Gardner recorder, and on the afternoon of the same day recorded the first mining claim, known as the Jordan. For years they have patiently and diligently toiled on, in developing their garden of Eden, notwithstanding the contemptuous sneers of mining experts and "knowing ones." To-day the result of their energy and belief is being realized beyond all expectations; and

West Mountain Mining District Boasts of 3,207 Locations

Of mining property, owned by persons hailing from every portion of the known world; a population of some two thousand souls, six settlements, called respectively Bingham City, Winnemuckville, Montreal Town, Shanghai, Waggonville and the village of Black Jack; two smelters, separating works, a twenty-stamp mill in the course of erection, a large commercial trade, a railroad which weekly handles millions of pounds of freight, and mines containing larger hoards of ore than any camp in the Territory. This district is

Traversed by three Distinct Belts of Mineral, namely: The Winnemuck or carbonate belt, the Jordan or chloride belt and the Black Jack or sulphuret belt, covering an area three miles in width, and are readily defined by bold iron croppings four miles in length.

Profitable Gold Diggings Abound.

Some \$200,000 has already been cleaned up, and it is expected that \$20,000 more of dust will be washed this season. This class of mining should receive more attention than it has of late. The amount of coined gold being only about four thousand millions of dollars, which if welded into one mass, could be contained in a cube of 23 feet, a sum insufficient to meet the demands of commerce. Aside from the natural advantages incidental to close proximity, and railroad communication with business centers, Bingham is gifted with one of the loveliest and most desirable of climates, affording not only a chance for the impecunious miner to carry on his prospecting at a comparatively small cost, but presents a field of great variety for students of geology, the naturalist and the tourist.

New Discoveries.

Daily new discoveries are reported, and as depth is attained, the ore becomes vastly superior, both in quality and quantity. In the

Owyhee Mine,

In upper Bingham, at the depth of sixty feet a ledge has been encountered three feet six inches wide, with 30 per cent. lead and \$144 silver.

The American Girl,

In Carr Fork, last evening, struck a large body of galena ore, assaying 200 ounces silver.

The Burning Moscow,

In Log Fork, lately purchased by Hay & Co., for \$13,000, at a distance of one hundred and fifty feet, found ore of sufficient value and bulk to warrant them asking \$100,000 for their property.

The Last Resort Mine,

Lately purchased by a Chicago company, have commenced work in earnest, and from the amount of ore in sight, their shipments will be necessarily large. It is the intention of this company at an early day to erect a smelter and refining works.

The Southern Cross,

Owned by John Campbell and Chris. Maltesta, gives promise of being one of the most valuable in the district. They have only run a tunnel of sixty feet, and struck a vein of carbonates, rich both in lead and silver.

The Kempton Mine

Have again resumed work, and are shipping about twenty tons of ore daily.

The Neptune, Sultan, Nez Perces Chief, and Damphool mines, still continue to yield a large amount of wealth. The Jordan is shipping about 690 tons of ore weekly.

The Winnamuck Furnaces

Are again in full blast. Their mammoth dust chambers are working like a charm.

Big Enterprise.

Messrs. Carson & Buzzo have just perfected arrangements to build seven furnaces at West Jordan, on a new and improved plan, part of which are inventions of Mr. Carson.

The Utah Mine.

It is currently reported that the Utah mine,

owned by the Utah Silver mining company (limited), has struck a body of splendid ore, almost entirely free from iron, having passed the immense belt of pyrites, which has heretofore been considerable of a drawback to the company. Their separating works, completed a short time since, at a cost of about \$30,000, will commence running as soon as the weather will permit, and, if successful, will be one of the grandest and most useful monuments of enterprise and economy that have ever been built on the Western coast. The concentrating works are contained in two huge frame structures, and consist of a Blake stone-breaker, Cornish rollers, six continuous self-feeding and self-discharging jiggers, crushers, handles, sizing apparatus, water-washing trenches and furnaces. It is expected that 175 tons of ore can be run through daily, producing 41 tons of concentrated ore, of 75 to 80 per cent. lead and 20 to 25 ounces of silver.

The Agnes Mine.

Which has been leased by Messrs. Walton, Eldredge, Pascoe and Ray, has "struck it rich." At the end of the present incline, a distance of 165 feet, a ledge of carbonate ore has been discovered, varying from 30 to 37 inches in width, assaying from 40 to 125 ounces silver, and from 45 to 65 per cent. lead. The walls are six feet three inches apart, consisting respectively of solid blue limestone and quartzite. The rich ore appearing in three distinct strata—one on the hanging-wall, in the center, and one on the foot-wall.

The Spanish, Last Chance and Montreal mines, are to a certain extent shut down for the present, in order to get breathing time for active operations in the spring.

Idaho Mines.

The Owyhee Avalanche of the 28th ult. contains the following mining items: The mining situation in this camp is decidedly healthy. Aside from the mines that are now being worked, new and important enterprises are on foot for the coming spring. It is currently reported that the Oro Fino has been sold to San Francisco capitalists, who will prospect, explore and develop the property next season. We have always regarded the Oro Fino as one of the very best mines in camp, and rejoice at the news of its getting into the hands of parties who will work it. The Poorman will also be extensively worked next season, and we expect to hear of its regaining at least a portion of its former prestige. Frank Britten and R. E. Beggs are engaged in saving the tailings from the various quartz mills, and intend to have machinery on the ground to work them early in the spring. This tailing enterprise, if properly managed, cannot fail to enrich its enterprising proprietors and increase the wealth and business of our camp. Those who own stock in our mines do not care to part with it, being willing to wait for the enhanced values and dividends that next summer will surely bring. Everybody feels encouraged and full of hope. It is undoubtedly certain that Owyhee is rapidly advancing towards a new era of prosperity.

SOUTH CHARIOT.—This mine is opening out splendidly. The main shaft is down 25 feet below the 8th level. A drift has been started off from the 8th level station north, and is now in 10 feet.

EMPIRE.—The 1st, 2d, 3d and 4th levels are all being driven north through good ore, and the main shaft is down 90 feet to the 5th level, in which they confidently expect to find the rich body of ore that now shows so prominently in all the other levels. The Superintendent says that he will have the Empire well opened for taking out ore by the 1st of June, when crushing will be commenced, and expects that monthly dividends will be declared from that time for an unlimited number of months.

INA ELLMORE.—Superintendent Minear informs us that he has been dived in sinking the shaft during the past few days, on account of the increase of water, but that he is now putting in a tank which will take up the water, thereby enabling him to sink much more rapidly than heretofore. Preparations are being made to start a winze from the 10th to connect with the 11th level, in order to secure good ventilation for the latter level. The mill is being thoroughly overhauled and put in order for crushing.

WAR EAGLE.—This mine continues looking first-rate in all its drifts. They commenced sinking the main shaft for the 7th level yesterday.

THE GOLDEN CHARIOT-MINNESOTA still keeps up its reputation for the richness and extent of its mineral deposits. Red Jacket is about the same as last reported, and gives promise of a big future. The Mahogany main shaft is down 40 feet for the 9th level, with no particular change to note. The Silver Cord is being energetically explored, with the most flattering prospects. Illinois Central is yielding plenty of ore as rich as ever. The Idlewild boys are taking out ore for another crushing. The Belle Peck is yielding richer ore than we have seen for many a day, and will soon have a clean-up that will astonish the natives.

BULLION SHIPMENT.—Wells, Fargo & Co. shipped from here during the past week, bullion to the amount of \$11,231 98.

Four men left Pioche, Nev., on the 25th ult., with a light spring wagon, for San Juan, Utah, via Prescott, Arizona. This is a very round-about way; but by this route teamsters avoid the great snow-belt which has of late caused so much suffering.]

Mining at Belmont.

The Belmont Courier, a new and sprightly journal, which sensibly pays more attention to local topics than to irrelevant subjects, gives the following about the mines in its vicinity.

At no time since the discovery of a silver-bearing quartz ledge in the Pennsylvania (Belmont) mining district, has the prospect for permanency and a large yield of the precious metals, been so good as at the present time, so we are informed by those who have been here since the organization of the district, and who are known to be thoroughly practical miners, and understand of what they are talking about. After a careful examination of a number of undeveloped mines, and favorable locations of those undeveloped, we are forced to the same conclusion. The dark days of Belmont are over. It is no longer an uncertainty as to whether there are mines, or not. "The hearing ear and the seeing eye"—bearing the sound of the pick and seeing the ledges, determines the question with us. Before our advent into the district, we "heard" of its wealth, and with our "eyes" we have seen the mines. Take the Belmont property, for instance—with a ledge of over 6,000 feet in length, of an average width of seven feet, yielding from one hundred into the thousands, per ton. In six months from this time, the mine will be opened from one end of the company's ground to the other, with hoisting works at the two extremes, over perpendicular shafts, which will place the mine in a condition to work a large force of men to good advantage. A silver mine, as well defined as are the Belmont Co's ledges, don't often "net" out. And in addition to the Belmont property, we have the Monitor Belmont and El Dorado South—and others—but of the latter two incorporations named, both have taken out of their ground immensely rich ores, and in considerable quantities. If either of our mines, that are now opened, were near the Comstock, the stock of either one would be worth \$75. For the Belmont mine, we can truthfully say, that if the stock was worth \$32 two months or so ago, it is now worth \$75, there having been a drift run of sufficient length in virgin ground, through the Moore & Martin location, in rich ore, to substantiate our assertion. The large and regular shipments of bullion from the Belmont is entirely satisfactory to stockholders here.

There is now hardly a doubt but what the several incorporations who have developed mines, will, once the weather becomes settled, put on an increased force of miners, and, by the employment of muscle and the necessary outlay of capital, place the mines in this district in a condition that will not only greatly benefit their owners, and the county and State, but enrich the commonwealth at large.

NEW METHOD OF ENGRAVING.—At the recent meeting of the French Association for the Advancement of Science, M. Gourdon, of Lyon, described some novel facts which he had observed in the action of acids upon zinc covered with certain metals. Zinc plunged into dilute solutions of sulphuric, hydrochloric, and acetic acids is attacked only at the points where other metals are present. The metals which produce this phenomenon with most intensity are cobalt, platinum, nickel, and iron. Ammoniacal chloride of cobalt renders it possible to perforate zinc with water containing only one 10,000th part of sulphuric acid. M. Gourdon applies these results to various procedures for engraving. By writing directly upon zinc with different metallic inks, making use of the most active, containing salts of cobalt, for the blackest parts, and passing it then into acidulated water, an engraved plate is obtained. To reproduce leaves or plants, they are soaked in solutions of metallic salts, and applied to the zinc, which is then treated with weak acid. The author has discovered a new kind of heliographic engraving by transferring the silver from an ordinary photographic proof upon the zinc, which can be attacked by the acids in the parts where the silver has been deposited.

RICH QUARTZ.—Mr. Dunlap, the discoverer of the "Morning Glory" quartz ledge, on Granite creek, has shown us some of the ore taken out of the ledge at sixteen feet from the surface. He also showed us the returns of the assays, both at Boise City and this place. We forget the exact figures, but the returns showed about \$250 per ton. Work has been suspended on the mine for the time being, because they had no sufficient means to keep the water out. The hands came to town during the week, and said they had succeeded in sinking a shaft sixteen feet; at that depth the mine looked very promising. Pumps will be fitted up here, and by the opening of spring they expect to drive things along more rapidly. The proprietors think they have got a fortune in the "Morning Glory," and this belief would seem to be pretty well founded.—Walla Walla Union.

MINING ACTIVITY.—A great amount of activity is noticeable in, and about the ore producing mines of the Comstock. Besides the 1,000 tons shipped daily to mills by rail, large quantities are sent off by teams, which from early in the morning line our principal thoroughfares for mining, an almost continuous procession extending from Gold Hill proper to Silver City. Every morning a large number of teams may be seen filing out of the corrals on the Divide, and wending their way northward to the mills in Six and Seven Mile Cañon, the long procession reminding one of an army train.—Gold Hill News.

Protection to Stockholders.

The last Bill of interest to miners, introduced in the Legislature is one by O'Connor, which is as follows:

Sec. 1. "The Secretary of every corporation for the purpose of carrying on the business of mining shall keep the books of such corporation written up every day, and at the end of each month shall make out a balance sheet, showing the correct financial condition of the corporation. It shall also be his duty to make out a written statement, on the first Monday in January, April, July and October of each year, exhibiting all the business and financial transactions of the corporation for the three months preceding, which said exhibit shall also contain a full description of all the property of the corporation, and the character, extent, and the title thereon, which said report or exhibit shall be verified by the oath of the Secretary, and shall, together with all the books, papers and records of the corporation, be open to the inspection of any and all stockholders of the corporation during the hours of business, every day in the year, Sundays and legal holidays excepted.

Sec. 2. Any owner of stock in any of the corporations, mentioned in Section one of this Act, shall at all hours of business or labor, on or about the premises, or property of such corporation, have the right to enter upon such property and examine the same, either on the surface or under ground, and it is hereby made the duty of any and all officers, managers, agents, superintendents, or persons in charge, to allow any stockholder to enter upon and examine any of the property of such corporation at any time during the hours of business or labor, and the presentation of a certificate of stock in the corporation shall be prima facie evidence of ownership, and the right to enter upon or into and make examination of the property of the corporation.

Under Section 3, the violations of the provisions of the Act shall subject the Trustees of the corporation to a fine of \$200 and costs of suit, and the expenses of the stockholders so refused in traveling to and from the property, which may be recovered in a Court of competent jurisdiction, either in the county where the property is situate, or in the county where the office and principal place of business of the corporation is situate, which said fine shall be imposed and collected for and paid over to the person so refused, together with all moneys collected for the said traveling expenses. Referred to Committee on Mines and Mining.

MINING SUIT.—Suit has been commenced by Joseph Trench in the Third District Court against Thomas Sunderland, of Virginia City, to recover the moderate sum of \$726,000. The complaint alleges substantially that Trench owned, in 1866, of the Kentuck mining stock, 666 shares, the whole number of shares at that time being 2,000. Sunderland, who is an attorney, was President of the company, and it is alleged that he fraudulently induced Trench to sell his stock to one John B. Winters, representing that the title of the company to the mine was extremely doubtful. Upon this representation he sold for \$24,000. He alleges that the purchase was made for Sunderland, who realized \$126,000 from the shares so purchased, for which he demands judgment. In his answer, Sunderland denies the charge of fraud, denies that he gave his opinion as an attorney, asserts that there were serious claims against the company's title, and sets up the statute of limitation.

PANAMINT.—A correspondent of the Inyo Independent says: Mr. Barnard McKean, a miner and prospector of no little fame, has returned from Panamint, where he has been putting in the blint end of the winter. He gives a glowing account of the richness of the mines on the surface, and the facilities for working them are unsurpassed. Mr. A. B. Williams, one of the original locators, and at present the sole owner of the Diana mine, left a few days ago for San Francisco to purchase a five-stamp quartz mill, to be put up here somewhere in the suburbs of Benton. A few days ago, two gentlemen from near Belmont, Nev., passed through here for San Francisco on their way for the Sticken river excitement.

A HEAVY SHIPMENT.—The largest shipment of ore ever made over the Virginia and Truckee Railroad since its construction was made yesterday. There were weighed at the American Flat ore scales during the day and evening 146 car-loads of ore. Each car containing about seven and one-half tons, or 15,000 pounds of ore, and the day's shipment aggregated about 2,190,000 pounds.—Virginia Chronicle, March 5th.

MINERAL KING WAGON ROAD.—The Visalia and Inyo Road company have completed their wagon road from Visalia to within fifteen miles of the new mines of the Mineral King District, and a good trail connects with the mines. Work is being vigorously pushed on the road, and it will probably be opened for travel by July. With the opening of spring several strong companies are preparing to mine on a large scale, as many valuable leads have been discovered in the district.

A PATENT has been issued to the Keystone mine, adjoining the Justice, on the Comstock lode.

THE OROVILLE mines still give employment to thousands of Chinamen.

USEFUL INFORMATION.

Separation of Gold and Silver from Lead.

But little is known, to those not engaged in the business, of the methods employed in this country for separating gold and silver from impure lead; and we believe the following facts, gathered by our reporters, will be found of interest:

Two grades of impure lead are exported from Utah to the Eastern States for refining. The impurities are gold and silver, which communicate a superior hardness to the lead, and also increase its fusibility. These ingredients, however, do not exist in sufficient proportion to warrant the application of the cupel process, or rather the loss of lead would be so great as to make the operation too expensive. The lowest grade contains 80 ounces of silver and 1 of gold to the ton; the other grade, known as the B. O. M. bullion, contains 120 ounces of silver and 4 of gold per ton of bullion. Beside these components, certain proportions of antimony and occasionally a trace of arsenic enter into the composition of the bullion.

The bullion is first placed in kettles and melted to refine it. In this process the dross, which rises to the surface of the metal during the melting, contains the greater part of the impurities, such as antimony, bismuth, etc. This dross is afterward refined separately in an appropriate furnace. This having been removed, the melted metal is drawn off into a larger kettle. It is thence removed to other kettles, and a certain proportion of zinc added, the quantity bearing a fixed ratio to the quantity of silver already in the metal. In the working of each sample of bullion a preliminary assay is necessary to determine the proportion of silver.

When the metal is melted with the zinc, a slow fire is employed; and, as the process goes on, an alloy of silver and zinc rises to the surface. The latter is skimmed off, and placed in a plumbago crucible, provided with a neck similar to a retort. The crucible is then placed in one of Du Faur's furnaces, which is so arranged that it can be tilted by the aid of a wheel attached to the furnace. The zinc is here distilled off, and condenses in the tube or neck, which is attached to the crucible. A part of the zinc is driven off as oxide, and this is lost, but about two-thirds of it sublimes in the neck of the crucible. When the tube is removed, the zinc is withdrawn therefrom, and used again in a similar operation. It will be remembered that silver melts at about the same temperature at which zinc is volatilized.

The metal remaining in the crucible consists of gold, silver, and lead, the latter in small quantity. This having been withdrawn, the precious metals are separated from the lead by cupellation. The resulting gold and silver are then run into ingots, and the silver removed by nitric acid, or by whatever method may be most convenient. In this mixture of gold and silver, gold forms from one-half to one and a half per cent. Some idea of the magnitude of the operation may be formed from the following facts regarding a large establishment. They claim a weekly production of silver of about 12,000 ounces, and a proportionate quantity of lead. Generally, the process returns about 89 per cent. of the lead which was in the bullion, at the commencement of the operation. They use cast iron kettles in the process of separating the silver from the lead by the aid of zinc, each capable of holding two tons of bullion. Twelve of Du Faur's tilting furnaces are used, each cupola holding about 250 pounds of metal. Four refining furnaces are used, two capable of a charge of 6 tons each, one of 12 tons, and one of 16 tons.—*Iron Age*.

The manner in which liqueur bon-bons are made is extremely simple. The sugar preparation, reduced to a fine powder, is spread over a tray, and upon this single drops of the liqueur are allowed to fall; the tray is then shaken, and the pulverized sugar forms a coating round the several drops of fluid, which can be increased at will to any thickness. The manufacture of bon-bons is carried on all over France, and in Paris alone there are nearly 200 shops devoted to it, employing over a thousand hands. The men get from a franc and a half to eight francs a day, and the women from one to four francs; while the amount of indirect industry, such as making boxes, packets, crackers, and fancy goods, is enormous. The last published statistics show that the sweetmeat trade of France exceeds twelve million francs. Perhaps the greatest marvel is to find that the country itself expends ten millions of this sum.—*The Engineer*.

WHY ALCOHOL CURES RATTLE-SNAKE BITES.—The experiments of Professor Binz, of Bonn, in regard to the effects of alcohol on animals, are exceedingly interesting, in as much as he seems to have discovered the reasons why alcoholic stimulants were so useful in cases of snake poisoning. He found that when decomposed blood was introduced into the veins of the living animal, all the symptoms of putrid fever were shown, the temperature increasing until death ensued. Alcohol reduced the heat, retarded the putrid process, increasing the action of the heart. This seems to be precisely the effect of alcoholic stimulants, when administered in case of rattlesnake poisoning.

Carbolic Acid.

Carbolic acid, in some of the various forms in which it is offered to the public, is one of the most popular disinfectants, and deservedly so. For simple disinfection, where the cause has been removed, nothing is superior to the acid itself, either concentrated or in solution. It is extremely useful in sick rooms and similar places for cleansing the vessels which have been used, and a small quantity of it added to the water in which the clothes are washed, will effectually destroy all germs of disease which may be present. For disinfecting the air of a sick room a few drops may be put upon a hot shovel or stove-lid, or any article that will retain its heat for some time. It has the advantage that it does not injure clothing or metal articles with which the vapor comes in contact. It should be used with care, however, as the liquid itself is a violent poison, even in small doses.

In many cases, however, something more convenient of manipulation is wanted than the liquid. This is furnished by several different compounds. The so-called "metropolitan disinfectant" is a mixture of sesquioxide of iron and carbolic acid. The iron destroys the organic matter with which it comes in contact, and the carbolic acid is slowly given off and acts in purifying the air. Another compound is the "Egyptian powder," which contains common clay as a basis. Still another, and one which has proved of great use, is carbolate of lime. Carbolic acid has the property of combining with alkalies and alkaline earths without having its active qualities destroyed, as these compounds are very unstable, and are decomposed by the weakest acids. The carbolate of lime is a dry powder, with generally a rose tinge, and smells somewhat like ordinary coal-tar. The lime in it acts upon, and soon destroys any organic matter with which it may come in contact, the carbolic acid being set free. It is extremely convenient and useful in all places where decaying matter is found. A little of it scattered two or three times a week around a swill-pail or other offensive object, keeps it perfectly sweet, and will also drive away all the flies from the vicinity.—*Journal of Chemistry*.

ALCOHOL FROM SAWDUST.—The cheapest material of which to make brandy, whisky, and alcohol is at present sawdust. We mentioned before that sugar is now made of it, and a direct consequence of this is that this sugar, by proper fermentation and distillation, can be made into alcohol, and this again by rectification and flavoring, into any of the mixtures known as gin, whisky, rum, arrack, cognac, brandy, etc. This manufacture of alcohol from sawdust is now carried on in Sweden very economically and on an extensive scale. We rejoice, because if the great staples, such as corn, wheat, rye, barley, etc., are used for this purpose, there is a destruction of material valuable for food; a breaking down of more complex valuable organic compounds into simpler ones, and if these same simpler compounds can so well be obtained from sawdust, which neither animal nor man can eat, there is a great saving in valuable material. The only objection thus far, is that in this operation a portion of the product is not the ordinary ethylic alcohol, but methylic alcohol, or wood spirits, which is less palatable and more unwholesome than ordinary alcohol; but that there is no doubt that improvements in this respect will soon be made, if this is not already the case, and that, as people must have alcohol, it will in the future not be produced at the cost of the destruction of a great portion of the staples of food otherwise adapted for the nourishment of millions, and which now are continually being destroyed by the distillers over all the world.—*Manufacturer and Builder*.

TO INCREASE THE ADHESIVENESS OF GUM ARABIC.—Concentrated solutions of gum arabic as a mucilage, says Hager, possess the disagreeable property, when spread upon printing or other paper not strongly sized, to penetrate them to transparency, and in spite of this not making them adhere to other paper. Paper cannot be attached to common pasteboard, nor wood to wood. Paper pasted with mucilage on metallic surfaces usually falls off soon. The use of gum as cement for glass, porcelain, or earthenware, etc., is entirely impossible. All these disadvantages of mucilage are remedied, when an aqueous solution of sulphate of aluminum is added. For 250 grammes of the concentrated gum solution (prepared with 2 parts of gum and 5 of water,) two grammes of cryol. aluminum sulphate will suffice. This salt is dissolved in ten times its quantity of water, and mixed directly with the mucilage, which in this condition truly deserves the name of *vegetable glue*. Solution of alum serves the same purpose, but far less efficiently.

TRANSFERRING PICTURES TO GLASS.—Coat the glass with a varnish of balsam of fir in turpentine, then press the engraving on smoothly and evenly, being careful to remove all air bubbles. Let it stand for 24 hours, then dampen the back sufficiently to allow the paper to be rubbed off by the forefinger, rubbing it till a mere film is left on the glass, then varnish again.—*Sc. Am.*

ANOTHER PROCESS FOR PRESERVING MEAT IS ANNOUNCED. By this method the animal is killed by felling, and immediately skinned and cleaned. It is then glazed over with a preparation of sugar and alcohol and placed in a bed of fat. The case is exhausted of air and soldered up.

GOOD HEALTH.

The Causes of Decay of Teeth.

It has been charged against our brethren of the dental specialty, says the *Lancet*, that they are woefully at fault in regard to knowledge of the commonest of all things—causes of the teeth. That they extract teeth with skill, and stop them with even more skill, and in a nobly conservative spirit, is admitted; but the causes of decay in the teeth have remained obscure. The investigations of Leher and Rottenstein into this subject have at least the charm of pointing to definite conclusions. They admit, of course, that there are differences of teeth, constitutional and connected with race, making teeth more or less resistant to the great influences which determine decay. These are not, according to these authors, internal and vital so much as external and chemical. The process of decay begins from the surface, and if it can be controlled or arrested at the surface, it is entirely controlled. The great causes of caries are two, namely, acids and a certain fungus found abundantly in the month, *Leptothrix buccalis*. This latter agent is characterized by certain microscopic appearances and by its reaction with iodine and acids, which give to the elements of *Leptothrix* a beautiful violet tinge. Under the microscope the fungus appears as a gray, finely-granular mass or matrix, with filaments delicate and stiff, which erect themselves above the surface of this granular substance so as to resemble an uneven turf. The fungus attains its greatest size in the interstices of the teeth.

No one can deny now-a-days the action of acids on the teeth, even weak acids, in dissolving the salts of the enamel and the dentine. All acids, both mineral and vegetable, act promptly on the teeth. Various experiments as to the action of acids on dental tissues are given, making the enamel, naturally transparent, first white, opaque and milky, and, in a more advanced state, chalky, and then the dentine more transparent and softer, so as to be cut with a knife. The acids which may actually effect the first changes in the production of caries are such as are taken with food, or in medicines, or such as are formed in the mouth itself by some abnormality in our secretions, which should be alkaline, or by an acid fermentation of particles of food. But acids alone will not account for all the phenomena of caries in the teeth. They play a primary and principal part, making the teeth porous and soft. In this state, the tissues having lost their normal consistency, fungi penetrate both the canaliculi of the enamel and of the dentine, and by their proliferation produce softening and destructive effects much more rapidly than the action of acids alone is able to accomplish.

It is not pleasant to think that fungi exist in the mouth of all but the very cleanest of people. Bowditch, in examining forty persons of different professions, and living different kinds of life, found in almost all vegetable and animal parasites. The parasites were numerous in proportion to the neglect of cleanliness. The means ordinarily employed to clean the teeth had no effect on the parasites, while soapy water appeared to destroy them. If this be a true version of the causes of caries—the action of acids, supplemented by the action of fungi—then it follows that the great means of preserving teeth is to preserve the most scrupulous cleanliness of the mouth and teeth, and to give to the rinsing liquids a slightly alkaline character, which is done by the admixture of a little soap. This is not so pleasant a dentifrice as some, but it is effective and scientific. Acids not only dissolve the salts of the teeth, but favor the increase of the fungi of the mouth. No increase of fungi and no action on the dental issues occurs in solutions slightly alkaline, as of a weak solution of soap. The good effects of stopping teeth, in the light of these experiments, are intelligible. The penetration of acids and fungi is prevented.

EATING WHEN SICK.—It is the custom among a certain class of people, when a member of the family falls sick, to begin at once to ask, "Now what can you eat?" Every one has heard of the old story of the man who always ate eighteen apple dumplings when he was sick. On one occasion when he was engaged upon the eighteenth, his little son said, "Pa, give me a piece." "No, no, my son, replied the father, "go away; pa is sick." When a young man has surfeited in season and out of season, until exhausted nature gives way, and a fever is coming on, the good mother is in trouble. She anxiously inquires, "Now, John, what can you eat? You must eat something! People can't live without food!" Then comes toast and tea, etc. The stomach is exhausted, and no more needs stimulating or food than a jaded horse needs the whip. What is needed is rest. Nine-tenths of the acute diseases might be prevented by a few days' starvation when the first indications appear. I don't mean complete abstinence in every case, but perhaps a piece of coarse bread, with cold water for drink. If such a policy were generally adopted, what ruin would overtake the medical profession. How many physicians would lack for patients.—*Heath and Home*.

In the hydropathic treatment, drinking cold water immediately after rising, provided that breakfast be not taken for at least half an hour, is prescribed. The explanation given is that the internal douche acts upon the stomach as a tonic, in the same manner as cold applications externally, upon the skin.

Action of Tobacco Smoke.

According to Messrs. Vohl and Eulenberg, the amount of nicotine in snuff and tobacco for chewing is so minute that nothing like nicotine-poisoning can result from their use. The action of tobacco-smoke and tobacco-juice is not due to nicotine, for it contains none, but to pyridine, picoline, colledine, and other bases, forming a homologous series, which are produced during the combustion of the tobacco. The reason why stronger tobacco can be smoked in a cigar than in a pipe is, that in the pipe a large quantity of pyridine is formed, which is very volatile and stupefying; while in a cigar little pyridine and much colledine are formed. The unpleasant symptoms experienced by persons just beginning to smoke, or who smoke to excess, as well as the poisonous effect of tobacco-juice, are not due to nicotine, but to the pyridine and picoline bases; and they have probably been attributed to nicotine because these bases, especially those having a high boiling-point, greatly resemble nicotine both in smell and in physiological action, producing contraction of the pupil, difficult respiration, convulsions and death.

They do not act so quickly when injected under the skin as when taken into the stomach, and their action is less rapid than that of nicotine. Other plants which are sometimes used for smoking, though they contain no nicotine, such as dandelion, willow wood and stramonium, yield pyridine bases, whose action are very like those from tobacco, though rather weaker. Pure picoline from Boghead coal had a similar action; and its vapor was poisonous, producing irritation of the respiratory passages, slight convulsions, and death. None of these, except the bases from willow wood, produced contraction of the pupil. The authors consider that the effects produced by opium-smoking are not due to the alkalis in the opium, but to the bases formed during its combustion; and that the difference between it and tobacco is owing to different bases being formed by their combustion.—*Arch. Pharm. and Chem.*

Color Blindness.

The derivation of the designation of an affection of the eyes very commonly known as Daltonism (color blindness) is, as many of our readers are doubtless aware, from the name of the great philosopher, the propounder of the atomic theory, who was attacked by it. Properly speaking it is simply incapacity on the part of certain people to judge of color, or more accurately, of certain colors. Dr. Favre has communicated to the Congress at Lyons the result of the researches, which, as chief physician of the Paris and Lyons railway company, he has made on the subject, the object being to determine what influence this disease or affection may have on the general safety of travelers. According to this report, among 1196 different individuals examined from 1861 to 1868, thirteen cases of red-color blindness and one of green were found. Again, among 728 subjects examined between 1872 and 1873 he testifies to forty-two of color blindness more or less developed. He further estimates the number of people in France suffering from this malady at nearly a million, and gives, as the most common causes of it, wounds, typhoid fever, syphilis, etc. The danger of such a disease existing, and possible in some instances without the knowledge of the subject or of his employers, is one which deserves attention, for although we cannot point ourselves to any instances in which errors have been made through it, nevertheless, Dr. Favre, as we understand him, is able to do so, and we quite agree with him, when he says that the only effectual preventive of the dangers which may possibly accrue from such a malady is a periodical optical inspection of all men who have to deal with colored signals, a mistake in the use of which might lead to such disastrous results. We recommend inquiry on this subject to locomotive superintendents and traffic managers.—*The Engineer*.

SUNSHINE AND SLEEP.—Sleepless persons should court the sun. The very worst soporific is laudanum, and the very best, sunshine. Therefore it is very plain that poor sleepers should pass as many hours as possible in the sunshine, and as few as possible in the shade. Many women are martyrs, and yet they do not know it. They shut the sunshine out of their houses and their hearts, they wear veils, they carry parasols, they do all possible to keep off the most potent influence which is intended to give them strength and beauty, and cheerfulness. It is not time to change all this, and so get color and roses in our pale cheeks, strength in our weak backs, and courage in our timid souls? The women of America are pale and delicate, but with the aid of sunlight they may be blooming and strong.—*Home and Health*.

BORAX FOR COLDS.—A writer in *The Medical Record* cites a number of cases in which borax has proved a most effective remedy in certain forms of colds. He states that, in sudden hoarseness or loss of voice in public speakers or singers, from colds, relief for an hour or so, as by magic, may be often obtained by slowly dissolving, and partially swallowing, a lump of borax, the size of a garden pea, or about three or four grains, held in the mouth for ten minutes before speaking or singing. This produces a profuse secretion of saliva, or "watering" of the mouth and throat, probably restoring the voice or tone to the dried vocal cords, just as wetting brings back the missing notes to a flute when it is too dry.

MINING SCIENTIFIC PRESS

W. B. EWER.....SENIOR EDITOR.

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San Francisco:

Saturday Morning, Mar. 14, 1874.

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THE STICKLEEN MINES.—Advice from Victoria dated the 5th inst. state that the steamer "Eliza Anderson" arrived from Cassiar on the previous day, and reports that all the miners are pushing on, none returning. As yet there is no information from those who have gone on. On the 27th ult. all then at Wrangle were to start for the interior. The "Anderson" made the round trip in nine days' running time. The Hudsons Bay company's steamer "Otter" also arrived at 6 p. m., from the same place, but brings no later intelligence. The following information will interest those who propose to visit the Stickleen mines: The average temperature at Fort Wrangle, from November 26th to December 1st, noted twice a day, 9 a. m. and 3:30 p. m., was 31 degrees below zero; from the 1st to the 28th of December, the average was 29 degrees. The coldest snap was in January, when the mercury congealed. Those who go up before the first of May will surely suffer. Dispatches dated at Victoria, on the 11th ult. say: The steamer "Eliza Anderson" sailed last evening, and the "Otter" this morning, both for Cassiar, carrying about 125 passengers. The steamship "California" from Sitka passed down this morning. She brings no news of any importance from Cassiar. The miners are going into the diggings, notwithstanding the intensely cold weather.

The wood of the osage orange is found to be useful for many purposes. An eastern paper states that a correspondent, who has been experimenting with the wood of the osage orange says that it takes a fine polish, and is very durable. The wood grown in Texas is found to be durable in all situations, and none more so than in fence posts. It is largely used for wagon wheels, and the wheels made of it are said never to require a second hooping. In Pennsylvania it is of slow growth, but further south it finds a congenial climate, and grows rapidly. If seed is to be sowed, the trees should be planted in clumps, in order that fertilization may be perfect.

The whole production of the precious metals throughout the world during 1873 is estimated to have been worth \$219,000,000.

The Mission Quicksilver Mine, Napa county, on Tuesday last, turned 1,800 pounds of rock in eighteen hours, producing 126 pounds of quicksilver.

Quicksilver.

Quicksilver is now quoted at \$1 37½ in gold in New York. Here the price still remains at \$1 20 per pound, as against 85 cents per pound last year. This is a very heavy tax on our mining interests; for, considering that we use 1½ pounds of quicksilver in working a ton of ore, it now costs \$2 10 for every ton worked, where it used to cost only \$1 45. We have frequently referred to this matter in our columns, and as often stated that the only way to remedy this state of affairs is to open and properly develop some of the lately-discovered deposits of quicksilver in California. There is a good deal of talk about "quicksilver monopoly," which is all bosh. That monopoly was broken up some time ago. The mines are all working on their own account now, and it would not pay to reduce production at the present high rates. A number of the mines opened last year are producing metal, but none of them as yet come up to the New Idria, New Almaden, and Redington, which formerly constituted "the monopoly." The St. John, Great Western, Phoenix, and some few others, promise well for an increased production, but as yet their yield is comparatively small.

The New Almaden mine, the production of which was stated to be 12,000 flasks last year, has turned out to be but 11,042, a difference of over 7,300 pounds. The percentage yield was but 4.87. We mentioned in our issue of the 28th ult. that we had called at the office of the company here and that they stated that the yield of 12,000 flasks was correct. Mr. Randolph the Superintendent of the mine tells us that the yield was but 11,042, and that the "office" in this city is merely the agency for the sale of the metal, and they know nothing of the details of the mine operations. The decreased production of this mine alone would have the effect of raising the price of quicksilver, especially as the demand for it has so materially increased.

We notice that one of our contemporaries in this city states that "any man now, who makes a discovery which is likely to furnish even a moderate amount of quicksilver, can obtain advances on his mine, so as to change the ownership very readily." They can't do any such a thing, and that is what is the matter with the price of quicksilver, not the "monopoly!" If the person that wrote that item can point out the man who will buy these mines, or make advances on them, he will confer a great favor on a good many deserving prospectors. The San Francisco capitalists are afraid to touch any of these discoveries, unless they have a sure thing of it, and "sure things" can't be found in quicksilver mines; hence, they do not invest. It takes a well-developed mine, a good location, plenty of ore on dumps, plenty more in sight, and a good deal of palaver, to get these capitalists even to look at a quicksilver mine, and they are very shy of buying them. The capitalists would rather get cent. per cent. sure, than put any money into uncertain mines, even with prospects of high interest on their money.

We know of numerous instances during the past winter when men, who had discovered cinnabar deposits in Lake, Sonoma or Napa counties, have spent months in this city endeavoring to get capital to aid them in opening these mines, and most of them have gone back disgusted. They are compelled to travel round day after day, and week after week, after these men of means, only to be put off, from time to time, and eventually neglected altogether. There isn't any capitalist in this city that wants to go into quicksilver mining, unless they could buy a New Almaden or Redington. They will not risk their money in opening and proving a deposit, for they can find safer investments. If the mining interests suffer for want of quicksilver, as they do, it is the fault of rich mining men, for not assisting to develop mines of this class. Until such assistance is rendered, we must expect to pay exorbitant prices for our quicksilver; even higher, perhaps, than we pay now.

Cinnabar mines are so extremely unreliable, that it is difficult to predict the future of any of them until they are well developed. Many of the mines lately discovered in Sonoma, Lake, Napa and Solano counties, promise well for the future, but as yet, few of them have been developed to any extent. When eight or ten these are provided with the necessary reduction works, and developed on a good scale, perhaps quicksilver will come down, but until this capital is forthcoming, we may expect high prices. With all the talk about quicksilver monopoly, it is a simple fact that it is the backwardness and want of enterprise in our capitalists that keeps quicksilver where it is.

MINING LAWS.—An interesting letter on this subject from a practical miner will be found on our second page this week. It contains some valuable suggestions and will be read with interest by mining men. If miners would often ventilate their ideas in the columns of the Press it would result in great benefit to the whole fraternity. The suggestions made by Mr. Lloyd are well worth consideration by our law makers, and he explains the provisions in a way that shows he has discussed the subject with other miners.

Oakland Harbor Improvements.

The report of the United States Engineers, on the proposed improvements in Oakland Harbor has been transmitted to the authorities at Washington. This report is signed by G. H. Mendell, C. S. Stewart and B. S. Alexander. After a long, detailed description of various surveys and soundings, and scientific discussion of securing the effects of tidal currents, etc., they submit and recommend the following comprehensive plan: First, that San Antonio Creek be confined within two parallel training walls or bulkheads, of stone, one thousand feet apart, and that these be carried out over the bar to a point opposite the end of the railroad wharf, where there is now a depth of sixteen to eighteen feet at low water. Secondly, that a canal be excavated from the head of the estuary to San Leandro Bay. Thirdly, that a dam be constructed across the entrance of San Leandro Bay. And fourth, that the latter be dredged so as to make it a tidal basin. This tidal observation taken by them, show that the water runs a little higher and falls a little lower in San Leandro Bay than in San Antonio Creek, the mean difference being about four tenths of a foot. The times of high and low water are later in San Leandro Bay than in San Antonio Creek, the difference being about one hour. The extended training walls are to be constructed to a height of four feet above low water, and will therefore be submerged at high tide. They say the effect of all this will be, that the ebb water will dredge out a channel of fourteen to sixteen feet deep, at low tide, between the whole length of the training walls, and make a harbor at Oakland capable of accommodating at one time forty large ships, together with ferry boat and small vessels. Such accommodations, they argue, are necessary for the overland freight and travel, which are now exposed to the dangers of an insecure wooden wharf. It is intimated, also, that the interests of San Francisco and Oakland are identical, or at least as closely connected as those of New York and Brooklyn. The engineers recommend that the execution of the first division of this plan be provided for at this session of Congress, by the appropriations of \$479,074, which they estimate at its cost including the dredging of the artificial channel between the training walls, which, after the rest of the plan is accomplished, will be kept dredged out by the ebb of the tide from San Leandro Basin. They estimate the cost of excavating the canal at \$350,000, cost of dam at \$65,000; cost of dredging out San Leandro Bay, so as to make it a proper tidal basin, at about \$920,929; aggregating for the whole scheme, \$1,815,003. This, however, they say will not cover the land damage and bridge involved in the construction of the canal, and does not provide for the complete conveniences for commerce, the construction of which they think may safely be left to the interests concerned.

The report then goes on to say that when the work described is completed Oakland and Alameda will have a fine land-locked harbor or basin, capable of accommodating forty large ships at the same time alongside their wharves, with room for as many more at anchor in the estuary, and have room besides for as many slips as would be wanted to accommodate travel. Oakland is not a port of entry; the nearest port being San Francisco, distant about five miles. Oakland is so intimately connected with San Francisco that the interests of the two cities, if not identical, are as nearly allied as those of New York and Brooklyn.

We learn from the newspapers of the day, that there were 67,000 overland passengers, 2,000,000 ferry passengers, \$32,000,000 in treasure from the mines of California and Nevada, 450,000 tons of general freight, 161,000 tons of wheat, valued at \$6,440,000, all passing over the long wharf at Oakland during the past year.

As both travel and trade between the two cities is increasing rapidly, and the present wharf is only a temporary one, it would seem that the interests of the two cities would be greatly increased by some more permanent landing at Oakland.

If such be the views of Congress, and if he decided to improve the harbor of Oakland, we recommend the appropriation of the amount necessary to construct the two training walls, and dredge out a channel between them one hundred feet wide, having a depth of six feet at low water, at the present session of Congress, \$479,094.

This amount would give a beneficial and useful result at once, and establish all the travel and much of the trade between the two cities, on a better basis of communication than it now has.

COAL is found in a number of the small gulches among the bald hills of the Buttes, lying in thin layers between strata of clay, from one to several inches in thickness, and on a considerable slant. Some of these streaks contain fine specimens of bituminous coal.

A CORRESPONDENT of the Sutter Creek Independent, writing from Lancha Plana, says the mines are about played out in that neighborhood. The only chance there is for the place to regain its former prosperity, or even the shadow of it, is the much-talked-of railroad from Stockton to Ione.

At present about thirty-two trains make daily trips over the Virginia and Truckee railroad.

Recent Patents.

Among the patents recently obtained through Dewey & Co.'s Scientific Press American and Foreign Patent Agency, the following are worthy of mention:

EYE GLASS.—Lonis A. Berteling, San Francisco, California. This invention provides an improved saddle or clamp for fastening the eye glasses upon the bridge of the nose. It consists in attaching the shoes or clamps to a spring in such a manner that they will possess an elasticity both at the top and bottom. The clamps will then adjust themselves to the seat or shape of the nose without pinching, and at the same time have a stronger and firmer hold.

CAR PROPELLER.—Fayette Mace, Jackson, Amador county, California. An arrangement by which a running stream is made to propel a car in either direction along its bank. Mr. Mace proposes to construct a railroad track alongside a mining stream or ditch which has a current, and place upon it a car. This car will be provided with a shaft which extends out over the stream. A wheel, similar to a paddle wheel is attached to the end of this shaft so as to dip in the water. A gear wheel on this shaft engages with a gear on one of the bearing wheels of the car so that when the current revolves the wheel and shaft the bearing wheel of the car is turned so as to carry the car up the stream, when the car has arrived at the head of the stream and received its load the gear wheel on the shaft is disengaged from the bearing wheel, and the shaft is fixed by a clutch so that it cannot revolve. As one or two of the hockets or wings of the wheel will then be in the water the current will carry the car down the stream. This arrangement is especially adapted for propelling a wood or lumber car from the foothills down to some shipping point.

PLANK ROADWAYS.—Cornelius McGowan, San Francisco, California. This invention consists in constructing plank roadways of boards which are thicker at one end than at the other and in placing the thickest portion in the middle of the roadway where the most wear occurs, while the thin portion is placed next to the sidewalk where there is the least travel.

SHIRT FRONT.—Ismar Zachariae, San Francisco, California, provides a shirt front the upper half of which is made of linen while the lower portion is made of colored material. At the point of junction in the middle of the shirt bosom is a flap the upper surface of which is linen (usually an extension of the upper half of the shirt bosom) while the under part is formed of the same material as the lower portion. By turning the flap up and buttoning it upon each side of the neck the linen portion is covered and the colored side exposed, but by turning the flap down the linen front is exposed.

VACUUM RELIEF VALVE FOR STEAM CYLINDERS.—Andrew J. Stevens, Sacramento, California. This invention provides a relief valve in the steam dome of the boiler, which is connected with the steam cylinder so that when the throttle is closed and the locomotive is running on a down grade without steam, the vacuum usually formed by the pumping action of the piston will be relieved and the piston lubricated.

IRRIGATION PIPE.—Nehemiah Clark, S. F., Cal. This invention relates to an improved arrangement for coupling underground irrigation pipe by which the water is allowed to escape at the joints, without danger of clogging the escape opening.

CUTTING APPARATUS FOR HARVESTERS.—Philoander Kitts, Monticello, Cal. This invention consists in an improved cutter bar for headers by which the heads of grain are prevented from dropping in front of the sickles after it is cut. The improved arrangement also strengthens the cutter bar while it is rendered much lighter than formerly.

SEED SOWER.—John B. Nixon, Cottonwood, Cal. Relates to an improvement in broadcast seed sowers, and consists in providing a simple arrangement, whereby the direction of the rotation of the distributor can be reversed so as to scatter the grain in an opposite direction alternately thus sowing it more uniformly.

PACIFIC SHIPBUILDING.—A strong company has recently been organized to carry on extensive shipbuilding operations on the Pacific Coast. The principal parties recently met in Washington city to perfect their plans. Among them are Richard Vance of Bath, Maine; Mr. Cheung, brother of Caleb Cheung, of Newburyport, Mass., and the leading New York shipbuilders. Erastus Bartlett of California is also connected with the enterprise. The company has not yet determined whether to establish their works at Puget Sound or Port Oxford or Elgin. They intend to build ships, manufacture lumber and work coal mines. They will sell the ships and cargoes in foreign ports.

The shipment of bullion from Pioche for the month of February was very light, being only \$170,229 05.

The road from Treasner Hill to Eberhardt is still blocked up with snow, and teams are unable to get down with rock.

Theatrical Machinery.

Perhaps no class of persons in the world require the genius of invention more than stage carpenters. Every new play must have its appropriate machinery arranged to work with the utmost precision, so as to produce the most deceptive effect upon the audience. Some of the devices and apparatus used on the stage possess remarkable features of mechanism, requiring originality of the first order, and although these devices are seldom patented, many of them show more real ingenuity than three fourths of the inventions for which patents are obtained. Yet, with all of this ingenuity in devising and constructing novel machinery for producing startling scenes upon

the stage, but little improvement has been made in the mechanism for working the permanent apparatus of the stage. To-day the drop scene is rolled up by cords and pulleys operated by hand, at the proper signal, in the same manner that it was rolled up fifty years ago; and who has not often witnessed the distressing accident of two flat scenes positively refusing to come together properly just at a time when it was particularly necessary to shift them quickly? We have recently forwarded to the patent office the application of Mr. H. F. Parsons, a resident of Los Angeles, in this State, for some very useful and ingenious improvements in the permanent mechanism of a theatrical stage. To the first place Mr. Parsons proposes to paint the scenes on wire cloth instead of canvas, as heretofore. One or two preliminary coats of paint upon the wire cloth, he states, will completely fill the meshes so that a perfectly opaque and uniform surface is provided. Mr. Parsons claims that there will be a saving of 30 per cent. in the amount of paint required to complete the scenes. He proposes to use wire cloth, not only for the flat scenes, but also for the wings and flies, and to use wires instead of ropes for operating them, thus rendering the stage comparatively fire-proof, and effecting a reduction of 70 per cent. in the insurance rates. The scenes thus made will also be more easily handled. Instead of ropes and pulleys for raising and lowering the drop scene, Mr. Parsons will employ a small water-wheel driven by water conveyed through a pipe connection with the water main of the city, and the valve will be controlled by the prompter, so that he can, at the proper moment, drop the scene without depending on an assistant. Besides the above improvements, Mr. Parsons has provided a number of others, by which the flat scenes, wings and flies, can be easily worked by one person instead of the large number heretofore required. He claims that a saving of 60 per cent. in the labor of operating stage machinery is obtained by his improvements, besides every part is so adapted as to work smoothly without noise or stoppages.

Mr. Parsons expects to place his improvements on some of the theatrical stages in this city during the coming summer.

MINING ACCIDENT.—About eleven o'clock on Friday night a miner named Richard McCarty, made a fatal misstep in the shaft of the Caroline mine, at Pioche, and falling a distance of 225 feet was instantly killed. It seems that McCarty was being lowered into the shaft, but when near a station he rang the bell, intending to get off at the station and procure something that was needed at the bottom. He rang the bell before the cage had reached the station, and in stepping from the cage he missed the point at which he aimed and fell to the bottom of the shaft. He must have fallen the entire distance without touching either side of the shaft, for neither his head nor his face was bruised at all, but his legs and thighs were broken in many places, and his neck was also broken.

THE STATE OF THE ROADS ABOUT EUREKA has caused about 1000 tons of ore to accumulate at the Eureka Consolidated, which, combined with the scarcity of coal, prevented the working of the furnaces, and necessitated the discharge of several workmen.

Ophir City, Utah.

The accompanying cut, originally published in the *Utah Mining Gazette*, represents a view of Ophir City, Ophir District, East Cañon, Utah. The town, as will be seen by the engraving, is situated in a cañon, two miles from its mouth, easterly, in the midst of the mineral belt, which stretches north and south, a distance respectively of four and three miles. In the town and vicinity there is a population of 1,000, to which may be added 500 more residing in different mining camps. The town has a good hotel, post, express and telegraph offices, which, with the smelting works and mills in active operation, impart a lively and business-like appearance to the place.



OPHIR CITY, UTAH.

Alpha district, in which the town is situated, is on the west side of that portion of the Oquirrh range, immediately south of Stockton district, and distant from the latter town about 8 miles. According to a pamphlet on the "Mineral Resources of Utah," by John R. Murphy, discoveries were made in this cañon as early as 1864, but being of the base metal class, with only a low per cent. of silver, attracted no particular attention until 1870, when the first discovery of horn, or chloride of silver, ore was made. The ore from this discovery assayed so high that it created quite an excitement which led to a rush of people to the place. Ophir district is divided by the cañon, which runs east and west, into the south or horn-silver high-grade section, and the north or argentiferous galena low-grade section.

THE YAKIMA MINES.—Late intelligence from the Yakima mines is not very encouraging. The *Lewiston Signal*, which has the latest, says: Al. Talkington, who has just returned from the Yakima mines, reports the diggings a failure; says he, in company with some old miners, were allowed to prospect the discovery claim, which was considered the best of any there; and, after sinking twelve feet to the bed-rock, washing out over a dozen pans of dry dirt, they obtained in all, about five cents. Some nuggets were exhibited which were said to have been taken out of the mines there, but Kootenai miners present could not be deceived; they knew they had come from Kootenai, and were being used for "salting" purposes. The man who induced Talkington and party to go to Yakima, turned up missing.

FUEL ON THE COMSTOCK.—The following are the present retail rates for fuel at Gold Hill, Nevada: Nut pine, \$16 per cord; limb wood, \$15; split wood, \$14; coal, \$22.50 per ton.

The Colombian Mines.

We have several times of late spoken of the newly discovered gravel deposits in the United States of Colombia which have lately attracted some little attention. On examining a large and detailed map of the country at the office of the Consol, we were surprised at the innumerable watercourses traversing the country and could well believe the assertions made as to the never-failing water supply for mining operations. The country is, however, in want of capital. We have been shown a letter from a resident of the mining regions there who owns a large tract of mineral land most of which is situated on the right bank of the large river Yambi, at a distance of two or three miles from

New Books.

We have received from the publishers, A. L. Bancroft & Co., a copy of "Copp's United States Mining Decisions," containing the decisions of the Commissioner of the General Land Office, and the Secretary of the Interior, under the U. S. mining statutes of July 26th, 1866, July 9th, 1870, and May 10th, 1872, with appendix of circulars and forms. The three laws referred to are given in full as are all the decisions bearing on mining interests, under these laws, as well as the instructions under them from the General Land Office. This work is merely a collation of all the decisions relating to the mining interests, but is a valuable one for reference, as all the information on these

subjects, possible to obtain, is within its covers. It is issued in the form of an ordinary law book in a durable binding. Recorders in mining districts, justices of the peace, editors who are in mining localities, lawyers and many others will find Copp's United States Mining Decisions of great convenience. It gives the law on the subject, stripped of all verbiage and in a comprehensive form.

We have also received from the author, John A. Chmeh, M. E., "Notes of a Metallurgical Journey in Europe," with 22 illustrations, (D. Van Nostrand.) The papers first appeared in the columns of the *Engineering and Mining Journal*, and are now republished in book form. The author in his preface makes the following noteworthy remark: "It is frequently said that American genius can be trusted to devise its own processes, and need not go abroad for instruction, but no one who is acquainted with the industry, skill and devotion of European metallurgists to their work, can be willing to lose the fruits of their experiments and thought. Few persons know how much time and money are spent by them every year in the work of revising old established processes, both by laboratory examinations and by experiments conducted on the largest scale. The little book is an interesting one to the mining engineer and metallurgist and is trustworthy, as the author only describes those works visited and carefully studied by him."

The "Transactions of the American Institute of Mining Engineers," Vol. 1, from May 1871, to

February 1873, was also received by us this week. The volume contains the rules of the Institute, a list of members and associates, and abstract of the proceedings of the first two years, and a number of papers selected from those proceedings. The papers have already been published in the official organ of the Institute and are republished in pamphlet form, so that members can preserve them conveniently. The majority of the papers are of more interest to miners in the East than to us on this Coast, as they treat largely on coal, iron, etc., to which we on the Pacific pay little attention.

MECHANICS' INSTITUTE.—At the quarterly meeting of the Mechanics' Institute on Saturday evening, the President, Mr. A. S. Halliday, submitted his report. From this it appeared that during the quarter 157 new members joined the association, and 294 volumes were added to the library. During the same period 19,720 volumes were withdrawn from the library and read by the members. The President reported that a course of fifteen lectures, delivered by the professors of the University of California, was in progress. In conclusion, he called the attention of the members to the fact that the Society was now sorely in need of funds wherewith to buy technical works of reference. With a view of supplying the deficiency and placing the Institute on a firmer basis, an industrial exhibition will be held next fall. The Board of Managers having control have advertised for the plan of a suitable building to be erected on the two 100-acre lots on Eighth street between Mission and Market. The receipts for the past quarter were \$3,946.25, and the disbursements \$3,705.89.

TEN tons of borax were shipped from Esmeralda county last week.

TUNNEL LOCATIONS.—"G H" is informed that tunnel locations cannot be patented, but the lodes discovered in running a tunnel may be patented upon full compliance with the law. There is no specified amount to be expended to retain the ownership of a tunnel location, but owners are required under the law to use reasonable diligence in working and advancing their tunnel. Failure to prosecute the work on a tunnel for six months is considered as an abandonment of the right to all undiscovered veins on the line of tunnel.

"JIM WHITLACK," of the California quartz crushing and ore sampling mills, of this city, has gone east to secure the aid of capitalists in putting up a mammoth quartz mill in San Bernardino county.

Arizona Mines and Mining.

A pamphlet has recently been issued by A. K. P. Safford, who was appointed Commissioner to prepare and publish information on the resources of Arizona by the Legislative Assembly, in which are numerous interesting facts relating to that rich but out-of-the-way Territory. In the chapter on mines and mining we find the mining situation of this Territory condensed in the following interesting manner.

It is impossible, in the limited space afforded in this pamphlet, to give an adequate idea of the mines of this Territory. There is scarcely a mountain or hill within this Territory that does not contain veins of gold, silver, copper and lead. Owing to various causes, principally Indian hostilities, this vast wealth has been but little developed, and is yet but imperfectly understood. I shall only attempt to refer to a few of the most prominent mining districts, and, in order to make the reference as brief as possible, I shall class them by counties.

Yuma County.

Gold, silver, copper and lead are found in lodes near the Colorado river, the entire length of the county; also placer gold in considerable sums has been extracted. No effort has been made to conduct water to these mines; the gold has generally been obtained by what is called the dry-washing process. To pay by this process, the mines must necessarily be very rich, but if water could be obtained, they would undoubtedly pay well, even when once worked by the other process.

Many lodes of gold, silver, copper and lead have been located, and quite a profitable business engaged in by shipping the ores via the Colorado river to San Francisco. The success of these enterprises would warrant the belief that by the erection of machinery and properly opening the mines, they could be made very profitable to the owners. Along the southern border of the county, extensive and rich mines of copper are found, but owing to the high rate of transportation have not yet been made to pay.

Mohave County.

It has been known since the organization of the Territory, that nearly all the mountains in this county contained lodes of gold, silver, copper and lead, and, in 1863, an attempt was made to develop and work some of these lodes; some machinery was erected and considerable money expended, but, as has been the case in nearly all new mining counties, from hostility of Indians, extravagance, want of experience, etc., the investments proved disastrous, and the mining interest has been paralyzed.

About two years ago, operations were again commenced and quite a mining settlement has sprung up at Wallapai about 30 miles east of the Colorado river. A vast number of new mines have been discovered, and new districts have been formed for many miles around. It will be seen by reference to the statistics of Mohave county that the ores that have been shipped and worked are remarkably rich, and from frequent personal examination, I am convinced that, with capital prudently invested, this will prove to be one of the richest and most extensive mining sections on the Pacific Coast.

Yavapai County.

Owing to the hostility of the Apache Indians, prospecting and mining has been much retarded over a large portion of the county, but sufficient explorations have been made to demonstrate the fact that it contains extensively rich mines of gold and silver—scarcely a mountain has been examined that does not show rich deposits of these metals. Placer gold is found over a large extent of country, and during wet seasons these surface mines are worked with great profit.

For three years water has been scarce, and but little work has been done on the immense gravel beds found near Prescott, but from present appearances a bountiful supply will be had the coming spring; and with a plentiful supply of water, thousands of men could obtain employment near Prescott in placer mining. The discovery of gold and silver quartz lodes are so numerous that it is out of the question to give room in this pamphlet to mention but one or two of the leading ones: The Vulture mine at Wickenburg is principally of gold ore; the lode is large and well defined. A forty-stamp mill erected at Wickenburg was kept constantly employed crushing ore from this mine for several years, but owing to the great cost of bringing the ore from the mine to the mill, a distance of 15 miles, and mismanagement of those who controlled it, work was some time ago suspended; but there is in sight at the mine thousands of tons of free gold ore, worth \$15 to \$25 per ton, and the time is not far distant when it will again be worked with profit. Messrs. Smith & Taylor, two practical mining and mill men, have for the past six months been running a ten-stamp mill on an extension of this lode with great profit, probably not making less than \$200 per day, after paying all expenses. In the Bradshaw district the Tiger lode gives promise of taking an important position beside the great silver-bearing mines of Mexico and the United States. The lode is wide and regular in its formation; a careful assay of about

700 tons on the dump shows this ore to be worth \$100 per ton, and from this, 35 tons were selected and shipped to San Francisco, and were disposed of for \$17,000. There are also many other valuable mines in this district. Considerable gold is being taken out by assays in this district, at Prescott, Walnut Grove and Antelope, and without the aid of capital. Our hardy miners, now that the Apaches have been made quiet, will soon demonstrate with gold and silver bars the mineral wealth of the Territory.

Maricopa County.

But very little prospecting has been done in this county, but sufficient to demonstrate the existence of veins of gold, silver, copper and lead in nearly all the mountains. The most important discovery yet made is the Silver Queen, twenty miles north of Florence; and most excellent prospects have been found in the Pinal mountains. An excellent vein of coal has been found near Camp Apache, and also a mountain of pure salt on Salt river. Many legends have been told by captives who have escaped from the Indians, and by Indians who have been taken as prisoners, of the existence somewhere in this section of rich placer mines, but all efforts to find them have so far proved futile.

Pima County.

Nearly all the mountains contain veins of gold, silver, copper and lead, and long before the country was purchased from Mexico, gold and silver mining was carried on to a considerable extent. After the purchase, the attention of capitalists was attracted here, and considerable money was invested with fair prospects of success. About this time, the Great Rebellion broke out, and the Confederate forces took possession and confiscated or destroyed all property known to belong to Union men; then the Union forces re-took the country, and confiscated or destroyed all property known to belong to those in sympathy with the Rebellion, and the Indians and marauding bands took what was left, irrespective of creed or parties. This effectually destroyed all mining enterprises, and it is only until within the past year that any effort has been made to revive the mining interest. During this time, considerable prospecting has been done, and a number of patents have been applied for. Sufficient developments have been made to warrant the belief that with capital well directed, a very extensive mining field would soon be opened. Certainly there is an abundance of ore, and assays and working tests show that it can be worked to great profit.

The Everlasting Mine.

The following item we take from the *Calaveras Citizen*: Drifting at this mine proceeds but slowly, owing to the hardness of the rock, and it will probably be several weeks before the proposed destination is reached, and the superintendent's theory be verified or disproved. If he has not been misinformed in regard to former workings of the mine the chances are greatly in favor of success. Last Tuesday we paid the mine a visit and consider it time well spent. The history of the mine and the facts upon which the present change of programme is based are as follows:

Several years ago Scieffard, and his partner sunk a shaft 45 feet north of the one on which the company's work has been done, and had good rock in the bottom—45 feet—but being unable to continue on account of water, left this shaft, which has filled in. The rock taken from the shaft still lays around it and prospects richly. The company's shaft is 50 feet west of this old shaft, pitches considerably and has no sound indications of being on the lead at all. In fact from developments which have been made—as explained to us—there can be little doubt that the true vein is the one on which the old shaft was sunk and which is almost perpendicular. The difference in the dip of the two shafts would make it expedient to drift from the working shaft to the old one as near the surface as possible. This is what is now being done; at the depth of 80 feet a drift is being run toward the abandoned shaft which is now in 15 feet. Should expectations be verified, and the lead be found, a new shaft will have to be sunk. North of the mine the lead can be easily traced in a straight line which would bring it directly over the old shaft.

Such are the facts of the case as explained to us by the superintendent, and we, in common with all the residents of this section hope for the best, and second to the owners of the mine, will be benefited by its success.

NEW QUARTZ MILL.—The *Mountain Messenger* says: Manson & Co., of the foundry, are building a quartz mill, the stamps of which are to be worked by Manson's "Elastic Power" device. The arrangements of the stamps and battery are peculiar, and original with Mr. Manson. Portions of the frame have already been cast. It will be put in operation on a ledge near town early in the spring. Each stamp will drop 200 times a minute with a crushing force equivalent to a 1,500 pound stamp dropping 14 inches at 60 drops a minute. The stamps will weigh 450 pounds each.

BIG FIGURES.—In Germany there are at present some twelve large manufacturing factories of alizarine from coal-tar, and the product, which is rapidly increasing, is now 25,000 hundred weight per annum, valued at \$2,000,000. Germany also supplies the world with aniline colors.—*Gas-light Journal*.

White Pine.

In an article entitled, "Fact stranger than Fiction," the *White Pine News* makes the following statements:

In previous issues of the *News* we have given many facts regarding the amounts of ore taken from our various mines, which have gone to add materially to the wealth of Nevada, and of the world. Fact is often found to be stranger than fiction, and figures will not lie. For a long time we have been laboring under great depression in all branches of our mining interests, from reasons often set forth by us. That the fault of the present dullness and apathy here existing is not to be ascribed to the county itself, we have always held, and have taken much pains to support and strengthen our advanced opinion by facts and figures. From the most reliable source, that of the Assessor's books, we glean the following interesting exhibit, which we are confident is under instead of over the true production of White Pine district. As these same figures have been obtained from A. J. Brown, a gentleman employed hunting statistical information bearing upon the mining interests of this district, and forwarded to Mr. Raymond for the purpose of being incorporated in his annual report, we have no hesitancy in pronouncing them as nearly correct as it is possible to obtain the same.

This whole number of tons of ore, of all characters, produced in this district up to, and including Jan. 1st, 1874, was 186,048, which gave a gross yield of \$8,767,484! This grand total shows the value of each ton of ore to average \$47.07. Included in the above amount were 10,445 tons, taken from our base metal mines on the White Pine Mountain and vicinity, which yielded \$445,000 in silver and lead, averaging \$42.70 per ton. Nearly nine millions of dollars extracted and sent forth from our mines in four years! It is perhaps a circumstance unknown to many that so much wealth has been taken out from this locality as the above goes to prove, but those doubtful of the fact have only to take the pains to look over the returns made during the time mentioned, and be convinced of the truth of our statements. It is certainly the height of folly to advance an opinion that no more mineral exists in the mountains from whence this was extracted, and we have but little patience with know-nothing scoffers, such as we meet frequently, who, with that egotism in their own views born from ignorance, confidently and knowingly, say "White Pine is played out!" We regard this county to be just on the turn in her history, and confidently believe that before many months our bullion product will again astound the mining world. We have men left here who have struggled on through years of adversity and borne up under the disappointments of hope deferred, brought on by the acts of unscrupulous speculators and their damning influences, who still know that success awaits them and are content to stay until the future shall work out their salvation.

A query suggests itself right here, that is, if, as the statistics show, \$445,000 in silver and lead was the product of our base metal interests in the past, with the crude manner of smelting then in vogue, why should not millions of dollars reward efforts to be made in the future, with the knowledge of the business gained in years of experiments resulting in the successes apparent in Eureka and elsewhere? All the necessary adjuncts to successful smelting of ores exist on White Pine Mountain that prevail elsewhere; our ore is richer in precious metals than at any other point, and only await comprehensive and judicious handling and treatment to make our county the most productive of all the rich sections of Nevada. We are anxious for the right men to commence operations on the extensive interests here and carry to a certainty our firmly rooted theory of the wealth of White Pine. Although our anticipations of the early development of our district may be unfounded, the fact still holds good that the wealth is here and will some day be utilized. From time to time we shall take pains to present new facts and figures, with earnest faith that our endeavors may induce men of means and of knowledge in mining matters to test the truth of our assertions. Many thousands of dollars and pounds, thrown away on wild-cat speculations, could be made to pay astonishingly large interest, if judiciously invested in properties now lying idle in this vicinity; and, we opine, that before long the numerous failures resulting from impracticable investments will teach operators to seek for opportunities such as we have to offer them.

UTAH MINES.—The *Salt Lake Tribune* says: The mining prospects of the Territory are brightening, and business is rapidly recovering from the stagnation incident to the monetary panic of last fall. There was a time, a few months since, when the money requisite to pay the freight on bullion could not be obtained, and the price of ore was so low, that, in some instances, it scarcely paid for shipment. Now, both ore and bullion command the highest figure, and many companies, that have been in financial embarrassment, will soon be able to pay off their indebtedness and extend their operations as the season advances. The mining outlook for the coming summer is very encouraging, and there is but little doubt, that before another winter, the permanence and intrinsic value of a number of the leading mines of this Territory will be placed beyond all peradventure.

Arkansas Dam.

Thus far the season has been a very good one for the miners on the river above Junction City, and they have not been slow to profit by it. At present the cold nights have shortened the water somewhat, so that there is no surplus above what the ditches will carry. At Arkansas Dam, Post & Glover have opened a new claim back of the site of the old trading post. They have not done a great deal of washing yet; the ditch which conveys water to the claim, being new, has been the source of considerable trouble by sliding; but, with settled weather, they will have a better opportunity of testing the ground. What work has been done exposes a bed of gravel which deepens with the rise of the hill, being seven or eight feet thick as far back as worked. It all contains fine gold; but, being cement in character for two or three feet above the bed-rock, is difficult to work. The ditch digging proved a greater job than they had anticipated, so the claim is not so well supplied with reservoirs as it should be to take advantage of the water supply. In another year this can be remedied. On this hill, back and below Post & Glover, the Sheridan Brothers have a fine run of water from Simpson gulch, and are using it to the best advantage. Chapman & Fisher, opposite, are running both their claims to the full extent. The upper claim is worked with 15 inch pipe and a 6 foot flume; the lower one on a smaller scale. They have made one clean-up in the lower claim—we did not get the full figures, but learn that the under-current alone yielded \$150. Prater & Gribble have a fair supply of water from their gulches; and, by hiring a pipehead from Chapman & Fisher's ditch, can work to good advantage. The claim of Fisher & Prater has also had a better show for water this year than ever before. Billy Lulo works from the lower ditch, and has done very well thus far. The boys console themselves for the present scarcity of water, with the thought that the deep bank of snow which cover all the high mountains will have to come down some time or other. Of the claims below we heard nothing, except that all hands were busy at work, and that the water supply had been very fair thus far. This promises to be the most prosperous season Junction has seen for years.—*Trinity Journal*.

WADSWORTH MINING MATTERS.—The annual meeting of the Black Warrior, Gold and Silver Mining company, was held at the Company's office at Wadsworth on Monday evening, February 25th. The following Trustees were elected to serve for twelve months: Jacob Zeck, Frank Free, Gustave Weissig, Frank Bricker, and J. B. Watson. Jacob Zeck was unanimously elected President of the company. At a meeting of the Trustees held the same evening, A. Moger was elected Secretary, Frank Free, Treasurer, and Frank Bricker, Superintendent. The company intended working their claim immediately, their ledge at present being at present about three feet in width, and a good quality of milling ore. Several new claims have been located in the vicinity of the Black Warrior mine during the past month, and a mining district organized. This new district being only about eighteen miles from Wadsworth, in Washoe county, we trust it may prove all that its friends claim for it.—*Nevada State Journal*.

PROSPECTING.—We are informed that Wm. Hanley, an old resident of Allegheny, has organized a company in San Francisco with a capital of about half a million for the purpose of prospecting the ridge below Allegheny. The company has already commenced work at Rapp's Ravine, some four miles below Allegheny. They are running into the ridge between Forest City and Allegheny, under which has been found some of the best paying ground in the State. There is a vast stretch of unprospected ridge below Forest City that gives every indication of having good pay under it. Where the ridge flattens out above Pike City, there have been good diggings for years. The whole country in that vicinity would, indeed, pay well if water could be had to work it.—*Mountain Messenger*.

SONOMA MINES.—A correspondent of the *Chronicle*, writing from Calistoga, under date of March 2d, gives some information regarding the quicksilver mines of Sonoma county. He says: The Sonoma mine, about two miles from Pine Flat, employs thirty men and has a ten-ton furnace. This mine is taking out a large amount of silver. The Rattlesnake mine, two miles further on, is, according to the opinion of some, destined to be the richest mine in the State. There is, however, some doubt regarding the extent of the lead. Passing on two miles further, we come to the famous Mission mine, owned by San Francisco capitalists. The ore from this mine, taken from a tunnel only seventy-five feet from the surface, yields 14½ per cent, there having been taken out 21 flasks in 13 days with two small retorts. Below this mine is the Kentucky, recently purchased by the San Francisco Contract company, and which will be put in running order as soon as the weather will permit. A four-stamp mill is to be erected at the Calistoga Gold and Silver mine, situated on Mount St. Helena. A large force of men are employed taking out ore.

The entire production of quicksilver of all the mines of Napa and Lake, including the Redington, is estimated to be about 1,200 flasks per month, the product of the latter alone reaching 500 flasks.

PATENTS & INVENTIONS

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[From Official Reports for the Mining and Scientific Press, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., Mar. 10, 1874.

For WEEK ENDING Feb. 24, 1874.

COAL SCREEN AND CHUTE.—James Flanagan, S. F., Cal.

WASH BOILER ATTACHMENT.—David J. Phillips, Stockton, Cal.

BRO.—Wallace Shattuck, S. F., Cal.

PAINTERS' CHASES.—John F. Uhlhorn, Sacramento, Cal.

SELF-CLEANING WATER TANK.—Prosper Huerns, S. F., Cal.

DEVICE FOR BUAINING HYDRO-CARBONS.—Geo. W. Rindell, Lima, Peru.

CAR COTTLINO.—Abraham Ruet, Vaca, Cal.

QUININO CAR.—James M. Thompson, S. F., Cal.

APPARATUS FOR CONDENSING VOLATILE METALLIC SUBSTANCES.—Ferdinand Fiedler, New Almaden, Cal.

The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. Note.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest time possible.

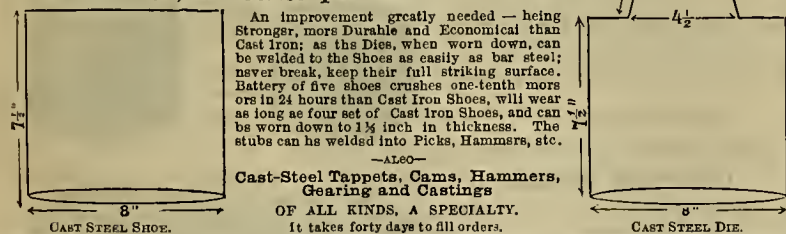
SAN JUAN.—We stated in a late issue that there had been trouble with Indians on the route to the Salt Lake mine. A correspondent of the Salt Lake Tribune makes the following extract from a private letter, written by H. B. Ferguson, dated at the San Juan mine, Jan. 21st, which gives a discouraging view of affairs there. "The San Juan country is a humbug. There are no gold ledges here of any size, and as for surface diggings, they are out of the question, the very best being from two to four dollar diggings. My advice to all is, not to come here. Cottonwood is nowhere, as far as snow is concerned. After leaving Salt Lake, we (a party of four) traveled south 350 miles, and then took a southeasterly course 150 miles, until we came to the present home of John D. Lee. We then traveled northerly and were joined by two men from Bristol, Nev. Reaching DeChille Valley, 80 miles from Lee's, we were attacked by Indians, and two of us, Charles Martin of Bingham Cañon, and George McClaren of Bristol, Nev., instantly killed. I received two wounds, one through my left arm and another through my thigh, the rest succeeded in escaping unhurt, except a man by the name of Fink, from Bingham Cañon, who is lying here badly wounded. There has been quite a number of men that crossed the Colorado river, bound for San Juan, who have never been heard from."

The Santa Rosa Democrat says that Eugene Light has invented a grain sower which he attaches to an ordinary gang plow. The machine is complete and perfect; it plows, sows and harrows the ground at one operation. It will put in from three and a half to four acres a day, and do the work well. The motive power is four horses.

PLACER diggings have been discovered at Santa Maria valley, San Diego County.

CAST STEEL SHOE AND DIE COMPANY,

OFFICE—Room 28, Hayward's Building, 419 California St., S. F.
Patented CAST STEEL SHOES & DIES for Quartz Mills.
Price, 20 cents per Pound.



SHAREHOLDERS, TRUSTEES, AND SECRETARIES OF ALL MINING COMPANIES,

Should see to it that their Notices are advertised legally in the MINING AND SCIENTIFIC PRESS, at much less cost than the usual rates of daily publications. Every person interested in the prosperity of legitimate mining enterprises should favor such practical economy. Send for circular of convenient dates for advertising, free blanks, and a copy of the New Code Corporation Assessment Law.

THE MINING AND SCIENTIFIC PRESS has closed its twenty-seventh volume, and the fourteenth year of its existence. The Press is a most valuable incentive to enterprise, inasmuch as it sets forth weekly the hidden resources, adventures, mining, scientific, mechanical, etc., of the Pacific States and Territories, besides a large amount of valuable reading matter. As the paper is a specialty in its line it should be read for reference by every subscriber.—Tuolumne Independent.

A New Yorker has now succeeded in making machinery which prepares the fiber in a highly acceptable condition for manufacturing. He is now negotiating with our largest planter on Twitchell Island to greatly increase the production. To insure a continuous market, he offers to take all that can be produced, at a price that will pay the contractor \$300 per acre. We want varied crops in California, and our farmers should inquire into this matter. The same must be moist land; especially after the first cutting, water is needed to insure a second growth. The uses of ramie are almost solely for interweaving with silk and wool. It makes a glossy cloth, and it takes all dyes. It weaves well. But it being of the nature of linen, the market offers no inducement to make cloth of that textile alone.—Bulletin.

THE RAMIE PLANT.—The farmers have now assurance of unlimited market for ramie. There has been no profit in its cultivation, because there was no machinery to prepare the fiber for the English market. It requires to be prepared when greasy, and therefore it cannot be sent abroad, where there is machinery. Twenty-six acres of ramie on Twitchell Island, yielded, in 1873, two cuttings, of sixty-five tons each, of green stock to the acre. Near Hayward, the same result was obtained; so that its successful cultivation is proved.

1840. 1874.

PAIN-KILLER, THE GREAT FAMILY MEDICINE OF THE AGE.

TAKEN INTERNALLY, IT CURES Dysentery, Cholera, Diarrhea, Cramp and Pain in the Stomach, Bowel Complaints, Painters' Colic, Liver Complaint, Dyspepsia, Indigestion, Sore Throat, Sudden Colds, Coughs, &c., &c.

Used Externally, it Cures Boils, Felons, Cuts, Bruises, Burns, Scalds, Old Sores, Sprains, Toothache, Pain in the Face, Neuralgia, Rheumatism, Frosted Feet, &c., &c., &c.

PAIN-KILLER, After a thorough trial by innumerable living witnesses, has proved itself THE MEDICINE OF THE AGE. It is an internal and external remedy. One positive proof of its efficacy is that its sales have constantly increased and wholly upon its own merits. The effect of the

Pain-Killer Upon the patient when taken internally. In case of Cold, Cough, Bowel Complaint, Cholera, Dysentery and other affections of the system, has been truly wonderful, and has won for it a name among medical preparations that can never be forgotten. Its success in removing pain, as an external remedy, in cases of Burns, Bruises, Sores, Sprains, Cuts, Stings of Insects, and other causes of suffering, has secured for it such a host of testimony, as an infallible remedy, that it will be handed down to posterity as one of the greatest medical discoveries of the nineteenth century.

The Pain-Killer Derives much of its popularity from the simplicity attending its use, which gives it a peculiar value in a family. The various diseases which may be reached by it, and in their incipient stages eradicate, are among those which are peculiarly fatal if suffered to run; but the curative magic of this preparation at once disarms them of their terrors. In all respects it fulfills the conditions of a popular medicine. Be sure you call for and get the genuine Pain-Killer, as many worthless nostrums are attempted to be sold on the great reputation of this valuable medicine. Directions accompany each bottle.

Price 25 cts., 50 cts., and \$1 per Bottle. Sold by all Medicine Dealers.

Black Mountain Coal Mining Company.—Principal place of business, City and County of San Francisco, Cal. Location of works, Santa Cruz County, California. Notice is hereby given that at a meeting of the Board of Directors, held on the 25th day of February, 1874, an assessment of three (3) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at his office, No. 402 Montgomery street, Room No. 23, San Francisco, California. Any stock upon which this assessment shall remain unpaid on the 15th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 15th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. F. N. WILLIAMS, Secretary. Office—No. 402 Montgomery street, Room No. 23, San Francisco, Cal. mri-1w

Buena Vista Petroleum Company.—Location of principal place of business, San Francisco, Cal. Location of works, Kern County, Cal. Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 28th day of January, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J. W. Adams.....	(not issued)	50	\$30 00
John Hamilton.....	(not issued)	30	30 00
W. B. Kavanaugh.....	37	10	10 00
J. O. Lovejoy.....	239	5	5 00
J. O. Lovejoy.....	254	20	20 00
D. M. Baldwin.....	219	1	1 00
D. M. Baldwin.....	222	20	20 00
N. G. Woodward.....	236	90	90 00
Alex. Deering.....	238	5	5 00
Jas. Hamilton.....	(not issued)	30	30 00
C. B. Farnsworth.....	246	50	50 00
C. B. Farnsworth.....	255	30	30 00
J. B. Mills.....	257	10	10 00
J. B. Mills.....	258	10	10 00
J. B. Mills.....	259	10	10 00

And in accordance with law, and an order of the Board of Directors, made on the 28th day of January, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the company, No. 430 Jackson street, in the City and County of San Francisco, State of California, on Monday, the 30th day of March, 1874, at the hour of 1 o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. L. AGUAYO, Secretary. Office—No. 430 Jackson street, San Francisco, California. mri4

Enterprise Consolidated Mining Company.—Location of works, West Point, Calaveras county, California. Principal place of business, San Francisco, Cal. Notice is hereby given that a meeting of the Stockholders of the Enterprise Consolidated Mining Company will be held at the Company's office, No. 24 Montgomery street, (up stairs), San Francisco, California, on Tuesday, March 24th, 1874, at 3 o'clock P. M. of that day. Said meeting is called for the purpose of adopting a code of By-Laws for the government of said corporation. FRED. MORRIS, Acting President. San Francisco, March 5th, 1874. mri

Geneva Consolidated Silver Mining Company.—Principal place of business, City and County of San Francisco, Cal. Location of works, Cherry Creek Mining District, White Pine County, State of Nevada. Notice is hereby given that at a meeting of the Board of Directors, held on the 10th day of February, 1874, an assessment of twenty-five (25) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at his office, room 14, 302 Montgomery street, San Francisco, Cal. Any stock upon which this assessment shall remain unpaid on the 15th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 15th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. I. T. MILLIKEN, Secretary. Office—Room 14, 302 Montgomery street, San Francisco, California. feb14-2w

Germania Mining Company.—Location of principal place of business, San Francisco. Location of works, Tintic District, Juab county, Utah. Notice is hereby given that at a meeting of the Board of Directors, held on the 24th day of February, 1874, an assessment of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, No. 408 California street, Room 15, San Francisco, Cal. Any stock upon which this assessment shall remain unpaid on the 15th day of March, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 15th day of April, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. J. W. TRIPP, Secretary. Office, 408 California street, Room 15, San Francisco, California. feb7

Hudson Gold Mining Company.—Principal place of business, San Francisco, State of California. Location of works, Cherokee Mining District, Plumas Co., Cal. Notice is hereby given that at a meeting of the Board of Directors, held on the 24th day of February, 1874, an assessment of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary, at his office, 113 Leidesdorff street, Room 10, San Francisco, Cal. Any stock upon which this assessment shall remain unpaid on the 30th day of March, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 20th day of April, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. G. W. FISHER, Secretary. Office—Room 10, 113 Leidesdorff street, San Francisco, California. 28

Notice.—The Annual Meeting of the Cordillera Gold and Silver Mining Company, Chihuahua, Mexico, for the election of Trustees and other business, will take place at 3 o'clock P. M. of the 30th day of March, 1874, at the office of the Company, No. 321 Washington street, San Francisco, Cal. HENRY R. REED, Secretary. mri

Jeinsen Lubricator Company—Principal

place of business, San Francisco, California. Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 30th day of January, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
M. J. McDonald.....	26	250	\$62 50
D. L. McDonald.....	27	10	25 00
Wm. J. Campbell, Trustee..	31	15	3 75
Wm. J. Campbell, Trustee..	32	15	3 75
Wm. J. Campbell, Trustee..	33	36	9 00
Wm. J. Campbell, Trustee..	34	60	12 50
Wm. J. Campbell, Trustee..	35	60	12 50
Wm. J. Campbell, Trustee..	36	200	50 00
McDonald & Whitney, Trusts.	62	1000	250 00
Louis Visaria.....	53	500	125 00
Wm. J. Campbell.....	54	20	5 00
Wm. J. Campbell, Trustee..	55	100	25 00
Wm. J. Campbell, Trustee..	56	10	12 50
Wm. J. Campbell, Trustee..	57	25	6 25
Wm. J. Campbell, Trustee..	58	25	6 25

And in accordance with law, and an order of the

Board of Directors, made on the 30th day of January, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the Company, No. 606 Montgomery street, San Francisco, on the 25th day of March, 1874, at the hour of 12 o'clock M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. CALLEB T. FAY, Secretary. Office, room 23, No. 606 Montgomery street. mri7

Land Purchasers' Association—Office, No.

425 Kearny street, San Francisco, Cal. Notice is hereby given that at a meeting of the Directors of this corporation, held on the 15th day of February, 1874, an assessment of ten dollars per share (being the 20th monthly installment on the subscription to the stock) was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at No. 425 Kearny street, San Francisco, Cal. Any stock upon which this assessment shall remain unpaid on the 23d day of March, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 14th day of April, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. C. S. WRIGHT, Secretary. Office, No. 425 Kearny street, San Francisco, California.

Lady Franklin Gold and Silver Mining

Company.—Principal place of business, City and County of San Francisco, State of California. Location of works, Silver Mountain Mining District, State of California. Notice is hereby given that at a meeting of the Board of Directors, held on the 10th day of March, 1874, an assessment of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at his office, 507 Montgomery street, San Francisco, California. Any stock upon which this assessment shall remain unpaid on the 15th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 12th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. J. S. LUTY, Secretary. Office, 507 Montgomery street, San Francisco, Cal. mri4

Mount Saint Helena Gold and Silver Mining

Company.—Location of principal place of business, San Francisco, Cal. Location of works, Calistoga Mining District, Napa County, California. Notice is hereby given that at a meeting of the Directors of said company, held March 10, 1874, an assessment of ten (10) cents per share was levied upon the capital stock of said corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, No. 418 Montgomery street, in the City and County of San Francisco, State of California. Any stock upon which this assessment shall remain unpaid on Tuesday, the 14th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 12th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. J. M. EADY, Secretary. Office—No. 418 Montgomery street, San Francisco, California. mri4

Manhattan Marble Company of California

—Principal place of business, San Francisco Cal. Location of works, Oakland, Cal. Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 2d day of February, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Edward P. Flint.....	24	60	\$120 00
Edward P. Flint.....	25	10	20 00
E. Tripp.....	42	119	238 00
George S. Ladd.....	83	50	100 00
George S. Ladd.....	84	50	100 00
George S. Ladd.....	85	19	38 00
John Currey.....	49	20	40 00
John Currey.....	50	20	40 00
John Currey.....	51	20	40 00
John Currey.....	52	10	20 00
John Currey.....	53	10	20 00
John Currey.....	54	10	20 00
John Currey.....	55	10	20 00
John Currey.....	56	10	40 00
John Currey.....	57	9	18 00
John W. Colarant.....	30	100	200 00
John W. Colarant.....	31	19	38 00
Chas. Barlow.....	94	60	120 00
Chas. Barlow.....	95	59	118 00
Irad Cochran.....	125	119	238 00
Chas. Webb Howard.....	126	119	238 00
C. O. Tripp, Trustee.....	145	5	10 00
C. O. Tripp, Trustee.....	146	5	10 00
C. O. Tripp, Trustee.....	147	5	10 00
C. O. Tripp, Trustee.....	148	10	20 00
C. O. Tripp, Trustee.....	149	10	20 00
C. O. Tripp, Trustee.....	150	10	20 00
F. E. Eppichman, Trustee.....	154	1	2 00
A. J. Morrell, Trustee.....	144	5	10 00
A. J. Morrell, Trustee.....	162	29	58 00
A. J. Morrell, Trustee.....	167	22	44 00
A. J. Morrell, Trustee.....	171	39	78 00
T. W. Miskel.....	159	60	100 00
H. P. Wakelee.....	161	119	238 00
Chas. Griffith.....	163	119	238 00
G. W. Blake.....	160	7	14 00
Geo. Edwards.....	174	30	60 00
Geo. Edwards.....	175	30	60 00
L. E. Dam.....	186	10	20 00
L. E. Dam.....	188	10	20 00
L. E. Dam.....	189	10	20 00
L. E. Dam.....	190	10	20 00
L. E. Dam.....	197	10	20 00
L. E. Dam.....	199	10	20 00
L. E. Dam.....	200	10	20 00
L. E. Dam.....	201	60	100 00
Louisa B. White.....	192	50	100 00
Mrs. Matilda Dam.....	211	20	40 00
Marshall Curtis.....	218	10	20 00
Marshall Curtis.....	219	10	20 00
Lawrence Lane.....	222	10	20 00
Lawrence Lane.....	223	10	20 00
Lawrence Lane.....	224	19	38 00
Lawrence Lane.....	225	10	20 00
Lawrence Lane.....	226	10	20 00
Lawrence Lane.....	227	10	20 00
Lawrence Lane.....	229	2	4 00
Murray Curtis.....	230	10	20 00
Lewis Starkweather.....	231	30	60 00

And in accordance with law, and an order of the Board of Directors, made on the 2nd day of February, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at No. 212 Sansome street, San Francisco, on Monday, the 23d day of March, 1874, at the hour of 2 o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. D. M. BOKEE, Secretary. Office—319 Pine street, San Francisco, California.

Silver Cord Mining Company—Location

of works, Coquille Mining District, Idaho Territory. Principal place of business, San Francisco, California. Notice is hereby given that at a meeting of the Board of Directors, held on the fourteenth (14th) day of February, A. D. 1874, an assessment (No. 3) of seventy-five cents per share was levied upon the capital stock of said company, payable to the Secretary, at the office of said company, in United States gold coin, to the Secretary, immediately. Any stock upon which said assessment shall remain unpaid on the twenty-fifth (25th) day of March, A. D. 1874, shall be deemed delinquent, and will be duly advertised for sale at public auction, and unless payment shall be made before, will be sold on Tuesday, the twenty-first (21st) day of April, A. D. 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors. J. W. CLARK, Secretary. Office—418 California street, San Francisco, Cal. feb14-2w

Mining and Other Companies.

Due to the time necessary to mail the present large edition of the M. & S. Press we are obliged to go to press on Thursday evening—which is the very latest hour we can receive advertisements.

Commercial Coal Mining Company of San

Francisco.—Principal place of business, City and County of San Francisco, California. Location of works, Santa Cruz County, California. Notice is hereby given that at a meeting of the Board of Directors, held on the 25th day of February, 1874, an assessment of 33 1/3 cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary, at his office, No. 402 Montgomery street, Room No. 23, San Francisco, California. Any stock upon which this assessment shall remain unpaid on the 15th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 15th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. S. B. HANSON, Secretary. Office, No. 402 Montgomery street, Room No. 23, San Francisco, California. mri4-2w

Machine Builders.

ESTABLISHED 1851.

PACIFIC IRON WORKS,

First and Fremont streets,
SAN FRANCISCO.

IRA P. RANKIN, A. P. BRAYTON,
GEO. W. FOGG, Superintendent.

Steam Engines and Boilers,

MARINE AND STATIONARY,

IRON AND BRASS CASTINGS

Mining Machinery of Every Description,

And all other classes of work generally done at first-class establishments, manufactured by us at the lowest prices, and of the best quality.

Particular attention paid to Jobbing Work and Repairs.
N. E.—Sole Agents for sale of HUNTOON'S CELEBRATED PATENT GOVERNOR.
18v20-3m GODDARD & CO.

FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

TEAM ENGINES,

Quartz, Flour and Saw Mills,

Wheeler's Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above How-
street, San Francisco. 5-47

THE RISDON

Iron and Locomotive Works.

INCORPORATED.....APRIL 30, 1863.
CAPITAL.....\$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,
SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy castings at lowest prices. Ovens and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors: Joseph Moore, Jesse Holladay, O. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS B. MEAD.....Secretary
24v17-27

PACIFIC

Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of
RAILROAD AND OTHER IRON
AND
Every Variety of Shafting,
Embracing ALL SIZES of
Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames

HAMMERED IRON

Of every description and size.

Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2033, San Francisco, Cal., will receive prompt attention.
The highest price paid for Scrap Iron.

SACRAMENTO FOUNDRY,

N. E. corner N and Front streets.....SACRAMENTO,

Steam Engines—all kinds of Mining Machinery.

SHIP, AGRICULTURAL, STOVE, RANGE AND HOUSE CASTINGS,

Iron Railings and Ornamental Work of every description

At the Lowest Rates.

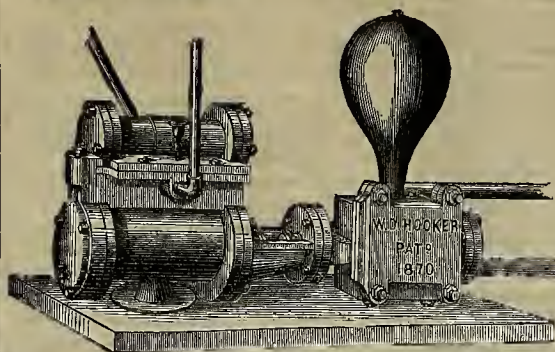
WM. GUTENBERGER.

CALIFORNIA BRASS FOUNDRY,

No. 125 First street, opposite Minna,
SAN FRANCISCO.

ALL KINDS OF BRASS, Composition Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rivet Braces, Hinges, Ship and Steamboat Belts and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch.
PRICES MODERATE.
J. H. WEED, V. KINGWELL.

Hooker's Patent Direct Acting Steam Pump.



W. T. GARRATT,
Cor. Fremont & Natoma
streets, S. F.,
Sole Proprietor & Manufacturer for the Pacific Coast.
SIMPLE, CHEAP AND DURABLE.

Adapted for all purposes for which Steam Pumps are used.
The Best Pump in Use.

SEND FOR CIRCULAR.

N. E.—Also manufacturer of Hooker's Deep Well and Double-Acting Force Pump. Received the Silver Medal awarded at the last Mechanics' Fair in San Francisco.

Machinery.

TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

All persons infringing on either of these patents

WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under Craig's, Rice's, Macey's and Hoskin's patents.

I Guarantee Full Indemnity to all my Customers.

Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an Improved LITTLE GIANT.

For further particulars apply to

R. HOSKIN, Dutch Flat,

Or R. R. & J. CRAIG,

Room 6, 240 Montgomery St., S. F.

WILLIAMSON & CORY, Marysville.

Dutch Flat, August 10, 1873.

Agents

6v27-2m

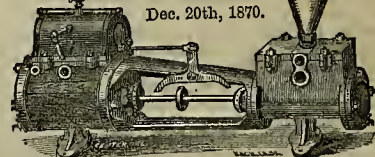
THE SELDEN DIRECT-ACTING STEAM PUMP,

A. CARR, Manufacturer & Proprietor.

Patented

Aug. 2d. 1870.

Dec. 20th, 1870.



Combining simplicity and durability to a remarkable degree. Its parts are easy of access, and it is adapted to all purposes for which Steam Pumps are used.

As a Mining Pump it is Unsurpassed.

—ALSO—

STEAM, GAS & WATER PIPE, BRASS WORK, STEAM & WATER GAUGES, FITTINGS, ETC.

CARR PATENT STEAM RADIATOR.

Send for Price List and Circulars. Address,

A. CARR,

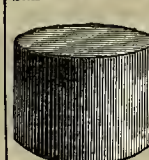
10v28-1y

43 Courtland Street, New York.

STEEL SHOES AND DIES

FOR QUARTZ MILLS,

Made by our improved process after many years of patient research and experiment. We have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for



Strength,

Durability

and

Economy.

Will wear three times longer than any iron Shoes.

BUILDERS AND CONTRACTORS

Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and general Mining Machinery in all its details and furnish of Mining Supplies.

All orders promptly filled.

MOREY & SPERRY,

88 Liberty St., N. Y.

Examination solicited.

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The New Wilson SEWING MACHINE

Has points of superiority over all others. A reliable warranty is given with each machine for

FIVE YEARS.

It is unequalled for light and heavy work. Examine and compare it with the highest priced machine in the market.

G. A. NORTON, Gen. Ag't for the Pacific Coast.

337 Kearny St., S. F.

2v27-2m-bp-ly

PRICE, \$50.

PURCHASERS please say advertised in Scientific Press.

WARING ROCK DRILL COMPANY.

SOLE PROPRIETORS AND MANUFACTURERS OF

WARING'S IMPROVED SELF-FEEDING

Rock Drill,

BY FAR THE MOST

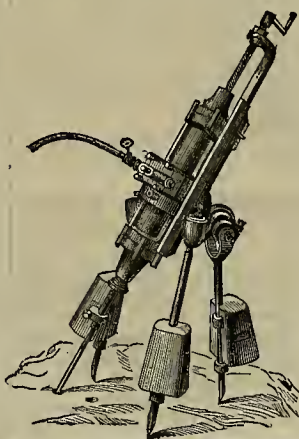
Simple and Effective Machine

FOR ALL DESCRIPTIONS OF

MINING, RAILROAD AND QUARRY WORK.

Office, 835 Broadway, Cor. 13th street,

NEW YORK.



10v28-6m

UNION IRON WORKS,

Sacramento.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS,

CROSS' PATENT BOILER FEEDER AND SEDIMENT

COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for new and old cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,
SACRAMENTO CITY.

THOMPSON BROTHERS,

EUREKA FOUNDRY,

129 and 131 Beale street, between Mission and Howard,
San Francisco.

LIGHT AND HEAVY CASTINGS,

of every description, manufactured, 24v16gr

OCCIDENTAL FOUNDRY,

137 and 139 First street.....SAN FRANCISCO.

STEIGER & BOLAND,

IRON FOUNDERS.

IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Rolling Pan and Callahan Grate Bars, suitable for Burning Screenings.

Notice.—Particular attention paid to making Superior Shoes and Dies.

20v26-3m

Miners' Foundry and Machine Works,

CO-OPERATIVE,

First Street, bet. Howard and Folsom, SAN FRANCISCO

Machinery and Castings of all kinds.

Dunn & Kewin, Pattern and Model Makers,

Globe Iron Works, Nos. 143 and 145 Fremont street,
between Mission and Howard, S. F.

1v28-6m

BUY BARBER'S BIT BRACE.

CROCKER'S PATENT
TRIP HAMMER QUARTZ BATTERY.



This machine, complete, weighs 1,500 lbs. Has an iron frame, five steel arms with stamps weighing 17 lbs. each, which strike 200 blows per minute, in a mortar provided with screens on both sides, and crushes fine 60 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$400.

G. D. CROCKER,
1726-tf 315 California street, San Francisco.

THEODORE KALLENBERG,
MACHINIST,

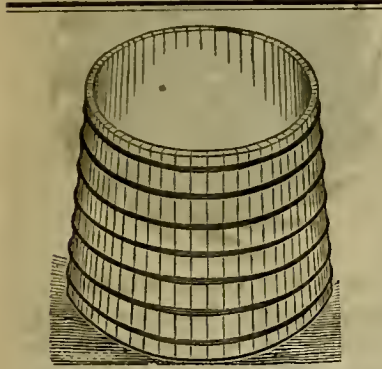
and Maker of Models for Inventors. All kinds of Dies Stamps and Punches made. Also, all kinds of Small Gears Cut.

Repairing done on very Reasonable Terms and in the best manner. No. 32 Fremont street, S. F. 19v23-3m

STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

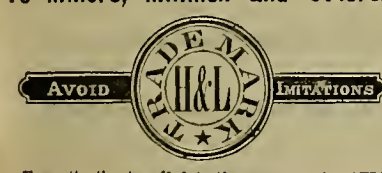
10v27-tf J. HENDY, No. 32 Fremont Street.



WATER TANKS of any capacity, made entirely by machinery. Material the best in use; construction not excelled. Attention, dispatch, satisfaction. Cost less than elsewhere.

WELLS, RUSSELL & CO.,
Mechanics' Mills, Cor. Mission & Fremont Streets.
3v28-3m-sa

AXLE GREASE.
To Miners, Millmen and Others.



Your attention is called to the very superior AXLE GREASE manufactured by us for over 18 years.

Recent improvements in the chemical arrangement of the lubricants used in its manufacture render it as serviceable on the lightest buggy as on the heaviest team.

The extensive demand for the H. & L. Axle Grease has enabled the proprietors to reduce its price to as low a rate as any of the inferior compounds, which are continually being forced upon the market.

See that the trade-mark (H. & L.) is on the red cover of the package, and take no other.

HUCKS & LAMBERT,
Manufacturers & Sole Proprietors,
SAN FRANCISCO.

Factory.....145 Natoma Street.
Depot.....312 Jackson Street.
10v5-lambp-ly

FRANCIS SMITH & CO.,
MANUFACTURERS OF

HYDRAULIC PIPE

AND
Artesian Well Pipe.

Having the Latest Improved Machinery, we can make it an object to

Mining & Water Companies

OR
WATER WORKS,

TO CONTRACT WITH US FOR
SHEET IRON PIPE.

ALL SIZES MADE AND ALL WORK GUARANTEED

OFFICE AT 112 BATTERY ST.,
SAN FRANCISCO. 1v3-tf

Brittan, Holbrook & Co., Importers of
Stores and Metals, Tinners' Goods, Tools and Machines;
111 and 11 California St., 17 and 19 Davis St., San Francisco, and 178 J St., Sacramento.

Metallurgy and Ores.

JOHN TAYLOR & CO.,
IMPORTERS OF AND DEALERS IN

ASSAYERS' MATERIALS

Chemical Apparatus and Chemicals,
Druggists' Glassware and Sundries,
PHOTOGRAPHIC GOODS, ETC.,

512 and 514 Washington street, SAN FRANCISCO

We would call the special attention of Assayers Chemists, Mining Companies, Milling Companies Prospectors, etc., to our large and well adapted stock of

ASSAYERS' MATERIALS

—AND—
Chemical Apparatus,

Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.

Our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for computation of assays in Ores and Grammes, will be sent free upon application.

7v25-tf JOHN TAYLOR & CO.

Varney's Patent Amalgamator.

These Machines Stand Unrivaled.

For rapidity pulverizing and amalgamating ores, they have no equal. No effort has been, or will be spared to have them constructed in the most perfect manner and of the greatest number built in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits.

They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows:

The pan being filled, the motion of the miller forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular flow between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.

Settlers made on the same principle excel all others. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed.

Mill-men are invited to examine these pans and settlers for themselves, at the office, 229 Fremont Street, San Francisco

Important to Miners and Mill Men.

Silver-Plated Copper Amalgamating Plates, for Saving Gold.

Of all sizes and in any quantity, furnished to order. Full instructions sent for operating. Particular attention given to plating goods for Builders, Plumbers, etc. Hotel and Restaurant work repasted.

SAN FRANCISCO GOLD AND SILVER PLATING WORKS,
655 Mission street, San Francisco,
2v25-3m E. G. DENNISTON, Proprietor.

CHARLES F. KIRCHNER,
Sampler and Crusher of Ores,
NO. 11 DRUMM STREET,
San Francisco.

ORE BAGS FOR SALE

IN QUANTITIES TO SUIT.

Apply to
CROSS & CO.,
etf 316 California street, San Francisco.

Richardson & Co., Copper Ore Wharves, SWANSEA.

RICHARDSON & Co. have been for thirty years established in Swansea as Agents for the preparation, Sampling, Assaying, and sale of Copper, Silver, Gold, Lead, Zinc, and all other Ores and Metals, for which they have extensive Warehouses and Wharves under cover, 1,000 feet of Quay Frontage within the Floating Dock, and the most complete Machinery and Appliances. They are also prepared to make advances against Ores in anticipation of realization, and to guarantee all payments when required. 2v26-ly

RODGERS, MEYER & CO.,
COMMISSION MERCHANTS,

ADVANCES MADE

On all kinds of Ores, and particular attention

PAID TO
CONSIGNEES OF GOODS.
4v16-3m

G. W. STENO, W. L. STENO.

STRONG & CO.,
Metallurgical Works,

No. 10 Stevenson Street, near First, SAN FRANCISCO.

We purchase high grade Gold and Silver Ores, Bullion, Etc. Ores worked and tested made with care; also, Ore Assays of Gold, Silver, Copper, Lead, Tin, Iron, Manganese, Cinnabar, Nickel, Etc.

LEOPOLD KUH,
(Formerly of the U. S. Branch Mint, S. F.)
Assayer and Metallurgical

CHEMIST,
No. 611 Commercial Street,
(Opposite the U. S. Branch Mint,
SAN FRANCISCO CAL. 7v21-3m

CALIFORNIA
Quartz Crushing & Ore Sampling
MILLS.

Nos. 413 & 415 Mission st., bet. First & Fremont, S. F.



Ours is the OLDEST, LARGEST and MOST EXTENSIVELY KNOWN establishment of this kind on the Coast.

Our mills are under the direct supervision of one of the most experienced Samplers and Millmen in the country, and we purpose carrying on the business upon a scale commensurate with the wants of the mining public.

We have the best facilities for Crushing, Sampling and Pulverizing all classes of Gold, Silver, Copper and Lead Ores and other minerals.

We also crush and pulverize all kinds of Marble, Fire-Clay, Bricks, Coke, Cement, etc., upon the shortest notice, for which we have special mills.

Reliable information furnished to miners and ore dealers concerning shipments, freights, prices, etc. Prompt execution of all orders. Faithful attention to business entrusted to us.

Abundant storage room without extra charge.

1v31-tf "JIM" WHITLATCH, Sup't.

E. N. RIOTTE, JAS. L. BEYEA, S. O. BROWN.
AUBURN MILL COMPANY,
Reno, Nevada.

Purchase Silver Ores in quantities of ten tons and upwards, delivered on board the cars at San Francisco or Oakland at the annexed Net Rates, WITH NO CHARGE FOR SAMPLING OR REDUCTION. On lots of less than 10 tons, freight to Reno will be deducted.

Special Rates for Gold Ores.

On Gold contained in Silver Ores to the amount of \$30 and upwards, 50 per cent. will be paid. When less than \$30, and above \$10, the amount will be added to the Silver value. Sacks promptly returned free of charge. Ores sampled by Battery or Sampling Mill as shipper may select, and returns made promptly by check on San Francisco.

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66 27	93 39	129 48	175 58	263 67	469 77	800 77	1000 78	1000 78	1000 78
70 28	95 40	133 50	184 59	275 69	480 78	800 78	1000 78	1000 78	1000 78
73 30	98 41	137 51	190 61	288 70	490 79	800 79	1000 79	1000 79	1000 79
76 31	100 42	141 52	200 62	300 71	500 80	800 80	1000 80	1000 80	1000 80
80 33	107 43	146 53	220 63	330 72	500 80	800 80	1000 80	1000 80	1000 80
84 35	112 44	150 54	230 64	375 74	1000 83	1000 83	1000 83	1000 83	1000 83
88 37	119 45	155 55	240 65	400 75	2000 84	2000 84	2000 84	2000 84	2000 84

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16v20-3m JOHN F. LOHSE, Secretary.

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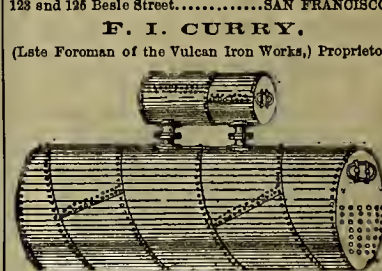


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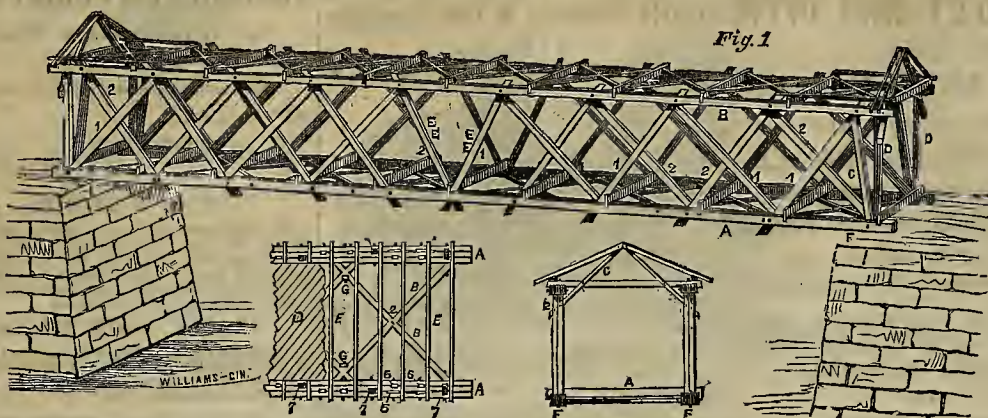
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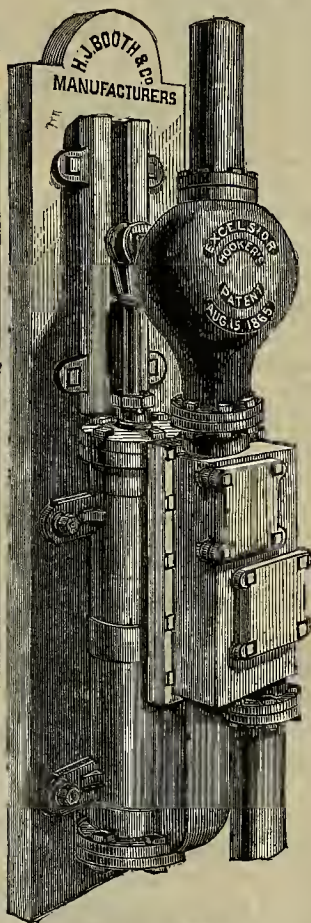
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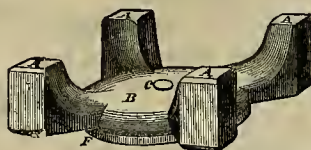
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Particular attention paid to construction of

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224 Sansome Street, SAN FRANCISCO,

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EASTERN IRON KEG POWDER,

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SAN FRANCISCO, SATURDAY, MARCH 21, 1874.

VOLUME XXVIII
Number 12.

The Banner Mines, Idaho.

Banner District, Idaho, is about 28 miles east of Idaho city. The district is a new one, although some work was done on the ledges in the district eight or nine years ago; but they remained undeveloped, as there was no mill in the neighborhood. Work was started up there lately, and the Wolverine mine, particularly, is being thoroughly prospected. They have run a tunnel in 339 feet through the solid rock, and struck the ledge with very fair ore, five feet in width. A shaft, already sunk, is 75 feet in depth, and the tunnel will connect with it. Mr. G. W. Crafts, at present in this city, is now building a 20-stamp mill in the district, which will be furnished with roasting furnaces, pans, etc. Mr. Crafts informs us that it will probably be completed in August. Mr. Crafts is owner of the Wolverine mine, above referred to, and is building the mill to crush ores from that mine. He will, however, be prepared to work small lots of ore for other miners in the district.

The ores in this district assay all the way from \$40 to \$900 per ton, varying from \$18 to \$40 in gold, and the balance in silver. The country in the vicinity is almost entirely unprospected, though there are many other ledges taken up, but not developed to any extent. The district is on the belt of quartz running to Atlanta district, Alturas county, about 50 miles distant. Several locations have been made on this belt.

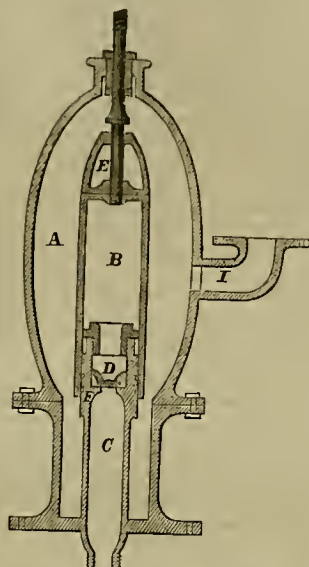
The facilities for wood and water in the district are excellent. There is plenty of water for steam purposes. A road was completed last year out through the mines. There is no settlement or town in the district as yet but Mr. Crafts informs us that there will be several hundred men there this spring. It is a fine healthy country, with some snow, but no winds. Grass is plenty all summer. There are placer mines within six miles of there now being worked by Chinamen. This part of Idaho Territory has heretofore been neglected but some considerable attention is now being called to it and the erection of the mill in this district will do much to develop the mines. The quartz interests in all that vicinity are now looking up. A new mill is now being erected near Idaho city, and some ore of good quality has been lately struck on Summit Flat near by. There is room for a good deal of prospecting in that part of Idaho; and, if the new mills are successful, it will doubtless cause many new mines to be opened.

WHEELER'S SURVEY.—The expedition for the geographical and geological surveys west of the 100th meridian, of which the parties under charge of Lieutenant George M. Wheeler, of the Corps of Engineers, has been in the field for the years 1869, 1871 and 1873, will, as soon as final action is taken by Congress, resume their field of operations in the spring in portions of Colorado territory. One party will be designated to prosecute the service over the unfinished parts, and over the area represented by their atlas sheet, No. 61, which is situated between parallels 39° and 37°, 10° and 105°, 30° and 315°, 15° longitude west from Greenwich. This is especially the section where there are manifold forms embracing portions of the headwaters of the San Juan and its northern tributaries; also of the Gunnison and Green rivers, where there are several prominent mountain ranges, among them the Sierra Lelata, Sierra San Miguel and Elk mountains. It is a part of the most elevated portion of the interior of the continent. Many are being attracted toward this section in search of precious minerals, and large numbers of miners are seeking the San Juan district, which vicinity promises a large and interesting field. Their work upon the Astronomical Survey will be resumed, and such astronomical parties as the appropriation will allow will be put into the field. From the remaining balance other field parties will soon be organized. In view of the amount available, they will take the field prior to the first of July.

CAPITAL IN UTAH.—It is stated that nearly half a million of dollars have been brought to Salt Lake city, within the past thirty days, for investment in mining property.

Purification of Quicksilver.

Mill men and miners all know that dirty quicksilver is not so good to work with as that



Improved Force and Lift Pump.

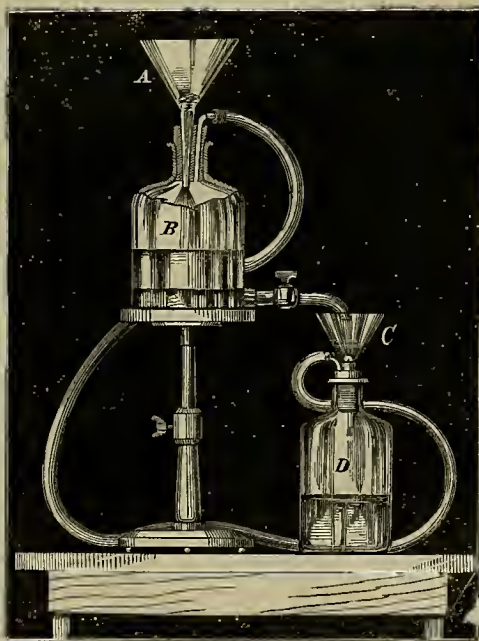
that is clean. In practical work in mills and hydraulic claims, or in investigations carried on in physical laboratories, and in the volum-

tube was partly filled with dilute nitric acid, and was provided with a stop cock below, or with a bent tube, so that a short column of mercury might balance a long column of acid.

The device recommended in the *Scientific American* by Prof. Leids, of the Stevens Institute of Technology, consists of a glass funnel, A, (see cut), capable of holding five or ten pounds of mercury, the tube of which is cut off at a point just below the stopper of the bottle, B. Cotton wool is jammed into the tube until it fills up the neck, and bulges out at the bottom of the funnel. A short glass tube bent at right angles passes likewise through the india rubber stopper of the bottle, and is connected with a water air-pump. The bottle is two-thirds filled with dilute nitric acid (one part of acid and four or five parts of water). The impure mercury poured into the funnel, A, is drawn through the cotton plug in a multitude of streams, and passes as a fine rain through the acid below. The foreign metals, if not in too large quantities, are removed by solution in the acid, and the pure mercury collects below. It is then run off through the stop cock into a second funnel, C; and, after being thoroughly dried by suction through another plug of cotton wool, it is caught and preserved in the bottle, D. A short time suffices for the almost automatic purification of a large quantity of mercury.

Delaney's Improved Pump.

Edward J. Delaney of San Jose, Santa Clara county, has recently received through the Scientific Press Patent Agency, a patent for a lift and force-pump, which possesses some peculiar improvements, worthy of note. It consists in a novel arrangement of a hollow plunger, which operates within the outer case and air chamber, and fits closely around the



APPARATUS FOR PURIFYING QUICKSILVER.

etric analysis of gases, a large quantity of mercury is employed. And as it is very readily contaminated, a method for its rapid and convenient purification is important. Such a method must provide for the removal of the three kinds of impurities which are usually present: First, foreign metals, especially lead, zinc, and tin; secondly, common dirt and dust; and thirdly, water or other liquids.

The most convenient device hitherto employed was a long glass tube, into which the mercury was poured through a paper funnel, the funnel having a pin hole at the bottom, and serving to retain the dirt and dust. The

induction pipe. In connection with this plunger is a peculiar arrangement of the valve, and a ring for holding the packing. By referring to the accompanying cut, the method of operation will be seen.

A is the air-chamber, having a proper stuffing-box at the top through which the piston-rod works. The air chamber is attached to a hollow stand secured to a base plate in the ordinary way. The induction pipe, C, is made to fit closely where it passes through this base plate, and its upper part is somewhat larger than the lower. This part is made smooth and has grooves, I, made around it, which serve to hold

the water for packing purposes. The plunger, B, is a hollow cylinder, and fits closely over the upper part of the induction pipe, C, the water between the two in the grooves, F, serving to make it work tight. The induction valve, D, is fitted to rise and fall within the induction pipe, C, near the top, being supported upon the seat, and guarded by snitable arms. At the top of the induction pipe, C, a ring is screwed on as the cut shows. This ring has a flange which nearly fills the inside diameter of plunger. The pipe, C, is turned somewhat smaller outside just below its top, and this space allows a packing to be used and held in place by the ring.

The discharge valve, E, is conical in shape, and fits around the piston as shown, a collar just above it preventing too great a lift. The operation is as follows: The plunger, B, being drawn up, the valve, E, remains closed, and a vacuum is produced within the plunger, which causes the valve, D, to open and allow the space to fill with water. When the plunger, B, is again depressed, the water will close the lower valve and open the upper one, whence the water escapes into the air chamber, A, and out of the discharge pipe I.

Legislative Report—State University.

The Committee on Education, A. Higbie, Chairman, has made a report, giving a detailed statement of their visit to the State University, to the Deaf, Dumb and Blind Institution, and to the Normal School at San Jose. The Committee expresses itself as much pleased with the appearance of the new site and grounds of the University, the buildings erected, the class rooms, etc. They also report that the Professors appear to have been faithful in the discharge of their duties.

They recommend that snitable buildings should be erected at Berkeley for the accommodation of the Professors, with their families, and such of the students as choose to remain permanently near the University. The present necessity for spending the day at the University and the night at Oakland, five miles away, is both inconvenient and expensive. In addition to these improvements it is considered very important that arrangements should be made at an early day for practical operations in farming, which would involve the erection of snitable farm buildings, the provision of teams, implements, tools, etc.

The committee say that "the time has come when the farmer and mechanic, and their sons must have equal opportunities, and be as thoroughly educated in their honorable and responsible calling as the lawyer, the physician or the clergyman in their professions." "These facts," adds the Committee, "are realized in Europe."

The Committee appears to differ from the opinion expressed by President Gilman, in his late address before the Legislature, that the Agricultural Colleges in the various States have come about of what should be considered a success. They say:—"We think we are warranted in saying that these colleges may be regarded, everything considered, not only a gratifying success, but as a means of lessening the distance in the educational work between the high and low, the richer and the poorer classes of the community."

The report favors the suggestion contained in the memorial of the Patrons of Husbandry, that the Board of Regents should more fully represent the entire State, by being selected from its different sections, etc.

The Committee hold that the Professor of Agriculture, especially, should have his residence upon the University grounds, and be supplied with the means for imparting practical instruction in the field. They say that those who had authority have "failed to carry into effect propositions made two or three years ago, by which the Professor of Agriculture might carry out this plan," which the Committee think would have been of great advantage to the University. The Committee, however, expressly disavow attaching any fault in the matter to any one connected with the management of the general affairs of the University. "Nobody to blame," of course.

Reese river now empties into the Humboldt for the first time in years.

MECHANICAL PROGRESS.

A New Railroad Snow-Plow.

In view of the rough times experienced along the line of the railroad recently, the following description of a novel snow-plow, from the *New York News*, will be found interesting:

For years the genius of railroad men has been exercised in trying to invent some method of overcoming the accumulated snows that seriously impede travel, and even bring the iron horse with its attendant train to a state of fixity, forbidding either advance or retreat; but heretofore every device has proved futile against the great barriers that are piled up over the track, sometimes in a few hours. At length, however, a device has been invented which it is thought will overcome the most formidable obstacle of this sort—that will easily and entirely vanquish the enemy, and make traveling by railroad as safe and facile in the winter as in any other season of the year.

Mr. Benjamin W. Hitchcock whose name has been familiar in connection with suburban improvements, while seated in his real estate office opposite the railroad depot at West Flushing during a snow-storm in the early part of last winter, observing the plank covered snow-catcher (the usual contrivance for shoving snow aside) on a train just passing, conceived the idea of elevating the snow and casting it aside by means of belts and pulleys with the assistance of shears and chutes, instead of the awkward but common method of "bucking" and forcing it away from before the train by main strength and stupidity. About the same time the newspapers published accounts of the frightful sufferings of several hundred men employed in constructing the new Pacific railroad, who had been "snowed in" at a point in Minnesota, one hundred miles from any settlement, entirely without food or any adequate means of protection against the extraordinary rigor of winter, and of the great exertions made for their rescue which was fortunately accomplished by the most arduous labor. The terrible experience of these poor fellows, wrought in Mr. Hitchcock a determination to test the efficacy of a plan he had conceived for opening a path through the deepest snows and clearing the track, by building a machine and putting it into practical use, feeling confident that in any case similar to that in Minnesota, life might be saved and uninterrupted travel secured by the invention. He accordingly employed a firm of machinists in this city to build a model after his plans. This model was completed, with such slight improvements on the original design, as suggested themselves as the work advanced.

The platform car upon which the structure is built is thirty feet in length. In advance is placed a frame twelve feet in length, elevated at an angle of forty-five degrees, and the top of which is about on a line with the front of the car. At the bottom of this frame is an iron plate and nose for breaking up and receiving the snow, which is caught up by iron huckets, four feet wide and eight inches high, attached to endless belts of rubber or canvas of immense strength, which revolve on cylinders of oak and iron, and thus carry their burden of snow to the tops of the frame and throw it upon the roof of the house covering the engines and part of the boiler, the other part of the boiler being covered by a still higher flat roof like the ordinary roof of a baggage car, excepting that it has a tower for a look-out and signal station, with glass sashes, some two feet higher than the roof.

When the snow is thrown upon the roof of the engine-house, which may be made with the pitch to one side, or both, as may be desired, large sliding shears give it direction, and the sloping roof assists its deposit away from the track on the side of the road. The roof and shears are covered with sheets of heavy zinc to afford a slippery surface. The present machine is built to discharge the snow on both sides of the track, at an elevation of six and a half feet, the railroad having but a single track. The motive power consists of a team of two ten-horse-power oscillating engines, with a twenty-five horse-power boiler—the engines driving the two upper cylinders upon which the belts revolve, by cog-wheels of great strength. The Snow Plow is intended to be used in advance of a locomotive, being pushed ahead to its work, and having its own machinery and power without depending upon either steam or force from the locomotive to do its track clearing.

GAS ENGINES.—Mr. Baher, British Inspector of Factories, mentions in his report, recently issued, that gas engines are coming into use in various trades, particularly for small letter-press printers and riband weavers. It is a cheap and easily applied motive power, whenever a solid foundation for the engine can be obtained. In the neighborhood of Coventry, he observes, steam power forming a considerable element of expense in the weaving of ribands, the gas engine has been applied to do the work of boys of thirteen or fourteen years of age, who used to turn the machinery, and the invention is acceptable as relieving labor of some part of its fatigue.

HEAVY.—Krupp's last big gun is 21 feet long, and throws a ball of 600 pounds, with a charge of 120 pounds of powder, and the last great ingot of steel forged under his 120,000 pound steam hammer, weighs 105,000 pounds.

Telodynamic Transmission of Power.

At the Paris Universal Exposition, the transmission of power by wire ropes, or telodynamic cables, as exhibited by M. Hirn, attracted great attention. This gentleman was among the first to distinctly enunciate the general principle upon which the economical transmission of power in this way could be secured, namely, the use of very light cables and wheels of large diameter, thus transmitting the power with high velocity, low tension on the cable, and the least amount of friction. The use of this method of transmission may be said to date in this country from the Paris Exposition; and, although the system has been adopted to a considerable extent in this country, it does not seem to have attained that extended application to which its merits entitle it.

According to Professor Barnard's report, the system of M. Hirn was successfully applied to the transmission of power through a distance of over three miles. It was M. Hirn's opinion that one hundred horse-power could be carried six miles without more than twenty-five per cent. of loss; and, although this estimate of loss is undoubtedly much below the mark, we know of no other system by which power could be transmitted to the same distance with greater economy. Compressed air passing through a pipe that length would, in ordinary practice, undoubtedly lose as much, through the loss of heat during the transmission, the friction of the air column on the walls of the pipe, and the friction of the engine at the terminus. Besides, the telodynamic system has a great advantage over any other, in point of first cost. According to M. Hirn, the pulleys need not be more frequent than once in two hundred and fifty feet. This being the case, power could be transmitted through a distance of one thousand yards by the use of two terminal pulleys, and two sets of intermediate carrying pulleys. The only cost, therefore, would be for these pulleys and their supports, and the cable by which the transmission is effected. While we do not doubt the practicability of transmitting power through very long cables, like those mentioned above, the difficulties undoubtedly increase in a larger ratio than the distances. The experiments made of propelling cars by cable on the elevated railway, running on the western side of this city, was a decided failure. Much of the difficulty in this case, however, arose from the necessity of stopping and starting cars. If continuous motion had been required, or if the starting and stopping could have been effected very slowly, it is probable the cable would have worked better. It was necessary, however, to attach the cars to the cable by a gripping apparatus, while the former was in motion, thus putting very sudden and great tension upon the rope and strain upon the machinery. Our own observations of the system of transmission of power by wire ropes, has satisfied us that for distances within from three to four thousand feet, it may be made the most economical, not only in first cost, but in cost of current repairs, of any system now known, while, at the same time, we believe it will compare favorably with any other system, when considered with reference to the percentage of the power of the prime motor it can transmit.—*Artsman*.

DESTRUCTIVE INGENUITY.—What may be termed a remarkable instance of destructive ingenuity is the new German infantry rifle, for metal cartridges, of an entirely new pattern and peculiar construction. The lock is an improved needle-lock arranged for self-cocking, and combining the simplicity and solidity of the needle system with quick and convenient loading, and with a rapidity of firing equal to the best rifles now in use. There are six parts to the lock, and the loading requires only three movements, namely, the opening of the chamber, by which operation the lock is cocked at the same time—throwing in one of the cartridges into its bed, it not being necessary to put it in exactly—and the closing of the chamber. The gun is now ready for firing. The empty cartridge is ejected at the next opening by means of an extractor fixed at the movable round of the chamber. The maximum number of shots per minute is twenty-four. The gun is constructed for ignition by pin or needle, as an exhibited chamber-round with screwed-in needle shows; the latter has only to be substituted for the chamber-round with pin, when a change is desired.—*Eng.*

INTERESTING TO INVENTORS.—The Council of the Society for the Promotion of Scientific Industry, in London, looking to the enormous waste there is in the consumption of coal, while its cost is every day increasing, have resolved that an exhibition shall be held in Manchester, of all appliances and apparatus that tend to the economic use and saving of fuel, for the purpose of inducing attention to, and eliciting opinions of practical men on the matter, and of giving all consumers of coal an opportunity of comparing the various appliances, with a view to their adoption of that which will best serve their purpose. The exhibition will comprise: 1st. Appliances which may be adapted to existing furnaces, etc., whereby an actual saving is effected in the consumption of fuel. 2d. Appliances which may be adapted to existing furnaces, etc., whereby waste heat is utilized. 3d. New steam generators and furnaces, boilers and engines specially adapted for the saving of fuel, appliances whereby waste products are utilized, and the radiation of heat prevented.—*N. S. Chronicle*.

SCIENTIFIC PROGRESS.

Spontaneous Generation.

All experiments thus far made with infusions of different substances, for the purpose of producing infusorial animalcules, appeared to prove that the access of air was necessary for their formation. Pasteur, who has extensively occupied himself with these investigations, found at last that the germs of these animalcules could, under certain circumstances, resist a temperature of 212° Fahr., as he obtained bacteria from solutions which had been previously boiled and afterward came only in contact with air which had been dried and purified by passing it through red hot pumice stone.

However, in 1869, Dr. H. Charlton Bastian took the matter up, and commenced trying if he could not produce animal life in a vacuum. He experimented with various fluids, especially infusions of hay and turnips; he placed them in one ounce flasks, having narrow drawn-out necks, and heated the solutions in them rapidly till they commenced to boil over, so as to be sure that all air was expelled; then he kept them boiling from a quarter to half an hour, while the steam was escaping with some force; then the neck was sealed up by melting the glass with a blow-pipe flame, while at the same time the heat was withdrawn. In this way he produced after some practice a perfect vacuum, that is to say, one where air was excluded, and only watery vapor present. The proof of this was that the water hammer effect was quite obvious; this means that the water could be made to fall with a shock from one end of the tube to the other, without passing an atmospheric bubble, as is the case when air is present. When the little flasks were thus prepared, they showed the development of bacteria and other minute moving organisms just as well as if they had not been submitted to great heat, and air had access. The time required for this phenomenon varied from a few hours to several days.

Even when the flasks, after being closed, were submitted for several hours to boiling water, the organisms appeared; and Dr. Bastian went even so far as to submit them for four hours to a temperature of 300°, and about 6° in excess, without preventing the subsequent development of the animalcules. He reasoned, then, as follows: As the germs cannot come from the air and pass through the glass, only one of two conclusions is admissible. 1. That the invisible germs of the animalcules are able to stand the heat of 306° without being killed; or (2) that living things can be evolved from non-living matter.

The first conclusion is that of Pasteur, and is based on the assumption of the old maxim *omne vivum ex ovo* (all life comes from an egg), deduced from the fact that it is known to be true for all the higher animals and plants, and that its extension to the lower forms of life, which are intermediate between animal and vegetable, is supposed to be a legitimate deduction on the ground of natural law.

The second conclusion is that defended by Dr. Bastian; he maintains that the doctrine of evolution, now established by an overwhelming weight of evidence, absolutely requires that living matter must at some time have arisen from that which was not living, and that, in absence of any reason to the contrary, the uniformity of natural law should lead us to believe that the process continues to take place. He says that all analogy is against the possibility of the assumed germs retaining their life after being subjected to a heat of over 300°. No living being that we know of can endure the heat of boiling water, 212°, except a few seeds of the higher plants, which are protected by a very hard and non-conducting coat. Most animals and plants, indeed, perish at a much lower temperature. With regard to the bacteria themselves, they are mere specks of naked protoplasm; they are utterly destroyed at 140°, as sufficiently proved by the numerous experiments made by Pasteur, Bastian, and others. It is unlikely, therefore, that they should have germs capable of enduring 306°.

Experiments were also made by Dr. Bastian with fluids capable, after being boiled, of nourishing bacteria when any were put into them, and of supporting their copious reproduction, though not evolving them anew, when enclosed in hermetically sealed vessels. The uniform result was that 140° not only kills all living bacteria, but also prevents the further development or reproduction of any germ which might be supposed to exist. The natural conclusion is that they do not exist, and therefore these experiments exploded the germ theory.

We hope that these investigations will continue so as to obtain uniform results; as only then can a full discussion of the possible explanations ensue. In the meantime, Dr. Bastian's experiments are drawing the attention of the most eminent philosophical naturalists. For instance, Alfred R. Wallace ranks Bastian's book as equal in value to Darwin's "Origin of Species," or Spencer's "Principles of Biology," especially in regard to "curious and novel facts," "new and astounding views of the origin of life," "excellent reasoning," and "acute criticisms."

There is, however, one point to which we wish to draw attention; it is the assumption

that these living organisms are evolved entirely from inorganic matter. This, we believe, is not strictly correct; the infusions all have organic origin; they are organic compounds, and it is well known that the organic compounds are not decomposed into their inorganic elements, except by actual combustion. Starch, sugar, gelatine, etc., are not destroyed, as such, by a temperature of 300°, therefore, if we attempt to generate living organisms from inorganic matter, we must not commence by using organic substances, but must confine ourselves to elements, or their simple inorganic chemical combinations.—*Scientific American*.

Circular Compass Needle.

M. E. Duchemer, addresses a note to the French Academy, in which he claims that a circular compass needle possesses the following advantages over the usual form:

1st. A magnetic power, for a given diameter, double that of a needle whose length is equal to this diameter.

2d. The existence of two neutral points instead of one, which has the effect of maintaining the position of the two poles constant; the magnetism seems to be so energetically preserved, that even the strongest sparks of a Holtz machine do not cause any displacement of the poles of the magnet.

3d. A more satisfactory means of suspending the magnet, when it is well mounted and balanced by a plate of agate; it seems then to move as if placed in a liquid.

4th. An increase in sensibility of the magnet proportioned to its diameter.

5th. The possibility of neutralizing the magnetism of the vessel by means of a second magnetic circle, changing the position by an amount calculated beforehand, and thus permitting the compensation of the compass before the sailing of the vessel. This idea was suggested by Capt. D. Venie.

NEW THEORY ABOUT COMETS.—At a recent meeting of the Lawrence, Kansas, Academy of Science, a paper entitled "Speculations on the Nature of Comets' Tails" was read by Professor F. W. Bardwell, who took the ground that a comet's tail is no more a part of the comet than is a shadow a part of the object which gives it form. He supposes that the resisting medium surrounding the sun for a great distance is itself self-luminous in a degree, as indicated by the zodiacal light; that the nucleus of a comet is merely a large meteorite; that in its rapid motion through the resisting medium near the sun, great heat is thereby developed, increased by the heat of the sun, causing some of the elements of the nucleus to become volatilized, and thus to present the phenomena of the coma with its glowing gas; and, finally, that the bright train called the tail is merely an effect of an increased luminosity of the portion of the resisting medium behind the comet, caused by the action of the sunlight and passed through the glowing gas of the coma, and projected beyond in a form usually approached that of a conical surface. He predicts that, on the appearance of a comet with a bright train, the tests of spectrum analysis will show that this train is not nebulous, as Bessel and others have supposed, and not of a meteoric character like that of the nucleus, as Schiaparelli and Le Verrier suppose; but chiefly of a zodiacal nature, and probably, in a slight degree, reflecting sunlight.

THE ACTION OF ACIDS UPON ZINC.—At the recent meeting of the French Association for the Advancement of Science, M. Gourdon, of Lyons, described some novel facts which he had observed in the action of acids upon zinc covered with certain metals. Zinc plunged into dilute solutions of sulphuric, hydrochloric and acetic acids, is attacked only at the points where other metals are present. The metals which produce this phenomenon with most intensity are cobalt, platinum, nickel and iron. Ammoniacal chloride of cobalt renders it possible to perforate zinc with water containing only one 10,000th part of sulphuric acid. M. Gourdon applies these results to various procedures for engraving. By writing directly upon zinc with different metallic inks, making use of the most active, containing salts of cobalt for the blackest parts, and passing it then into acidulated water, an engraved plate is obtained. To reproduce leaves or plants, they are soaked in solutions of metallic salts and applied to the zinc, which is then treated with weak acids. The author has discovered a new kind of heliographic engraving by transferring the silver from an ordinary photographic proof upon the zinc, which can be attacked by the acids on the parts where the silver has been deposited.

LIGHTS FOR VESSELS.—At a late meeting of the Manchester Scientific and Mechanical Society, a paper was read by Mr. J. Hacking. One means suggested was by supplying vessels with feelers, in the shape of long poles fixed to their bows, which should signal the approach of danger. His next proposal was that every vessel should carry an apparatus composed of some flexible or rigid material, to be in readiness to place over any leak. A discussion followed, in which considerable doubt was expressed as to the applicability of the plans proposed. Prof. Reynolds said there was some difficulty in the adoption of the first plan, but he thought the second might be of service. Mr. Moorsom was of opinion that neither proposal was feasible. What was wanted was better lights, and he thought the time was coming when the electric light would be generally used on board ships.—*Iron*.

CORRESPONDENCE.

American Fork District Utah.

Editors Press:—This district is south east of, and adjoins Little Cottonwood, is distant from Salt Lake city, about 45 miles via the Utah, Southern and American Fork Railroads, and 35 miles via Little Cottonwood.

In this district is found milling ore, but principally smelting ore, carbonates, sulphates and galena. The principal mine in this district is the Miller, the property of the

Miller Mining and Smelting Company.

Who also own the Sultana Smelting works, four miles east of the Miller, and situated in Forest city.

The principal shareholders of the Miller Mining and Smelting Company are General Lloyd, Aspinwall, and Mr. Howland, of New York. The ore is brought to the smelter by means of a tramway, which, after leaving the mine at a steep pitch, winds itself through Mary Ellen gulch, around the mountain side at a sufficient elevation to give it a good grade. The Miller mine is developed on the south side of the hill by the Mormon tunnel 700 feet long, the main tunnel, with incline and extension drift, more than 800 feet long; from this extension drift ran two inclines toward Mormon tunnel, and from the main tunnel a shaft 92 feet deep, down upon Howland tunnel, (a branch of the Mormon tunnel); the Alpine tunnel, 85 feet long; Lady Annie May tunnel, 50 feet long; Emilino tunnel, 187 feet; Last Hope tunnel, over 200 feet; Aspinwall shaft, 73 feet deep.

On the north side of Miller hill, the Lady Annie tunnel, 354 feet; Baskin tunnel, 25 feet. The Mormon tunnel struck ore at a length of 600 feet, the vein being 3, and at some places 5 feet wide. This ore contained 47 ounces silver and from 35 to 50 per cent. of galena, but was difficult to work on account of a great percentage of sulphates of iron. The vein lies between slate and limestone; 15 feet below the slate was the quartzite formation.

The Last Hope tunnel begun in September 1873, is run up to the present date, already 200 feet, so that the Miller mine has a very fair prospect for this year.

Between the Last Hope and Mormon tunnels lie all the other tunnels, which were working out and following principally pockets of carbonate ores. The smelting works consist of three cupolas, engines and blowers, and were built in 1871, shortly after the incorporation of the company.

The mine at present is under the superintendence of Mr. Epley, a California quartz miner.

The Wild Dutchman,

Close to the Sultana smelter, largely developed, is yielding a considerable amount of ore, of high grade. They have sold a considerable quantity to the Miller Co.

The London Tunnel Company

Are washing away with hydraulic on the opposite side of the hill, south from the Miller, for float, and have sold considerable to the Miller Co. The Mary Ellen and the Live Yankee have both fine prospects, with large quantities of ore in sight.

The Wyoming Company

Is developed by two tunnels and one shaft. It is rumored that the Miller Co., have bought this mine, which contains considerable good ore.

The Silver Gleaner

On the ridge opposite, south of the Miller, is developed by two tunnels. Fine and rich milling ore in sight. It is a very good mine.

The Roessler Mine,

West of the Miller, owned by Messrs. E. Roessler, W. Bredemeyer and Good, has a vein of galena, 2½ feet wide, assaying 67 ounces in silver and 54 per cent. in lead. The vein is a true fissure vein, formation, quartzite. On this mine is an incline 50 feet deep, and a drift of 30 feet, all upon the vein. The vein is traceable down the mountain for 1,200 feet.

The Caribou Mine

Is worked by a tunnel 36 feet long, and a shaft 35 feet deep, upon the vein. The vein is 3 feet wide. Their ore is galena intermingled with quartzite and sulphates of iron. It assays 140 ounces in silver, one-half ounce in gold and 35 per cent. lead. Its situation on the hill is such that a tunnel 150 feet long, would strike the vein again, having 1,000 feet of ore above.

The War Eagle,

Is developed by one tunnel and one shaft. It is on the same vein as the Caribou, and is owned by Hirschman Brothers of Salt Lake city.

The Pillsburg

Is largely developed; ore in great quantity, but low grade. Mr. Kennedy is superintendent.

The Queen of the West.

Is opposite the Caribou. Vein 3 to 5 feet wide; ore galena; percentage, 47 ounces silver, 70 per cent. lead, formation, quartzite. Developed by tunnel 200 feet long, and a shaft upon the vein.

The Moavogue and Bredemeyer No 2.

Is as yet little developed. Vein galena, 2½ feet wide. Assay 47 ounces silver, and 35 per cent in lead. Owners, E. L. Moavogue and D. Bredemeyer.

American Fork district has numerous other mines, but little developed. There is plenty of water, fuel and good roads all around. This district will produce this year a great quantity of ore, and will certainly draw public attention towards it. It is certainly worth the notice of capitalists.

W. BREDEMAYER.

Utilization of Pyrites Residue.

The process invented by Mr. Gibbs for the utilization of pyrites residue after the manufacture of sulphuric acid has been well described by Mr. Ch. Mene in an interesting communication to *La Houille*. The pyrites treated, chiefly those of Spain, generally contain copper worth extracting. The residue, which still contains, perhaps 4 per cent. of sulphur, is mixed with fresh pyrites, so as to raise the contents of sulphur to about 5 per cent.; 7 per cent. of rock salt is then added, and the mass having been mixed, is roasted for 12 hours at scarcely a dull-red heat. This is done in a reverberatory furnace, the sole of which is formed by a turn-table. The sulphur under the influence of the oxygen charges the chloride of sodium into sulphate of sodium. In treating the mass by water, sulphate of soda and chloride of copper go into solution, and the insoluble residue consists almost entirely of oxide of iron, which is sold to the ironmasters, and turned to account by them. There remains to be extracted from the solution the soda and the copper, and these two processes are made by Mr. Gibbs, to work into each other. Firstly, the copper is thrown down as sulphate by sulphuretted hydrogen, and the precipitate is converted into a coppery matte (On2S) in a reverberatory furnace; the matte is subsequently roasted, and then refined into a malleable and very pure copper. Besides the copper, the pyrites usually contains a little silver. To extract it, the first portion of the precipitate (that containing the first 5 per cent. of the whole of the copper, determined by analysis) is set aside. This precipitate contains all the silver which is extracted, and sold as chloride of silver.

Returning to the treatment of the sulphate of soda, which was mixed with the chloride of soda in the first solution, the object is, on the one hand, to transform it into carbonate of soda which is salable; and, on the other, to recover the sulphuretted hydrogen which has been used for the separation of the copper. The solution whence the copper has been precipitated is evaporated. The sulphate of soda is then mixed with coal, and the mixture in the reducing flame of a reverberatory furnace; with ½ ton of sulphate, the operation lasting three hours. Sulphide of sodium is thus obtained, and is dissolved out with warm water, in a closed vessel to avoid the introduction of air. Into this solution (the strength of the solution is such that it will give one-fourth or one-fifth of its weight in salt of soda) a current of carbonic acid is introduced, the sulphuretted hydrogen is disengaged, and goes to precipitate the copper, as has just been explained, and the soda passes into the state of salt of soda after the evaporation of the solution.

The carbonic acid is produced by means of two cupolas, one containing coke and other carbonate of lime. In the first a current of air passing through gives carbonic oxide, and in the second this carbonic oxide, by suitable admission of air, burns, and gives carbonic acid from the decomposition of the carbonate of lime. The sulphuretted hydrogen disengaged is entirely absorbed, for it will not precipitate quite all the copper, the last portions have to be separated by the addition of a little scrap-iron. The process is interesting, as showing that when scientific processes are suitably applied they often become industrial, practical, and lucrative.

THE OLD TRUCKEE DISTRICT.—W. F. Osborn, who was Recorder of Truckee Mining District at the time that the leads in that region were first located, arrived here two or three days since from California, and is making arrangements with some of the old-time owners of the mines formerly worked to resume operations on them early this spring. All the leads are rich in argentiferous galena, the assays from several of them averaging from \$200 to \$350, and it is thought that they can now be made to pay well for working, so great are the advances that have been made by our people in the art of smelting ores. At the time the mines of Truckee District were first opened there were no furnaces in operation in the country, and there being no demand for ores that required to be smelted the original owners of the mines (all poor men) were forced to abandon them. The district lies to the east of Reno, in the direction of Pyramid Lake.—*Enterprise*.

"IS THERE COAL IN THE SAGEBRUSH?"—From a specimen shown us last evening by Frank Wittenberg we should say there was a good prospect for coal. Messrs. Wittenberg, Mendes & Co., have just made a valuable discovery. They have discovered an extensive bed of coal, the locality of which is within forty miles of Eureka. The exact place will not be made known for a few days as the surveys are not yet completed. The vein as far as developed is about four feet thick, but the indications are that it will become more extensive as depth is attained.—*Eureka Sentinel*.

PROSPECTING—that great work which adds so much to the wealth and prosperity of the country—will be more vigorously prosecuted during the coming summer than for years past, throughout the coast.

Lake County Mines, Colorado.

In Lake county there has been some ten or twelve lodes found in the vicinity of Iowaglnch the ore from which assays from 150 up to 200 ounces per ton in silver, and from thirty to forty per cent. lead. The crevices are very large, some of them in limestone and some in gneiss wall-rock.

At the head of Evans gulch, there has been some eight paying lodes found in granite wall-rock, which can turn out about eight tons per day of ore that will pay 150 ounces per ton in silver, and twenty per cent. lead, mill samples.

About Oro City there has been tea lodes opened, which are very rich in silver and gold, and as the ore also contains iron and lead, it cannot be treated at the stamp mills; so all the mines are laying idle waiting for some enterprising person to erect smelting works in that part of Colorado.

Nineteen miles from Oro City is located the Homestake mine owned by Messrs. Archer and McFadden of Denver. They are now working five men getting out ore, and four men driving a tunnel, which when completed, will be 234 feet long, and will cut the vein seventy-five feet below the first tunnel. The tunnel will reach the vein by August or September, 1874, and will give them all the ground they can stoop out in twenty years, including what they have from first tunnel.

The first tunnel is fifty feet long, and the mine is worked east and west from tunnel—300 feet on east level, and 275 feet on the west level, which gives fifty feet stopping ground to surface on east end, and on west end seventy-five feet. There is a railroad in the tunnel from east end to west end, and a tramway 600 feet long from tunnel to foot of mountain. The tramway is built on a trestling ten feet from the ground, so that snow storms cannot block it up and stop the work. Cars run into the mine, are filled, attached to a wire rope ¾ inch thick and let down the tramway while the empty cars come up. There is a good wagon road to the foot of the tramway.

There have been two drills at work on the mine, driving levels, five months in 1873; fifty-four tons of ore have been shipped to Denver, and there are about seventy-five tons on dump. The ore shipped to Denver is worth \$225 per ton. That on dump is worth \$100 per ton.

This is one of the best locations in Colorado for smelting works. There is no work of the kind in Lake county, and parties contemplating their erection, would do well to visit that part of the Territory, and see for themselves the many advantages offered by that section to encourage such an enterprise.—*Denver Tribune*.

The Morgan Mill.

The *News* has the following about the Morgan Mill, situated on the Carson River, a short distance east of Empire.

All of the machinery connected with the mill was in the completest order, and running like clock work. The engine-room was very clean. There was not a drop of grease to be seen on the floor, which was as white as that of a Shaker church. The engine was a beauty to behold. In the engineer we recognized our old-time friend, W. O. Broadhead, a very companionable gentleman. At the mill we saw in operation a pump involving the principle of the famous Archimedean screw. It stands at an angle of thirty degrees, and daily pumps up to the top of the building the refuse water from the settlers, together with about twenty tons of sand. Several years ago a gentleman applied for a patent for a pump of this description, but was chagrined to learn that the same kind of pump was in use on the banks of the Nile thousands of years ago.

Among the improvements recently made at the mill is an immense blauket flume, containing five sluices, each 600 feet in length, the superficies of the whole amounting to 3,600 feet. We had a very pleasant chat with the efficient foreman, A. J. Lockwood, to whom we were indebted for many courtesies.

SAN JUAN.—The *Washington Republican* says: The San Juan mining regions which are now attracting so much attention, are to receive the special attention of Professor Hayden, United States geologist, in his explorations during the coming season. * * * The mines are located near the "Park of Las Animas," and from the mountains flow many streams in a southerly direction, such as the Rio de la Plata, Rio de Las Animas, Rio Florida and many others. Flowing eastward, parallel with this range, is the great Rio Grande Del Norte, with most of its tributaries. All the streams mentioned have their sources not very distant from the mines, and each stream flows through a valley capable of sustaining a large agricultural community, thus making the entire region self-sustaining, both in mining and agriculture. This portion of Colorado has attracted so much attention that there are now from fifteen to twenty thousand people waiting for the season to open sufficiently to admit of the prosecution of mining operations and settlement by agriculturists.

MINING SALE.—The *Nevada Transcript* says: We understand that Mr. Nickerson, who lives on Wolf creek below the Lime Kiln, in this county, is about selling his mine at that place. The mine is supposed to be rich in quick-silver.

Ventilating Mines.

Necessity and experience combined often bring to light and put into useful practice new and almost invaluable improvements in the working and development of our deep and wonderful mines—things that appear very simple of themselves, but which add incalculably to the economy of the work and the comfort of the workmen. That of which we would now speak is a new method for the ventilation and cooling of long drifts and tunnels, extending away from the shafts and regular air currents in the deep, lower levels of the mine. This is a matter that has been much studied, and many have been the various plans suggested, and it would take hundreds of thousands of dollars to cover the cost of the expenditures in fitting up the different kinds of blowers, air-compressors and other machinery devised for that purpose. But, says the *Gold Hill News*, it has been left to James G. Fair, Superintendent of the Hale & Norcross, Gould & Curry and Virginia Consolidated mines, to put into practical use one of the cheapest, simplest, and yet most invaluable improvements now in use. It consists of simply extending one end of the top cap of a set of timbers 18 inches beyond the usual length required, and making that amount of extra excavation. Then a partition of inch boards is carried up on the inside of the drift timbers, next to the excavation, leaving a clear open space on the outside, of 18 inches in width, the full height of the tunnel timbers. This division forms a complete draft, carrying the pure air from the outside in, and the foul air from within out, making the most complete ventilation possible. The draft of air thus created cools the sides and face of the drift, gives the workmen pure, healthful breathing, and thus enables them to do double the amount of labor, in comparative comfort. This principle Mr. Fair has put into practice in driving the north drift on the 1,900-foot level of the Hale & Norcross mine, which drift has been driven a distance of 249 feet from the main incline, with the most perfect ease and comfort to the miners. He is now engaged in putting the same plan in use on the lower level of the Gould & Curry, and expresses an undoubted faith in being able to run a drift in that manner to any required length whatever. The principal involved is certainly one of the soundest, and, should it be deemed necessary, the partition can be carried back and made to connect with a shaft from which there is always a good circulation of pure air. This improvement is undoubtedly a step ahead, in the right direction, and one well worthy the consideration of mining men throughout our State.

TWENTY-NINE PALM DISTRICT.—The new gold discoveries in San Bernardino county, about eighty miles from the town of San Bernardino, known as the Twenty-nine Palms, are attracting considerable attention. The *San Bernardino Guardian*, of the 7th inst., has the following in relation to them: William Smith, just in from the Twenty-nine Palms, brings us the best mineral news which we have yet heard. Of course these mines have already developed richly, but recent developments prove them to be the richest quart-producing mines on this Coast. We speak advisedly, having full confidence in the judgment and integrity of our informant, who is one of the most experienced quartz miners in the State. At a depth of 35 feet on a new incline, the ore is extraordinarily rich in gold, and the rock grows richer gradually as they sink. This is by far the richest gold vein yet found, even in that very rich mineral section. All doubts, even by the most skeptical, as to the existence of extensive and rich gold-quartz veins, are now completely dispelled. The Twenty-nine Palms is not only one of the richest mineral camps in the country, but it is absolutely certain that it is also one of the most extensive. These mines have already been located for a distance of five miles, on a north and south line; and the ore from every location develops quite as richly as that from the original one.

A GRAND SUCCESS.—The huge inverted syphon of the Virginia and Gold Hill Water company, which carries the water across Washoe Valley, is proving a grand success. It is now ninety days since it has been necessary to even so much as pass along the line to look at it. Day and night, warm or cold, it pours from the Sierras its constant volume of pure and sparkling water. Notwithstanding the severity of the winter, there has been little trouble with either the flume in the Sierra Nevada Mountains, which conveys the water to the inlet of the syphon, or that which brings the water from the outlet to the city. Having stood the test of such a winter as the present little fear of trouble at any future time need be entertained.—*Enterprise*.

THE MINING OUTLOOK.—It is gratifying to be able to state that at no time in the history of Reese River district has the mining outlook appeared as flattering as at present. The mines on Lander Hill are turning out a large amount of rich ore and have large quantities in sight. At Yankee Blade, New York Canon etc., a great deal of good ore is being produced and, as a rule, chlorides are doing well and making money. We are safe in saying that the billion product for 1874 will exceed that of 1873 by fully one half.—*Reveille*.

SHIPMENT OF ORE.—The largest shipment of ore ever made in one day on the Virginia and Truckee Railroad was made last week, and consisted of 1,177 tons.

Weekly Variations in Stocks.

[Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.] For 6 days ending Wednesday, Mar. 18, 1874.

NAME OF COMPANY.	IN MINES.	STOCKS.	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.						
Alamo.	300	6000	13 1/2	12 1/2	1/2	1/2
Alpine.	3000	2000	1 1/2	1 1/2	1/2	1/2
Alta.	1500	18000	1 1/2	1 1/2	1/2	1/2
Arizona & Utah.	300	24000	1 1/2	1 1/2	1/2	1/2
Bacon M. & M.	100	24000	1 1/2	1 1/2	1/2	1/2
Baltimore.	100	24000	1 1/2	1 1/2	1/2	1/2
Belcher.	100	24000	1 1/2	1 1/2	1/2	1/2
Best & Balcher.	100	24000	1 1/2	1 1/2	1/2	1/2
Bowers.	100	24000	1 1/2	1 1/2	1/2	1/2
Buckeye.	100	24000	1 1/2	1 1/2	1/2	1/2
California.	100	24000	1 1/2	1 1/2	1/2	1/2
Chollar-Potosi.	100	24000	1 1/2	1 1/2	1/2	1/2
Confidence.	100	24000	1 1/2	1 1/2	1/2	1/2
Con. Gold Hill Quartz.	100	24000	1 1/2	1 1/2	1/2	1/2
Con. Virginia.	100	24000	1 1/2	1 1/2	1/2	1/2
Copoc.	100	24000	1 1/2	1 1/2	1/2	1/2
Crown Point.	100	24000	1 1/2	1 1/2	1/2	1/2
Dansey.	100	24000	1 1/2	1 1/2	1/2	1/2
Dardanelles.	100	24000	1 1/2	1 1/2	1/2	1/2
Eclipse.	100	24000	1 1/2	1 1/2	1/2	1/2
Empire M. & M.	100	24000	1 1/2	1 1/2	1/2	1/2
Eschschuer.	100	24000	1 1/2	1 1/2	1/2	1/2
Farmington.	100	24000	1 1/2	1 1/2	1/2	1/2
Flower.	100	24000	1 1/2	1 1/2	1/2	1/2
Franklin.	100	24000	1 1/2	1 1/2	1/2	1/2
Globe.	100	24000	1 1/2	1 1/2	1/2	1/2
Gould & Curry.	100	24000	1 1/2	1 1/2	1/2	1/2
Hale & Norcross.	100	24000	1 1/2	1 1/2	1/2	1/2
Imperial.	100	24000	1 1/2	1 1/2	1/2	1/2
Indus.	100	24000	1 1/2	1 1/2	1/2	1/2
Insurance.	100	24000	1 1/2	1 1/2	1/2	1/2
Jacob Little.	100	24000	1 1/2	1 1/2	1/2	1/2
Julia.	100	24000	1 1/2	1 1/2	1/2	1/2
Justice.	100	24000	1 1/2	1 1/2	1/2	1/2
Kentuck.	100	24000	1 1/2	1 1/2	1/2	1/2
Knickerbocker.	100	24000	1 1/2	1 1/2	1/2	1/2
Kossub.	100	24000	1 1/2	1 1/2	1/2	1/2
Lady Bryan.	100	24000	1 1/2	1 1/2	1/2	1/2
McMeans.	100	24000	1 1/2	1 1/2	1/2	1/2
Mint.	100	24000	1 1/2	1 1/2	1/2	1/2
Nevada.	100	24000	1 1/2	1 1/2	1/2	1/2
New York Con.	100	24000	1 1/2	1 1/2	1/2	1/2
Occidental.	100	24000	1 1/2	1 1/2	1/2	1/2
Opbir.	100	24000	1 1/2	1 1/2	1/2	1/2
Overman.	100	24000	1 1/2	1 1/2	1/2	1/2
Phil. Sheridan.	100	24000	1 1/2	1 1/2	1/2	1/2
Pitkin.	100	24000	1 1/2	1 1/2	1/2	1/2
Rock Island.	100	24000	1 1/2	1 1/2	1/2	1/2
Savage.	100	24000	1 1/2	1 1/2	1/2	1/2
Seg. Belcher.	100	24000	1 1/2	1 1/2	1/2	1/2
Seg. California.	100	24000	1 1/2	1 1/2	1/2	1/2
Seg. Rock Island.	100	24000	1 1/2	1 1/2	1/2	1/2
Senator.	100	24000	1 1/2	1 1/2	1/2	1/2
Serra Nevada.	100	24000	1 1/2	1 1/2	1/2	1/2
Silver Hill.	100	24000	1 1/2	1 1/2	1/2	1/2
South Comstock.	100	24000	1 1/2	1 1/2	1/2	1/2
South Overman.	100	24000	1 1/2	1 1/2	1/2	1/2
Succor M. & M.	100	24000	1 1/2	1 1/2	1/2	1/2
Sutro.	100	24000	1 1/2	1 1/2	1/2	1/2
Trench.	100	24000	1 1/2	1 1/2	1/2	1/2
Tyler.	100	24000	1 1/2	1 1/2	1/2	1/2
Union Con.	100	24000	1 1/2	1 1/2	1/2	1/2
Utah.	100	24000	1 1/2	1 1/2	1/2	1/2
Woodville.	100	24000	1 1/2	1 1/2	1/2	1/2
Yellow Jacket.	100	24000	1 1/2	1 1/2	1/2	1/2
NEVADA.						
Adams Hill.	100	24000	1 1/2	1 1/2	1/2	1/2
Alps.	100	24000	1 1/2	1 1/2	1/2	1/2
Amador.	100	24000	1 1/2	1 1/2	1/2	1/2
American Flag M. & M.	100	24000	1 1/2	1 1/2	1/2	1/2
Arkansas.	100	24000	1 1/2	1 1/2	1/2	1/2
Belmont.	100	24000	1 1/2	1 1/2	1/2	1/2
Bowers.	100	24000	1 1/2	1 1/2	1/2	1/2
Brannan M. & M.	100	24000	1 1/2	1 1/2	1/2	1/2
Charter Oak.	100	24000	1 1/2	1 1/2	1/2	1/2
Chief of the Hill.	100	24000	1 1/2	1 1/2	1/2	1/2
Chief East Extension.	100	24000	1 1/2	1 1/2	1/2	1/2
Columbus M. & M.	100	24000	1 1/2	1 1/2	1/2	1/2
Condor.	100	24000	1 1/2	1 1/2	1/2	1/2
El Dorado South.	100	24000	1 1/2	1 1/2	1/2	1/2
Eureka Con.	100	24000	1 1/2	1 1/2	1/2	1/2
Excelsior.	100	24000	1 1/2	1 1/2	1/2	1/2
Harper.	100	24000	1 1/2	1 1/2	1/2	1/2
Hayes.	100	24000	1 1/2	1 1/2	1/2	1/2
Hernest.	100	24000	1 1/2	1 1/2	1/2	1/2
Home Ticket.	100	24000	1 1/2	1 1/2	1/2	1/2
Hubb & Hunt.	100	24000	1 1/2	1 1/2	1/2	1/2
Ingram.	100	24000	1 1/2	1 1/2	1/2	1/2
Ironhorse.	100	24000	1 1/2	1 1/2	1/2	1/2
Jackson.	100	24000	1 1/2	1 1/2	1/2	1/2
Josephine.	100	24000	1 1/2	1 1/2	1/2	1/2
Junata Con.	100	24000	1 1/2	1 1/2	1/2	1/2
K. & K. Con.	100	24000	1 1/2	1 1/2	1/2	1/2
Kentucky.	100	24000	1 1/2	1 1/2	1/2	1/2
Kinston.	100	24000	1 1/2	1 1/2	1/2	1/2
Lehigh.	100	24000	1 1/2	1 1/2	1/2	1/2
Lillian Hill.	100	24000	1 1/2	1 1/2	1/2	1/2
Louise.	100	24000	1 1/2	1 1/2	1/2	1/2
McMahon.	100	24000	1 1/2	1 1/2	1/2	1/2
Marion.	100	24000	1 1/2	1 1/2	1/2	1/2
Meadow Valley.	100	24000	1 1/2	1 1/2	1/2	1/2
Mocking-Bird.	100	24000	1 1/2	1 1/2	1/2	1/2
Monitor-Belmont.	100	24000	1 1/2	1 1/2	1/2	1/2
Murphy.	100	24000	1 1/2	1 1/2	1/2	1/2
Newark.	100	24000	1 1/2	1 1/2	1/2	1/2
Pacific Tunnel.	100	24000	1 1/2	1 1/2	1/2	1/2
Pace & Panca.	100	24000	1 1/2	1 1/2	1/2	1/2
Peavine.	100	24000	1 1/2	1 1/2	1/2	1/2
Phoenix.	100	24000	1 1/2	1 1/2	1/2	1/2
Pioche.	100	24000	1 1/2	1 1/2	1/2	1/2
Pioche West.	100	24000	1 1/2	1 1/2	1/2	1/2
Pioche-Phoenix.	100	24000	1 1/2	1 1/2	1/2	1/2
Portland.	100	24000	1 1/2	1 1/2	1/2	1/2
Raymond & Ely.	100	24000	1 1/2	1 1/2	1/2	1/2
Rye Patch.	100	24000	1 1/2	1 1/2	1/2	1/2
Silver Peak.	100	24000	1 1/2	1 1/2	1/2	1/2
Silver West Con.	100	24000	1 1/2	1 1/2	1/2	1/2
Standard M. & M.	100	24000	1 1/2	1 1/2	1/2	1/2
Star Con.	100	24000	1 1/2	1 1/2	1/2	1/2
Starlight.	100	24000	1 1/2	1 1/2	1/2	1/2
Sterling.	100	24000	1 1/2	1 1/2	1/2	1/2
Spring Mountain.	100	24000	1 1/2	1 1/2	1/2	1/2
Spring Mt. Tunnel.	100	24000	1 1/2	1 1/2	1/2	1/2
Ward Beecher.	100	24000	1 1/2	1 1/2	1/2	1/2
Washington & Creole.	100	24000	1 1/2	1 1/2	1/2	1/2
Watson.	100	24000	1 1/2	1 1/2	1/2	1/2
Yellowstone.	100	24000	1 1/2	1 1/2	1/2	1/2
CALIFORNIA.						
Alpine.	100	24000	1 1/2	1 1/2	1/2	1/2
Bellevue.	100	24000	1 1/2	1 1/2	1/2	1/2
Calaveras.	100	24000	1 1/2	1 1/2	1/2	1/2
Cedarberg.	100	24000	1 1/2	1 1/2	1/2	1/2
Chariot Mill.	100	24000	1 1/2	1 1/2	1/2	1/2
Con. Amador.	100	24000	1 1/2	1 1/2	1/2	1/2
Cottonwood Creek.	100	24000	1 1/2	1 1/2	1/2	1/2
Dunderberg M. & M.	100	24000	1 1/2	1 1/2	1/2	1/2
El Dorado.	100	24000	1 1/2	1 1/2	1/2	1/2
Eureka.	100	24000	1 1/2	1 1/2	1/2	1/2
Gillis.	100	24000	1 1/2	1 1/2	1/2	1/2
Independent.	100	24000	1 1/2	1 1/2	1/2	1/2
Keystone.	100	24000	1 1/2	1 1/2	1/2	1/2
McJannet.	100	24000	1 1/2	1 1/2	1/2	1/2
Oakville.	100	24000	1 1/2	1 1/2	1/2	1/2
St. Lawrence M. & M.	100	24000	1 1/2	1 1/2	1/2	1/2
St. Patrick.	100	24000	1 1/2	1 1/2	1/2	1/2
Tombs.	100	24000	1 1/2	1 1/2	1/2	1/2
Yule Gravel.	100	24000	1 1/2	1 1/2	1/2	1/2
IDAHO.						
Empire.	100	24000	1 1/2	1 1/2	1/2	1/2
Golden Chert.	100	24000	1 1/2	1 1/2	1/2	1/2
Ida Elmore.	100	24000	1 1/2	1 1/2	1/2	1/2
Mabogany.	100	24000	1 1/2	1 1/2	1/2	1/2
Red Jacket.	100	24000	1 1/2	1 1/2	1/2	1/2
South Chariot.	100	24000	1 1/2	1 1/2	1/2	1/2
War Eagle.	100	24000	1 1/2	1 1/2	1/2	1/2
WHITE PINE.						
Gonsale.	100	24000	1 1/2	1 1/2	1/2	1/2
Mammoth.	100	24000	1 1/2	1 1/2	1/2	1/2
Noonday.	100	24000	1 1/2	1 1/2	1/2	1/2
Orig. Hidden Treas.	100	24000	1 1/2	1 1/2	1/2	1/2
Silver Wave.	100	24000	1 1/2	1 1/2	1/2	1/2
Ward Beecher.	100	24000	1 1/2	1 1/2	1/2	1/2
UTAH.						
Deseret Con.	100	24000	1 1/2	1 1/2	1/2	1/2
Wellington.	100	24000	1 1/2	1 1/2	1/2	1/2
Virgie.	100	24000	1 1/2	1 1/2	1/2	1/2

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.									
Company.	Location.	No.	Amt.	Levied.	Delin.	nt.	Sale.	Secretary.	Place of Business
Alpha Gold M & M Co	Amador Co Cal	6	100	Mar 10	April 14	May 7	J F Lightner	433 California st	
Alps S M Co	Ely District	2	25	Feb 2	Mar 13	April 6	G F Balcom	426 Montgomery st	
American Flat M Co	Gold Hill	3	50	Feb 11	Mar 16	April 6	G W R King	434 California st	
Amador Tunnel & M Co	Ely District	2	100	Feb 5	Mar 12	April 6	L Kaplan	Merchants' Ex	
Andes S M Co	Wa-boc	1	50	Mar 2	April 6	April 27	Edward Landers	507 Montgomery st	
Arizona and Utah M Co	Gold Hill	1	75	Mar 11	April 6	April 16	J Maguire	419 California st	
Baltimore Cons M Co	Nevada	3	100	Jan 5	Mar 1	April 27	W H Watson	302 Montgomery st	
Bellevue M Co	Cal	2	200	Jan 24	Mar 3	Mar 24	D F Verdinal	409 California st	
Caledonia S M Co	Gold Hill	7	7	3 Jan 30	Mar 5	Mar 5	R Wegener	414 California st	
Caroline M. Co.	Ely District	4	50	Jan 17	Mar 12	Feb 27	R H Brown	402 Montgomery st	
Chief of the Hill	Ely District	4	50	Mar 9	April 15	May 7	C S Neal	419 California st	
Condor S M Co	Ely District	2	25	Jan 27	Mar 7	Mar 28	G T Grimes	240 Montgomery st	
El Dorado South Cons M Co	Nevada	3	100	Feb 26	Mar 31	April 11	W Willis	419 California st	
Eschequer M Co	Gold Hill	10	30	Feb 9	Mar 13	April 4	D T Bagley	401 California st	
Globe M Co	Gold Hill	6	75	Mar 11	April 16	May 4	J Maguire	419 California st	
Gould & Curry S M Co	Washine	2	100	Jan 23	Feb 28	Mar 20	A K Durbrow	Merchants' Ex	
Hubb & Hurn S M Co	Ely District	3	30	Mar 1	April 16	April 27	W H Watson	402 Montgomery st	
Klunkerbocker M Co	Idaho	12	100	Feb 12	Mar 19	April 11	W Willis	419 California st	
Independent M Co	Cal	5	50	Feb 10	Mar 14	April 4	G T Grimes	240 Montgomery st	
Julia M Co	Washoe	17	200	Feb 10	Mar 16	April 4	A Noel	419 California st	
Kentucky G. S. & M. Co.	Ely District	7	25	Jan 3	April 27	April 27	W Ed Smith,	419 California st	
Knickerbocker M Co.	Gold Hill	8	100	Feb 14	Mar 21	April 10	Henry Boyle	Stevenson Building	
Mabogany G. & M Co	Idaho	1	50	Feb 25	April 7	April 127	T J Owens	215 Sansome st	
Mammoth S M Co	White Pine	10	100	Mar 3	April 13	May 4	J L King	434 California st	
Mar G. S. & M Co	Washoe	1	100	Feb 10	Mar 16	April 13	W Ed Smith,	419 California st	
Newark S M Co	Ely District	6	100	Feb 13	Mar 25	April 18	D T Bagley	401 California st	
New York Cons M Co	Gold Hill	8	101	Feb 17	Mar 20	April 27	H C Kibbe	419 California st	
Ophir S M Co	Washine	28	60	Feb 10	Mar 25	April 6	Jeph Marks	419 California st	
Orion S M Co	Ely District	6	100	Jan 19	Mar 26	April 6	W Ed Smith,	419 California st	
Pioche West Ex M Co	Nevada	5	25	Feb 27	April 6	April 29	T L Kimball	409 California st	
Rock Island G. & S M Co	Nevada	100	Feb 28	April 2	April 2	April 2	J W Clark	418 California st	
Ree Patch Cons M & M Co	Nevada	2	100	Feb 28	April 2	April 2	J W Clark	418 California st	
Richmond M Co	Washoe	5	500	Mar 5	April 8	April 29	E B Holmes	419 California st	
Silver Peak M Co	Ely District	4	75	Jan 28	Mar 5	Mar 28	G T Grimes	240 Montgomery st	
South Charlot M Co	Idaho	9	200	Feb 24	Mar 30	April 27	Frank Swift	419 California st	
Spring Mt Tunnel Co	Ely District	2	25	Jan 27	Mar 7	April 6	W Ed Smith,	419 California st	
Thurston M & M Co	Placer Co Cal	5	50	Feb 25	April 1	April 20	R B Noyes	41 1/2 California st	
Tyler M Co	Washoe	4	30	Mar 8	April 16	April 30	A K Durbrow	Merchants' Ex	
Union Cons S M Co	Washoe	5	50	Mar 6	April 5	April 27	M J Buntington	Merchants' Ex	
W. S. M Co	Oregon	4	100	Feb 20	Mar 10	April 6	E B Holmes	402 Montgomery st	
Washington & Creole S Co	Ely District	4	100	Feb 9	Mar 14	April 6	F D Cleary	Merchants' Ex	
Wells M & S Co	Utah	4	25	Feb 17	Mar 24	April 14	R Wegener	414 California st	
Woodville M Co	Gold Hill	6	100	Mar 9	April 13	May 2	A Noel	419 California st	
Yellow Jacket M Co	Washoe	17	500	Feb 10	Mar 14	April 15	S W Hopkins	Gold Hill	

our local obtained while there on Thursday, of the Nevada Quartz Mine (Soggs') situated on Deer creek, a mile below Nevada City. This mine is now only 300 ft. deep. While sinking the shaft the last 100 ft. it was found that the ledge had been broken; lots of trap rock coming in; but this week, while drifting on the lowest level, on the north side, about 30 ft. from the shaft, the men found a well defined four-foot vein, which shows free gold that it does one's eyes good to see. The rock from this drift will probably mill \$50 per ton, while on the same side about 50 ft. from surface is a smaller vein, of decomposed quartz, out of which the foreman took a dollars worth of gold from a horn-full of dirt. Attached to this mine is a fifteen-stamp mill which is kept running all the time.

NEVADA ITEMS.—*Transcript*, Mar. 14: Messrs. Jones & Keith intend erecting a quartz mill in the rear of Keith's blacksmith shop, near the plaza, shortly. It will be run by water power, and they are already at work on the wheel, which will be 24 feet in diameter, and will afford power enough to run all the machinery of the mill. There will be two batteries having two stamps each. The latest improved pans, and machinery of all kinds, are intended to be put in.

STRUCK IT RICH.—We were yesterday shown some very fine looking rock, which came from a ledge situated on American Hill, near town. The rock is filled with sulphurets, and is rich in free gold. This ledge is about sixteen inches thick and prospects well. Messrs. J. F. Carr and Thomas Miner are the owners. They are now engaged in further prospecting it.

SEVEN-THIRTY MINE.—*Union*, March 18: This mine is situated near Deadman's Flat, about 5 miles south-west from Grass Valley. A year ago it was sold to Mr. Burroughs. A few days ago Mr. Burroughs sold the mine to E. P. Sanford and R. D. McCook. The purchasers commenced work a day or two ago on the Seven-Thirty by sinking a new shaft on the ledge. This new shaft has shown well in free gold. In one day a candle-box full of specimens came out, and the gold in that rock is estimated to be worth about \$500. We saw a chunk of the rock yesterday, about the size of a big man's fist, which was valued at from \$40 to \$50. The Seven-Thirty was sold a year ago, for a delinquent tax of from \$30 to \$40. The purchasers can pick up their money anywhere on the ledge.

OUR GRANITE QUARRIES.—Few of our people realize the importance of the extensive granite ledges lying just back of Santa Cruz. The Parson's quarry, and the quarries on Baelder's land up to Blackhorn creek, have lately been inspected by parties from the city and are pronounced superior to the quarries at Folsom. A railroad will be built from the beach to the quarry and a line of vessels kept constantly employed transporting the blocked marble to San Francisco. Hundreds of men will necessarily be employed in and about the business, should the quarries of this section be purchased by the city paving company.

PLACER.

HYDRAULIC MINING AT BATH.—*Argus*, March 14: We learn that the Roush mine is not working very extensively at present, owing to the scarcity of water, caused by the cold weather, but as soon as the snow commences to melt there will be an abundant supply; from indications, this claim promises to be one of the finest in Placer. The Paragon, to the east of the Roush, appears equally as good, although more expensive to work, on account of the great predominance of rock and cement. The Hazard mine, in Volcano Canon, is now prospecting better than ever before; the Hazard is very hard and should have a stamp mill in order to free the gold from the cement. This claim has been in operation almost two years without any encouraging prospects until the present time, when the developments are quite favorable.

SANTA CRUZ COUNTY.

GOLD IN GOLD GULCH.—*Enterprise*, March 14: Recently, parties have been prospecting for gold in the region of country of this county, near Santa Cruz, known as Gold Gulch, located on Mr. Treat's ranch, and have found such a flattering prospect as to make it highly probable that a company will soon be organized to secure of Mr. Treat the right to proceed with the work of sluicing. The quality of gold found is fine indeed, and is in sufficient quantity to justify no small outlay in order to proceed successfully with the work. An old and experienced miner has made a thorough exploration of the ground and pronounces it rich. Some lucky man may yet find the lead from which the notorious holder from which \$50 was taken, had parted, and awaken some little interest in the development of our mines.

SIERRA COUNTY.

LOSING THE LEAD.—We are informed, on very good authority that an item recently appearing in our Mining Summary in relation to the North America Mining Co., Sierra county, having lost their lead, is wholly incorrect. The statement was made on the authority of a correspondent of the *Mountain Messenger*, from which paper we copied the item. The correspondent was no doubt mistaken, as the North America Co., although the bed-rock in their main drifts has lately been lower than usual, never had a better lead than they have at present, and their prospects were never better.

SANTA CRUZ COUNTY.

SANTA CRUZ OIL REGION.—*Enterprise*, March 13: A gentleman of much observation in the appearance of, and manner of working oil wells in Pennsylvania, has just returned from a two-days' visit to the oil regions of this county, lo-

cated just back of Sonnet, and says the indications of an abundant supply of crude petroleum are far better than at many places in the East, where, through moderate boring, a great flow was obtained. Some specimens of coal, and slates, or slates casings, which to his mind evidence the fact of extensive coal deposits, were brought away. The oil is oozing from the region in quantities that justify saving it for refining purposes. Mr. Peasley, the superintendent, says that more than a barrel of crude petroleum per day can be gathered that will yield some ninety per cent. of pure oil. This region is, of late, attracting much attention, and is destined to be most thoroughly prospected for deposits of both coal and oil. That there is oil in abundance somewhere in that vicinity is proven by the constant flow of a very superior quality of crude petroleum; but the amount of boring required to procure a paying flow is a matter yet to be tested.

TRINITY COUNTY.

WATER PLENTY.—*Journal*, March 14: For the first time in several weeks, miners everywhere in the county are at work with all the water they can use. It is but fair to presume that the extreme cold weather is now at an end, and that water will be plenty for the next five or six months.

GETTING READY.—Mr. D. W. George, Superintendent of the Weaver Ditch and Hydraulic Mining Company, arrived last Monday evening, and has since been very actively engaged in making preparations for commencing work on the West Weaver Ditch. To-day (Friday) they will go into camp at the old Mountain House; and, if the weather is reasonably good, work will commence with the next week. A large quantity of necessary tools have arrived from below, and provisions, cooking utensils, etc., have been purchased here, and forwarded to the camp. Everything will be pushed with all possible dispatch, and those interested, confidently expect to have both ditch and mine in running order early in May.

PAYING WELL.—Hager & Haas, on the hill back of Junction City, have a good claim, and are making it pay. They made a clean-up the other day, taking out over \$2,000 from a run of four weeks. Of this amount, \$648, or nearly one-third of the yield, was saved in their under-current. Last fall this company ran a 7-ft. bed-rock tunnel of 225 ft., for the purpose of obtaining more fall, and have put in a 4-ft. flume, on a grade of 8 inches to the box, and a 12-ft. under-current, 36 ft. in length, with 12 inches grade to the box. This week they commenced running through the new flume and expect to run off much more dirt than formerly. Hager & Haas own the first right to the waters of Clear Gulch, which lying on the south side of the mountain has kept their ditch filled all through the cold weather, and will keep up the supply until late in the season.

VENTURA COUNTY.

PITB.—*Signal*, March 14: Mr. Griffin Robbins, just in from the Pitb mines, says that a wealthy company is constructing a large flume. The miners are confident that the mines will prove a success. The work is stopped for the present, owing to the heavy snow, which is three feet deep on the top of the mountains. Work will be resumed early in April.

Nevada.

ELY DISTRICT.

MEADOW VALLEY.—*Pioche Record*, March 7: Work progresses satisfactorily in the various drifts and shafts of this mine, and the mills at Dry Valley, belonging to the same company are kept constantly running. A great number of men are employed by the company. Yesterday the Summit shaft was down 976 ft. and sinking still continued. The west drift from the fifth station, Summit shaft, is being pushed ahead rapidly, and the indications in this part of the mine continue favorable. No. 3 shaft is fast approaching the 1,200-ft. level, and looks as well as ever.

PORTLAND.—The drifts are running east and west, and the ore being raised continues of that kind noticed by us last week. The developments in the mine surpass the expectations of the most sanguine.

RAYMOND & ELY.—The shaft is down 1,190 ft., and sinking continues; in a day or two a new station (the twelfth) will be put in. Drift from the tenth station is in to the ledge, and some good ore is met with. Stopping is going on between the seventh and eighth levels as usual. The supply of ore is not as great as it has been heretofore.

HIGHLAND.—The works of the east drift is under good headway, and some ore is in sight. Preparations are being made for hoisting and a short time Highland district will add its quota of bullion to shipments from Pioche.

PIOCHE.—On Monday last started drift from a depth of 600 ft. in the new shaft, which is being pushed rapidly for the ledge. Some splendid ore was hoisted yesterday from the old shaft.

CAROLINE.—Indications are regarded as very favorable.

CHIEF EAST.—Ore is being extracted from the 225-foot level, and there are now about 40 tons of ore on the dump.

AMERICAN FLAG.—The mine continues to be worked with energy.

NEWARK.—Shaft down 820 feet. The usual number of men are kept at work sinking.

HUGH AND HUNT.—Prospects of reaching the ledge continue. Drifting continues, and all the surroundings are favorable.

PIOCHE WEST.—Drifting for the ledge commenced a few days ago.

WASHINGTON AND CREOLE.—Sinking and drift-

ing continue. Appearances are still encouraging.

SILVER PEAK.—Incline down 500 feet, at which point the ledge widens, and has greatly improved in character.

WASHOE DISTRICT.

OTHER.—*Gold Hill News*, Mar. 12: There is no particular change to note of the prospecting operations on the 1,300-ft. level. The winze from the 1,465-ft. level has apparently passed through the west ore body, which was found to be even richer than it was on the level above. The ore body, where penetrated in the winze, pitched sharply to the east, and hardly leaves a doubt but that it will continue to below the 1,700 ft. level.

CONSOLIDATED VIRGINIA.—The ore stopes and breasts on the 1,000, 1,200 and 1,300-ft. levels all continue to look splendidly. The north winze is down to the 1,400-ft. level, the entire distance in good ore. The bottom of this winze is still in magnificent ore, some of the tub samples yesterday assaying as high as \$800 per ton. Sinking the main shaft is making steady headway.

CROWN POINT.—Daily yield, 500 tons of ore, from the 1,000, 1,200, 1,300 and 1,400-ft. levels. All of the ore breasts on the three first named levels are looking well. The north winze, on the 1,400-ft. level, has attained a vertical depth of 52 ft., all the way in good ore. The middle winze, on the 1,400-ft. level, is down 22 ft., also in good ore. The three floors which have been opened up on this level, are producing a large amount of ore of excellent quality. On the 1,500 ft. level, the main south drift following the course of the foot wall, is being driven ahead vigorously with a view of intersecting the middle and north winzes. The water on this level is decreasing rapidly and in a short time it is expected that the level will be entirely drained.

BELCHER.—Daily yield, 550 tons of ore. The main incline is down 126 ft. below the 1,400-ft. level, in hard blasting rock. The east drift, at the 1,400-ft. station, is in 100 ft., also in hard blasting ground. The winze, from the 1,300-ft. level, is down past the 1,400 ft. level, and is being continued on down to reach and ventilate the 1,500-ft. level. The ore is being extracted mostly from the 1,000, 1,200 and 1,300-ft. levels.

SIERRA NEVADA.—Daily yield, 65 tons of ore, keeping the mill steadily running. The ore breasts are all looking well, and the ledge appears to be becoming more solid, the ore requiring continual blasting. The drain tunnel for the proposed new hydraulic works is being rapidly driven ahead. Sinking the new shaft is progressing three feet per day.

GOULD & CURRY.—The heavy flow of water from the main east drift, on the 1,500-ft. level, continues without intermission, and is all that can be handled by the pump.

LEO.—The vein matter shows indications which are liable to develop into a pay chimney at any time. From the stopes above the adit level considerable quantities of good milling ore continue to be extracted.

HALE & NORCROSS.—Cross-cutting and prospecting the 1,900-ft. level still continues, without change of interest, except a widening out of the ore streaks previously mentioned in cross cut No. 3, from the main north drift, near the Savage line.

SAVAGE.—Sinking the main incline below the 1,900 ft. level is making steady headway.

OVERMAN.—A north cross-cut from the 200 ft. station, in the winze, from the 1,000-ft. level has been started, following the west wall of the ledge almost the entire face of the drift being in fine ore.

KENTUCK.—The cross cut which has been started eastward from the drift which connects the Crown Point and Yellow Jacket mines on the 1,500-ft. level, is now in 66 ft. From the strength and character of the ore found on the 1,500-ft. level of the Crown Point mine, at a much farther northerly locality than at the upper levels, it is believed that pay ore will be found in this cross-cut.

UTAH.—The face of the main west drift has cut through the east wall into the ledge, developing a fine body of quartz, which gives some excellent assays. The ledge at this point appears to be quite solid, and the face of the drift is perfectly dry, while the body of water still stands in the old shaft many feet above the level of the drift, and is steadily drained through the loose formation of rock further back.

SOUTH COMSTOCK.—The cross-cut east, at the 150 ft. level, is to-day in 18 feet. Fourteen feet of this is through ledge matter, that in the face of the drift not being of quite so favorable a character as that already passed through. The average assays of the drift thus far have been from \$17 to \$35 per ton.

GLOBE CONSOLIDATED.—Stations are being opened and drifts run in the ore body developed in the up rise, preparatory to extracting ore.

EUROPA.—After passing through 94 ft. of solid quartz, the main west drift finally reached what is supposed to be the west wall of the ledge. At that point a drift north was started, which is to-day in 13 ft. The rock assays well and looks so favorable for a paying deposit that it is the intention of the company to commence sinking a winze from this drift day after to-morrow.

DAYTON.—The mine is looking splendidly throughout. The ore bodies on both the second and third levels, if anything, show improvement in the quality of ore. The bottom of the north winze, from the second level, is still in rich ore. The ore is being sent to the mills as fast as the bad condition of the roads will permit.

BALTIMORE CONSOLIDATED.—The steam connections with the new boilers have been completed and sinking the main shaft below the 600-ft. level was resumed again this morning.

CHOLLAR POTOSI.—Daily yield of ore, 90 tons per day; the assay value of which is \$29 per ton.

BUCKEYE.—The east cross-cut from the 450 ft. level, has penetrated the ledge a distance of 22 ft., without yet finding any east wall.

JULIA.—The main south drift on the 900-ft. level cut into a fine body of ore during the week; proving that the ore is improving as the work progresses further to the southward.

FLORIDA.—In the winze in the north drift or crosscut, from the main tunnel, some very good looking rock has been encountered, assays averaging \$12 per ton.

CALIFORNIA.—Both the north drift from the Virginia Consolidated and the south drift from the Ophir, on the 1,300-ft. level, are making rapid progress.

LADY WASHINGTON.—Repairing and preparing the shaft for a new and much larger pump is making rapid progress.

SUCCESS.—The new station at the 300-ft. level in the little shaft, east of the mill in the canon, has been completed and a drift started to prospect the ledge.

NEW YORK CONSOLIDATED.—Preparations for putting in a larger pump and four new boilers are being rapidly completed.

SEGREGATED ROCK ISLAND.—A drift has been started from the main west tunnel, to connect with the old shaft, for the purpose of better ventilating the mine.

LADY BRYAN.—Lumber and machinery are being delivered and the new shaft and other mining work will be started forthwith.

YELLOW JACKET.—The prospecting cross-cuts on both the 1,400 and 1,500-ft. levels are making good headway, both in favorable working ground.

SUTRO.—The main north drift is being driven vigorously ahead. There is a streak of quartz in the face 2½ ft. in width. The ore assays \$15.

JUSTICE.—Much better progress is being made in sinking the incline below the 400-ft. level.

DANEY.—The shaft is down 363 ft. in good sinking ground. The water does not interfere with sinking.

ALPHA.—The north drift on the 1,500 ft. level is being pushed steadily ahead, occasionally cutting some small streaks of ore.

WOODVILLE.—Driving the north drift on the 300-ft. level to reach the ore body, is making steady headway.

BULLION.—Driving the main north drift on the 1,700 ft. level of the Imperial is making good progress.

Arizona.

BRADSHAW AND WALNUT GROVE.—*Miner*, March 7: George Monroe, John Timmons and others are running four arrastras, by horse power, on Hmhng creek, and making good ore. They have the richest kind of free gold ore.

At Walnut Grove, a Mr. Hill is constructing an arrastra, and Messrs. Condon & Wade are erecting what Mr. B. called a quartz mill. Rich float rock was recently found near the Placitas and prospectors were hoping to find the ledge from which said float started.

One of the ledges recently discovered by Mr. Bradshaw, in the Castle creek country, east of Walnut Grove, is very large and contains both gold and silver. He thinks of putting up a furnace and melting the ore.

Several arrastras are running on rock which pays from \$50 to \$150 per ton, at Antelope Hill.

Colorado.

DEL NORTE DISTRICT.

COPPER ORE.—*San Juan Prospector*, Mar. 7: One of the finest copper specimens we ever saw was shown us yesterday by Mr. S. H. Crowell, an old San Juan prospector. It showed native copper in abundance, and was evidently very rich. It was taken from one of two copper lodes, located near the La Plata river. An assay made from this lode yielded ninety per cent. copper.

MINING EXCITEMENT.—Considerable excitement was occasioned late yesterday afternoon by the announcement that a rich lode had been discovered within one half of a mile from Del Norte, on San Francisco creek, near Mr. Hnghee's ranch. A piece of top rock purporting to come from there was assayed by Mr. Howard, and yielded \$30 to the ton. The party making the discovery claim to have a well defined crevice one foot wide.

MINING DISCOVERY.—It is rumored that in digging the foundation for the new saw mill, which Gile & Co. are putting up on the Piños creek, near here, a rich gold lode was discovered.

Utah.

LITTLE COTTONWOOD ITEMS.—*Salt Lake Tribune*, March 11: The strike in the lower levels of the Emma Mine is creating considerable interest in mining circles, and it is considered as a "good omen" that the bottom of this famous mine has not "fallen out." The ore struck is said to be in the lowest works of the mine, and is of a white, soft character, assaying up in the thousands, and is considered richer than any heretofore taken out of the mine. The vein struck is between five and seven feet, and is increasing in width. The shipments from this mine this week have been larger, and the ore of the highest grade.

THE FLAGSTAFF.—We learn that this mine has struck another body of good ore, which is said to be quite extensive. All the works of the mine are looking well at present, and they are shipping about 60 tons daily.

The shipments for the past week show a slight increase, and were as follows: Flagstaff, 450 tons; Emma, 60 tons; Vallejo, 20 tons.

Hume Capital Versus Foreign Capital.

While it must be admitted that the introduction of English capital first benefited Utah and brought her mineral resources into notoriety, it must also be conceded that the advantages so gained have almost, if not quite, been overbalanced by the persistent howling of those who have invested injudiciously, and without sufficient investigation.

The history of past English investments in Utah, extending over a period of about two years, proves that the only benefits which have accrued, so far, have been temporary, and that the subsequent collapse of Utah Mines in London has really wrought us more injury than the original investments have done us good. Of the many millions of dollars invested in our mines by the British public but a very small proportion has benefited our citizens, the bulk of the amount having gone into the pockets of the schemers, and those who have no interest in Utah other than speculating on her mines. Outside of disbursements for bare working expense, and the money received by a few citizens originally owning such properties, and which has been expended here in permanent improvement, English capital so far has availed Utah but little. The Emma and Flagstaff mines are notable instances of the truth of this assertion, for apart from the sums received by our own citizens and the disbursements for labor, but little of the products of these mines has reverted to the credit of the Territory.

While it is just to ascribe to English capital, in the first instance, the bringing into notoriety of Utah mines, it is also apparent that subsequent events have proved that English investments in Utah have also been the cause of the present depreciation. Indeed, so well is this understood that no efforts are now being made to place Utah mines on the London market, for the reason that public confidence has been destroyed—not by the original Salt Lake vendors, but by Englishmen themselves, who, not content with moderate and ordinary business profits in effecting a sale of property, still continue to so manipulate the stock and dictate the management of the property in London that the results to Utah are anything but beneficial.

It is a notable fact, and one well worthy the consideration of Utah mine owners, that English capital in Colorado and other mining Territories has not contributed much towards the material growth of those sections of country, and it is becoming apparent that their history is being repeated here to a very considerable degree, in fact, so much is this the case, that the efforts of mine owners are now being directed to the securing of capital from the Eastern and Western States.

Nevada, with her \$22,000,000 yield of last year, is comparatively free from the demoralizing influence of British capital; we say demoralizing because it is safe to assert that had the Comstock lode been owned in England a few years ago it would not have been in its present prosperous condition, for the reason that past experience teaches us that English capitalists purchase American mines more to speculate on, than to render productive by judicious and persistent development, such as has characterized the great Comstock lode. Such experience also teaches us that English capital expects a mine to pay for itself during the first year or two after its purchase, and that it cannot stand the system of assessment practiced in the West, and which has really been the means of developing many mines which would otherwise have remained in obscurity. The secret of this is, English capital is easier discouraged by reverses than American.

We are especially pleased to notice the growing disposition on the part of Eastern and Western men to invest in Utah mines, not more so, however, than to witness the growing desire on the part of our mining men to invite such capital, by offering property at figures that will fully justify its expenditure in this direction.

Already we hear of preparations being made to concentrate Eastern and Western capital in Utah for the purpose of investing in mines, as also, for the establishment of bullion banks, and the erection of more reduction works. Such evidences, of course, bespeak confidence in the future of Utah, and prove that although English capital has become discouraged by adverse, home capital, which is far more desirable, is beginning to awake to the fact that Utah presents extraordinary inducements for its employment, and that returns will prove both safe and large on intelligent and business-like investments.—*Utah Mining Gazette*.

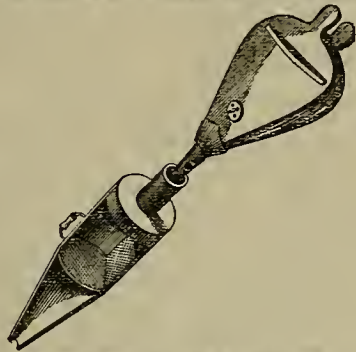
THE OLYMPIA COURIER says: "The Reuton coal mine, on Black River, near Seattle, now being opened preparatory to thorough work, give promise of great benefit to the vicinity, and the country generally. Messrs. Wilson, who are running the foundry here vigorously, have given some of the coal a practical test, and they are well qualified to do so. They pronounce it first-class for steam purposes—at least thirty per cent. better than that of the Seattle Coal and Transportation Company's mines, and that is regarded as good."

SUPERINTENDENT JONES is driving work on the Crown Point mine. Orders have been received at all the mills running on the company's ore to keep on hand duplicates of all the machinery which is liable to break.

Squirrel Exterminator.

Mr. James Hebborn, of Natividad, sends us a drawing of a device which he uses for driving sulphurous fumes into squirrel holes, a small cut of which is shown below. There is nothing new in destroying squirrels by means of sulphur, but the difficulty of doing so is great. This little machine is said to accomplish it easily, and as it can be made by any tinner, is worthy of notice by those who are sufferers from these pests.

There is a sheet-iron cylinder, rather larger than a common stove pipe, with a tapering nozzle. In it is a perforated partition. On the large end is a snugly fitting cap, like that on the top of the can used by milk peddlers, but having a tube to receive the nozzle of the bellows. The bellows are of the ordinary construction, and should be some fifteen or eighteen inches across. The mode of applying the contrivance is as follows: A shovelful of live coals is placed upon the partition within the cylinder; the nozzle is inserted into the squirrel hole; a large tablespoonful of sulphur is dropped upon the coals; the cap is affixed; the bellows attached, and worked. In a few seconds a dense, sulphurous smoke issues from every hole which has any connection with that attacked, even though thirty or forty feet distant, and by stopping these up with earth and applying sufficient force to the bellows the smoke can be driven through even the crevices and worm holes. Mr. Hebborn states, as a curious fact concerning the wonderful vitality of the pests, that the rough treatment sketched



SQUIRREL EXTERMINATOR.

does not always kill the squirrel, though it mildly suggests to them the advisability of moving their quarters, in which case they are easily dispatched as they seek to escape; and asks that some one should suggest a more deadly poison.

PANAMINT MINES.—The *Havilah Miner* of the 7th contains the following: Some of the richest specimens of silver ores that we have ever seen are on exhibition at the Bella Union Hotel. The ores were brought from the Panamint mines, by Mr. John Rupp, a former miner of Kern, who asserts that the wealth of these mines is almost unaccountable. Old miners from the Comstock report this country as exceeding anything in Nevada. The mineral belt is simply immense. The ledges average in width, all the way from four to twenty feet. Little work has been done, except on the Wonder and Wyoming mines. These mines have been sunk on, from fifty to eighty feet; and, in that distance, have widened over two feet; beside, the rock has increased in richness, prospecting no less than two thousand dollars, and as high as five thousand dollars. They now show a most wonderful development of mineral, several solid feet of the argentiferous metal being in sight. Many more mines as good as these are lying idle with their millions hid away in the recesses of the earth, that only requires capital for its extraction. The owners of the mines are, without an exception, poor. They know they have a good thing, and are waiting for capitalists to step in and buy, or to put up a mill or furnace. This article is not written to get anyone to "bite," but is a true statement of the, no doubt, richest undeveloped mines in the world. A site for a city has already been selected—town lots bring from fifty dollars to one hundred dollars, and a Virginia city in California is imminent. At present, the population of Panamint is seventy.

EEBERHARDT & AURORA MINES.—Conversing with miners who are now engaged in the mines, of the Eberhardt & Aurora Company, on Treasure Hill, we are led to believe that no change, except it may be for the better, has shown itself in the appearance of the same, both as to quantity and quality of ores. In the chamber immediately above the famous Peerless Chamber, fabulously rich rock is being extracted, and all indications point to its continuing down to the latter workings. When these two chambers are connected, which must be ere long, a repetition of the Mammoth Cave of Kentucky will be presented to view, with the exception, however, that in the former case, stalactites and stalagmites abound; and, in this, rock rich in the precious metals surround one on every hand. One point is conclusive, which is that the Peerless Chamber has ore enough in sight to keep the mill at work for many months. Other portions of the property are also said to be looking well, and everybody connected with the company is in fine spirits, and full of hopeful anticipations of the future. We have promised ourselves a visit to the locality shortly, and will then lay the facts before our readers.—*White Pine News*.

Calico Printing.

In all the appliances of chemistry to the requirements of man, there is none more interesting than that of dyeing. Almost everyone knows something of the art; and yet he would be very much surprised could he but see a little of that which he knows not. The dye house is generally a very uninviting-looking place, the air being filled with condensed steam, and the woodwork covered with moisture, which often collects on the floor in quite large pools, and with stains of different dyes; the vats are filled with dirty-looking liquids, the color of which it would be difficult for an inexperienced person to tell. Where the goods have simply to be dipped in the requisite solutions, and the colors, if need be, afterwards brightened by being soaped, etc., we are apt to look upon it as a mere matter of course, however great may be the skill necessary to make the solution, or perform the different manipulations. That which strikes the stranger most with wonder is, that the prints that he sees in the shops among the commonest kinds of dress goods, undergo by far the most complicated process of dyeing. In the first place he has seen them pass the cloth over a red hot plate, or through a gas flame in a manner which, he thinks, would damage it beyond redemption; but it simply removes the fuzz, which would interfere with the printing. When, after bleaching, he sees it on the printing machine, and remarks that the colors are not very pretty, he learns that they are not the intended colors of the goods, but simply used to tell the printer if the pattern fits properly. After printing it is left in a warm, moist atmosphere, and afterwards passed through a bath of cow dung, or dung substitute, and washed until, in some cases, the goods cannot be told from those just blacked. It is then passed through the dye-vat, and when taken out, is found to be dyed in different colors, according to the pattern which has been printed upon it. The reason of this is, that cotton will not take the dye like wool or silk, but must have another substance, called a mordant, used at the same time. Different mordants produce different colors with the same dye; thus acetate of iron will produce black with madder, while acetate of alumina will produce a red, and mixture of the two a chocolate. The mordant then are printed upon the goods, in the required pattern, which will appear after coming from the vat. This is by no means a modern idea, since Pliny describes it as being used in his day; but it is curious enough to be interesting to some of our readers who have never visited a dye house.—*Journal of Applied Chemistry*.

SIGNALING IN MINES BY ELECTRICITY.—At a meeting of the North Staffordshire Institute of Mining and Mechanical Engineers, held at Stoke-upon-Trent, on Monday evening last, Mr. T. M. Goddard read a paper on "Better Communication in Pit-Signalling by means of Electricity." It was essentially to the successful working of the system that the wires should be well insulated to prevent breakages. This system required less room than the old one in shafts; and the wires required no play, as did the old stranded bell wire. However much the wire was coiled, contact remained perfect, independent of distance, thus avoiding the necessity for laying wires in up-cast shafts, where the effects on wire were so detrimental. By this system the noisy clapper was done away with, except in shaft repairs. Engine-tenders were no so liable to make mistakes with the new as with the old method. He showed that it was a great advantage to avoid the up-cast for signaling, as they might by the new system. Where cages are working in wooden conductors in shafts of small area, there was no danger of the cage tearing the wire from the staples, and cutting off communication between the hooker and engine-tender. Where minerals were got below the down-cast, wires could be conducted down, and signals communicated as effectively as if they were sent direct up the up-cast, showing this system peculiarly applicable where ventilation by fan was not in use. He pointed out that the new system was more economical, and more easily maintained; and argued that it was more efficient than the old system. Several members expressed themselves favorable to the new system, and it was decided that Mr. Goddard's paper should be printed.

MINERS' WAGES IN AUSTRALIA.—The average rate of wages for miners in the Ballarat district, when the mail left, was £2 5s. per week, with eight-hour shifts; breaksmen were getting a slightly higher rate. In Bendigo district quartz-miners in deep sinking, for pit work, were getting £2 10s.; ordinary quartz-miners getting £2 5s. per week; engineers receiving £3 to £3 10s. In Bendigo most of the work is done on tribute. In Alexandria, Maryborough and Daylesford miners were receiving £2 10s. per week. Most of the work in Gipps Land is done by contract. Where wages are paid, the men were receiving from £2 10s. to £3. Boilermakers, smiths, fitters and turners were getting 10s. to 12s. per day; laborers from 6s. to 7s. per day. Owing to the meat-preserving companies not being fully employed, a good many tinsmiths were out of work. In the trade the rate is from £2 10s. to £3 per week of ten hours per day. Plumbere and gasfitters were receiving £3 to £3 10s. per week of eight hours per day.

A LETTER FROM CAÑON CITY, says the miners are busily engaged in arranging and repairing flumes, changing position of hydraulic pipe, cleaning out ditches and making general preparations for their summer's work.

The Bladen Mining District.

This is the name of the new mining district organized at the mines recently discovered in the San Jacinto mountains, near the San Bernardino line. The ores are rich in silver, with some admixture of gold. We have lately mentioned the fact that the company in which our townsman, Mr. D. G. Christian, is interested have commenced the erection of a mill at their mine. No doubt longer exists that extensive and permanent silver mines, yielding very rich ore, have been discovered in that portion of San Diego county. We saw yesterday a ton of silver and gold from two ounces of average rock, taken from the mine referred to; and Rev. I. H. Cox informs us that ore is taken out that will assay \$1,000 to the ton.

A few days since a new district was organized about five miles southeast of the Bladen district, where rich discoveries have been made. In fact, the croppings are found to exist continuously for about eight miles from the Bladen district. A number of miners are now going down on the ledge.

These mines are in the same elite range as the gold mines of the Julian district, and are situated only about forty miles north of Julian City. It is our opinion that this whole range will be found rich in mineral wealth. Prospecting may be said to have only just begun in our mountains, and when the country is thoroughly explored we are confident that mines of great value will be developed. In our neighboring county of San Bernardino prospecting has lately been going on very actively, and exceedingly important discoveries have been made near the line between the two counties, in the same range of mountains. Gold and silver will be not the least important of the products of these counties in a short time.—*San Diego Union*.

A SINGULAR GIANT POWDER ACCIDENT.—The *Virgilia Enterprise* of March 4, relates this incident: "A strange accident with giant powder occurred at the Blue Jacket Mine, just north of the Sierra Nevada Company's new shaft day before yesterday. The accident occurred in this wise: William Quayle had placed two frozen giant powder cartridges in a tin can with some water, and had the whole on a blacksmith's forge heating. He was holding the can on the fire with his right hand, while he was blowing the bellows with his left. The can was held upon the stove in a slanting position, and the side thus left bare of water became red hot. By some means one of the cartridges broke in two, and the upper portion fell against the tin and instantly exploded. Quayle had, on the hand with which he was holding the can, a thick huckskin glove. This was rent into shreds and blown entirely off his hand without injuring his fingers, though he received a deep and bad cut in the back of his hand. He also received a severe wound in the right leg, just above the knee, from a piece of the can, which was torn to fragments. The singular point in connection with the accident, however, is that only the upper half of one of the cartridges exploded, though the remaining whole and half cartridge must have been very near to, if not absolutely touching, the half exploding. This strange result can only be accounted for by supposing the portions of the cartridges, which did not explode, were still frozen; and they thawed less rapidly in the water than did that piece which was in the air near the hot tin. Frozen giant powder—even when the proper percussion cap is discharged in it—does not explode, but burns in a fizzing manner, as would damp black powder, until the cartridge is consumed. In this instance, however, the giant powder remaining was not even set on fire."

THE STRIKE AT SILVER CITY.—We are informed by James Wardell, of Silver City, that, evening before last, the owners of the ledge in which gold-bearing quartz of extraordinary richness was struck a few days since (of which strike we made mention at the time), have, at a greater depth struck richer rock, than that at first found. It will be remembered that the first rich quartz found in the mine was just after passing through the east lay, the shaft then being about 70 feet in depth. The rich streak was two or three feet in thickness, the rock below being of an ordinary character. The men continued to sink upon the vein, which pitches to the east, for the purpose of passing through it; when, if nothing more was found, they intended returning and following the rich streak above. Evening before last, however, at the depth of about ten feet, they came into quartz exceedingly rich in free gold. How far down this may extend is a matter of conjecture, but the chances are that they are now near the west wall. Having such rich rock on both sides of their lead is a good indication of the deposit proving extensive and permanent. Mr. Wardell informed us that one piece of quartz shown him, about the size of his thumb, must have contained at least half an ounce of gold. The croppings of the ledge are very large, and are supposed to indicate a chimney at the point where the shaft is sunk. The people of Silver City feel pretty confident that the new strike is one of great value.—*Enterprise*.

THE MINERS in Southern Oregon have now sufficient water to keep them busy for some time. It is estimated that several thousand dollars will be taken out in Jackson and Josephine counties this season.

USEFUL INFORMATION.

A Paper and Glass Debate.

A correspondent sends a couple of interesting questions, which he informs us are to be the subject of a debate, relating to the merits of paper and glass. The first is: "Providing we had no paper, what other substances may be mentioned that would take its place?" And, second, "Providing we had no glass, what are its possible substitutes?" Of course, the idea is to bring out, in the present connection, not names of substances, which may be advantageously used instead of the above-named almost indispensable materials, but of such as we probably would employ, (and of many of which in fact our ancestors did avail themselves), did glass or paper cease to exist or become unobtainable. The case is imaginary, but leads to much instructive thought.

In lieu of glass, we can find material suitable for window panes, for drinking vessels, and, in some cases, even superior to it for small lenses, but nothing that combines all its properties, or is capable of its ready manipulation into desired forms. For windows, perhaps the best substance other than glass is simple mica, which may be readily split from the rock in thin, translucent sheets. It is now used for doors of stoves, to protect paper shades around gas lights, and in other common employments. The Romans filled their windows with *lapis specularis*, a fossil of the class of mica, which is readily cloven into thin smooth laminae. The same substance is found in the Island of Cyprus, in masses a foot in breadth, and three inches in thickness. It is used for the construction of hot houses, and for the protection of delicate plants. Up to the present day it is also much employed in Russia, in place of glass for windows.

Horn cut into sheets is still used for lanterns, and for drinking vessels; and, if made sufficiently thin, would answer for illuminating purposes. Oiled linen, or other fabric, similar to that now used by draftsmen for tracing, would be also available, and so would very delicate sheets of india rubber. Skins, prepared like parchment, or vellum, would be translucent though not transparent. Gelatin, however, might be treated with bichromate of potash, so as to be insoluble; and, if it would stand the weather, would give quite clear window lights. Collodion films, we should imagine, if made thick enough, could also be used for the purpose, as also animal membrane.

In addition to mica, the mineral kingdom offers a variety of substances. There is the Brazilian pebble, a species of quartz, now used in an immense extent for spectacles and other lenses. We have seen perfect spheres of this material three inches in diameter, without a single speck or flaw to blemish its complete transparency. Rock crystal and other varieties of quartz might also be employed if means could be devised to cut them properly; so could plates of aelenite, thin alabaster, or even of rock salt, though the latter would not be very durable. Some shells are sufficiently thin to be translucent, and ivory could be made into plates having the same property. Amber would be transparent enough, but difficult to obtain, while, like ivory, it would be rather costly. Large leaves of trees, if chemically treated, might have their texture preserved and serve to cover windows, if other means failed; or if the dwellings were located in polar latitudes, one might follow the example of the Esquimaux and use blocks of clear ice.

In recalling substitutes for paper, many of the materials suggested in place of glass, owing to their translucency, would, from their flexible nature, answer even more suitably for writing purposes. Such is evidently the case with parchment, membrane, cloth, horn, rubber, collodion, or gelatin sheets. We might go back to graven tablets, like the Moabite stone, or write with the stylus upon wax, as did the ancients; in fact, there are numberless modes of inscribing our thoughts on solid substances. But paper has a multitude of other uses, especially in these days of paper clothing, paper furniture, paper churches and paper money. Hence material is needed with more of its attributes than simply its use as a vehicle for the dissemination of our ideas. The same source of supply, open thousands of years ago, is still at hand, for the papyrus tree still flourishes in Egypt and Sicily. The bark of the common white birch may also be employed; or by ingenious machines we can cut shavings of fine grained wood to serve in place of hangings for our walls. Sheets of metal, rolled to almost infinite attenuation, would, however, probably form the most favored substitute. About two years ago the Upper Forest Tin Works, in Wales, rolled the most delicate sheet of iron ever made. The iron was worked in a finery with charcoal, and the usual blast, then forged into a bar, and finally passed through the tin rolling mills. When finished the sheet was 10 inches by 5½ inches in dimensions or 55 inches in surface, and weighed but 20 grains. It would take 4,800 such layers to make up a mass one inch in thickness. Letters have been sent across the Atlantic on iron thinner than ordinary paper and nearly as light. Steel, iron and copper, could thus be pressed into service; and where flexibility was necessary, alloy could be made to answer the purpose.—*Scientific American*.

DRYER FOR OIL COLORS AND VARNISHES.—Water, 100 parts; gum lac, 12 parts; horax, 4 parts.

ABATE'S METHOD OF DECORATING WOOD.—A sheet of veneering is exposed for a few moments to the fumes of hydrochloric or sulphuric acid. Strong hydrochloric acid, commonly called muriatic acid, of the shop is probably the best for amateurs, as it is more readily obtained than fuming (nordhouse) sulphuric acid. Ordinary sulphuric acid may, however, be used if the wood be slightly wet with the acid, instead of being exposed to the vapor. After the exposure or wetting, the acid should be carefully wiped from the surface. A piece of white calico or paper or common wood may be used, upon which to produce the pattern of the veneer. Whichever of these materials is employed the reproduction is obtained by pressing the prepared veneer strongly upon the surface of the material which it is desired to ornament, a suitable press being employed for this purpose. For amateur work a common copying press will answer very well, if the surface to be decorated be not too large. After the impression is taken, the material to be decorated must be exposed to a strong heat to bring out the pattern, which is invisible before heating. About twenty impressions may be taken before the effect will cease, when the pattern will have to be prepared over again in the same manner as before. The impressions after exposure to the heat show a general wood-like tint, which is very natural for the light colored wood, such as walnut, maple, etc., but for mahogany, rosewood, and others of dark color, the articles to be decorated must be dyed the light color of the wood.

DEPOSITS IN BOILER FLUES.—Professor Hayes gives, in the *American Chemist*, the following opinion regarding the formation of these deposits: They are of two kinds, both of which are capable of corroding the iron rapidly, especially when the boilers are heated and in operation. The most common one consists of soot (nearly pure carbon) saturated with pyro-ligneous acid, and contains a large proportion of iron, if the deposit is an old one, or very little iron if it has been recently formed. The other has a basis of soot and fine coal ashes (silicate of alumina) filled with sulphur acids, and containing more or less iron, the quality depending on the age of the deposit. The pyro-ligneous deposits are always occasioned by want of judgment in kindling and managing the fires. The boilers being cold, the fires are generally started with wood, pyro-ligneous acid then distils over into the tubes, and, collecting with the soot already there from the first kindling fires, forms the nucleus for the deposits, which soon become permanent and more dangerous every time wood is used in the fire-place afterward. The sulphur-acid deposits derive their acids from the coals used, but the basis material, holding these acids, is at first occasioned by cleaning or shaking the flues, soon after adding fresh charges of coal. Fine ashes are thus driven into the flues at the opportune moment for them to become absorbents for the sulphur compounds distilling from the coals, and the corrosion of the iron follows rapidly after the formation of these deposits.

THE PRESERVATION OF TIMBER.—*Engineering* has had an opportunity of examining some specimens of timber preserved by a new and very promising process, invented by Mr. J. B. Blythe, of Bordeaux, of which our contemporary speaks as follows: Mr. Blythe treats the timber with carbonized steam—that is, with steam having mixed with it a small proportion of hydro-carbon vapor—the result being an evolution of acetic acid, and the formation between the fibers of the wood of a peculiar gummy substance, which hardens by time, and which appears to materially increase the resisting powers of the material. When first treated, the timber is so softened that it can be rolled to give it an even surface, or its form can be altered to a considerable extent by pressure, and it can be thus molded to many forms, which are at present only producible by the action of cutting tools. The forms thus given to the timber in a soft state are retained permanently. As far as can be judged from experience gained on the Northern Railway of France, on which line sleepers, treated by this process, have been down for some time. Mr. Blythe's system of treatment is an effectual preservative, while it has the great advantage of enabling green timber to be seasoned in a few hours. In fact, the sap-wood, when "carbonized," appears practically equal to the heart-wood in durability and powers of endurance.

A SIMPLE FILTER.—We find in an English exchange the description of a very simple filter, called "The Poor Man's Filter." It consists of a common garden flower-pot, of some nine inches diameter and ten inches depth. The drainage hole is stopped (not too tightly) with a piece of clean sponge. A layer of about two inches of animal charcoal is first placed in the pot, then a second layer of clean sand, upon which a layer of three inches of clean coarse gravel is placed. The pot can be set over an earthen jar, into which an abundant supply of pure water will filter for all drinking purposes.

The reason why common salt sometimes becomes moist when exposed to the atmosphere is because it is not pure. Chloride of calcium and chloride of magnesium are impurities generally present in salt, and they absorb moisture from the air.

LIMPID AND FLEXIBLE VARNISH.—Anhydrous alumina acetate, dissolved in turpentine, is the article recommended for this purpose, and it is said to be unalterable at elevated temperatures.

GOOD HEALTH.

Goitre.

In reference to the epidemic of goitre which has broken out among the young soldiers at St. Etienne, Dr. Bergeret has just made a communication to the Académie des Sciences, pointing out the influence of the sulphates in the production of this disease. He states that before the year 1835 all the inhabitants of Saxon in the Valais were either goitrous or cretins. They then drank water derived from a bank of gypsum, which on analysis was found to furnish one gramme of sulphate of lime per litre, besides some sulphate of magnesia. In 1835 the notable water was derived from a spot situated far above the bank of plaster; and since then goitre has much diminished. The children are no longer subject to it, and before long the disease will probably have disappeared.

But how does this fact go to explain the occurrence of goitre at St. Etienne, where the water is of such excessive purity that photographers use it in place of distilled water? It is, in fact, rain-water which falls on the primary rocks of Mount Pilate. The cause is to be sought for in the excess of sulphates which gain access to the circulation through an exaggerated muscular "dystrophie" induced by forced exercise. In fact, as long since observed by M. Chevreul, in order for the health of an adult to be maintained good he should weigh the same at the same hour every day—that is to say, that the anatomical elements, the tissues and organs, should receive assimilable principles of an equal weight to that of those which are destroyed, in order to maintain the animal heat and to execute the mechanical work imposed upon them. If what is received does not equal what is expended, consumption or anemia takes place.

This is what is observed in the goitrous soldiers in barracks who are subjected to excessive work, and who are not fed proportionately to the amount of force they are called on to expend. It is a phenomenon which presents some analogy to what was observed among the French laborers engaged during the construction of the Du Nore Railway, and later in certain factories. On the other hand, we know that when a muscle is employed with force and continuity, or when it is submitted for a certain time to the action of a continuous electrical current, such muscle, burning its own substance, becomes acid, and that the acids produced are the sulphuric and phosphoric, at the expense of the sulphur and phosphorus contained in albuminoid principles. Under the conditions of excessive work, then, a man has circulating in his blood an abnormal amount of sulphates, absolutely the same as if he had drunk water loaded with gypsum. This is what has occurred to the soldiers in the barracks suffering from goitre. In support of this theory M. Bergeret cites analysis of urine, showing that the sulphates precipitated are three or four times more abundant during the existence of goitre than in the normal state.

M. Larrey, in relation to goitre in young soldiers, observed that it, as well as enlargement of the cervical glands, were formerly of much more frequent occurrence than at present, the cravat having been substituted for the stiff military stock formerly in use.—*Druggists' Circular*.

PHYSIOLOGICAL CLASSIFICATION OF FOODS.—The most rational and practical classification is: 1st. Carbonaceous food. 2d. Nitrogenized food. 3d. Phosphorized food. 4th. Fresh vegetables. Of the first bread and butter is the type, and to it belong in general all articles in which starch or flour, fat and sugar predominate. They are the fuel, serving chiefly to sustain the animal heat by the slow combustion of the carbon, given off as carbonic acid in the act of respiration. Consumptive people must use this class of food in abundance. Of the second, roast beef is the type; and, in general, the flesh and blood of quadrupeds, which, when taken in one's stomach, is rather simply absorbed than digested; because, being already muscular ingredients, it needs no elaborate changes to be appropriated into our muscular tissues in order to supply their waste. Hard-working people need this in abundance. To the third class belong oysters and fish, especially to be recommended to persons using their brain much. Of the fourth class, lemons and lemon-juice is the type, good for everybody, for reason of the purifying, medicinal effect of fresh vegetables and fruits, stimulating the secreting organs, keeping the system pure, and counteracting all tendency to scorbute, scrofula, eruptions, indigestion, constipation, etc.—*Manufacturer and Builder*.

DIABETIC BREAD.—M. Dannevy proposes the use of bread made from roasted flour for diabetic patients, instead of gluten biscuit. He asserts that roasted starch cannot be converted into glucose, and that bread made out of the various farinas so torrefied is greedily eaten by patients who have been restricted to the ordinary preparation of gluten until they have become thoroughly disgusted. Moreover, under its use the thirst lessens, and the digestive derangements are markedly ameliorated.

A WRITER in the London *Lancet* thinks that the climate of Southern California is unrivalled in the world for softness, dryness and equality of temperature.

An Ingenious Operation.

We find in the Richmond and Louisville *Medical Journal*, an account of a most ingenious surgical operation, designed to remedy the turning of eyelashes upon the eyeball, in a case of twenty years' standing. The irritation of lashes thus turned in was so great, that the patient had been accustomed to relieve himself by pulling out his lashes. The perpetual irritation had, however, produced opacity of the cornea of one eye, and it was evident that this sad result would have taken place with the other in a short time, had not the following operation been performed: "A very fine curved needle was threaded with a double strand of fine silk; the point of the needle was then entered upon the tarsal border of the lid, at the very spot where the respective hairs emerged from the lid-surface, and, being pushed outward, the front of the needle made its appearance through the skin just above the row of eyelashes. When the needle had traveled the lid, the double thread, with a noose at its free extremity, was drawn upon until the noose was ready to disappear in the lid-tissues. The wild hair was now pushed gently through this noose, and, as the thread was drawn upon until it escaped from the outaneous surface of the lid, it drew the vicious hair in the same direction, leaving it still attached to its hair-bulb (for this is all-important), but drawn completely through the free border of the lid in a passage made for it by the needle, the point of the hair sticking out in front through the needle puncture. The rationale of the operation is, that the hair drawn through the lid will, by constant traction in its growth, change the position of the hair-bulb, and in this way correct the wild direction which it formerly took, to the serious injury of the patient." The ingenious surgeon who performed this operation was Professor Julian C. Chisholm.

CLOTHING OF INFANTS.—In the first stage of infancy warmth depends on clothing alone, for there is no muscular movement.

Avoid a degree of warmth which produces sensible perspiration.

Flannel and calico are the best materials in all seasons.

Dress the child loosely, and fasten with strings, not with pins.

The umbilical cord, navel, and belly band, require much attention.

Avoid keeping the child's head too warm, or its feet cold.

Avoid chilling the child, or taking it abroad in cold weather.

Attend to the form and size of the child's shoes, so that the feet shall not be cramped.

The practice of plunging infants into cold water, to render them hardy, is exceedingly dangerous.

Let a child's washing be very completely and carefully performed. Keep the child always perfectly clean and neat.

Be very attentive to ventilate the apartment where a child lives, but never expose it to draughts of air.

Begin early to form habits of personal cleanliness and delicacy.—*Ez.*

WHAT IS IN THE BEDROOM.—The importance of ventilating bedrooms is a fact in which everybody is vitally interested, and which few properly appreciate. If two men are to occupy a bedroom during a night, let them step upon weighing-scales as they retire, and then again in the morning, and they will find that their actual weight is at least a pound less in the morning. Frequently there will be a loss of one or two pounds, and the average loss throughout the year will be more than 1 pound; that is, during the night there is a loss of a pound of matter, which has gone off from their bodies, partly from the lungs, and partly through the pores of the skin. The escaped material is carbonic acid and decayed animal matter, or poisonous exhalations.

RAW TURNIPS.—Some one writes the *Herald of Health*: "I have always let my children eat as many raw turnips as they like. I heard a city woman say the other day they were not healthy, and I believe they don't hurt anybody. Will you please settle the dispute for us?" The editor answers: "Generally children are fond of raw turnips, of the flat, white, strap-leaved variety, if taken fresh from the field before very old and tough. If they are scraped with a knife they will not harm healthy, active children. If simply chewed they are not easily digested. As a rule, country children have better appetites and stronger powers of digestion than city children. They get more fresh air and exercise. There is more waste and more want, hence the same rule will not apply to both classes."

CURE FOR CORNS.—The safest, the most accessible, and the most efficient cure of a corn on the toe, is to double a piece of thick, soft buckskin, cut a hole in it large enough to receive the corn, and bind it around the toe. If in addition to this the foot is soaked in warm water for five or more minutes every night and morning, and a few drops of sweet oil, or other oily substance, are patiently rubbed in on the end after the soaking, the corn will almost infallibly become loose enough in a few days to be easily picked out with a finger nail. This saves the necessity of paring the corn, which operation has sometimes been followed with painful and dangerous symptoms. If the corn becomes inconvenient again, repeat the process at once.—*Hall's Journal of Health*.



W. B. EWER..... SENIOR EDITOR.

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Partz's Cube Sugar Process.

We have watched, with considerable interest, the practical development in this city of a recent invention, which seems to be destined to impart a new feature to an important branch of manufacture. It consists in a process by which hard, white sugar is produced in a much shorter space of time, and at less cost than heretofore, and by which, moreover, the sugar is furnished in the shape of well-defined cubes. The process has been introduced by its inventor, A. F. W. Partz, of Oakland, at the Bay Sugar Refinery on Battery street, where it has been in use now for several months, and where we have repeatedly inspected its operation.

There have been many attempts to convert granular sugar into solid cubes, or pieces of other shapes; but the methods employed were too slow and otherwise inefficient, and the products, besides, of an inferior quality; so that the old mode of making "cube-sugar," by sawing loaves into slabs and bars and cutting the latter into square blocks, has thus far been the only one successfully practiced. Yet, it takes about two weeks from the time the sugar leaves the vacuum-pan until it is finished in the form of loaves; and the work of dividing them into small blocks is quite laborious and expensive.

By Mr. Partz's new process granular sugar, taken fresh from the centrifugal machines, is in a few hours transformed into cubes of three-fourths of an inch in size, which are equal in firmness to those made from loaves and superior to them in appearance, in as much as they are more regular in shape and the crystalline luster of the sugar is not despoiled by sawing. These cubes are turned out by the one machine now in operation, at the rate of about 36 pounds per minute, and they are dried in two hours. The total cost of making them scarcely exceeds one-tenth of a cent per pound. To meet the increasing demand for this sugar, which has become already quite a favorite in the San Francisco market, especially among restaur-

PRODUCTION OF QUICKSILVER AT NEW ALMADEN, FOR 21 YEARS AND THREE MONTHS.

DATES.	CLASS AND QUANTITY OF ORE.			Total Pounds.	Flasks from Furnaces.	Flasks from Washings.	Flasks Total.	Average Amount per Month, Flasks.	Per Centage, including all.	Per Centage, Tierras.	True Per Cent. of ore, ex'd Tier. & Wngs.	No. of Mths.
	Grueso, Pounds.	Granza, Pounds.	Tierras, Pounds.									
July 1850 to June 1851				4,970,717	23,875		23,875	1,989 1/2	36.74		38.74	12
July 1851 to June 1852				4,643,290	19,921		19,921	1,660	32.82		32.82	12
July 1852 to June 1853				4,839,620	18,036		18,036	1,503	28.50		28.50	12
July 1853 to June 1854				7,443,000	26,325		26,325	2,193 3/4	27.03		27.03	12
July 1854 to June 1855				9,093,300	31,800		31,800	2,650	26.75		26.75	12
July 1855 to June 1856				10,365,200	38,083		38,083	3,173 1/2	26.74		26.74	12
July 1856 to June 1857				10,299,900	28,002		28,002	2,333 1/2	19.31		19.31	12
July 1857 to June 1858				10,997,170	29,847		29,847	2,487 1/2	20.41		20.41	12
July 1858 to Oct. 1858				3,873,085	10,688		10,688	2,647	20.91		20.91	4
Nov. 1858 to Jan. 1861	Closed by Injun-tion.											
Feb. 1861 to Jan. 1862				13,323,200	32,402	2,363	34,765	2,897	19.96		18.64	12
Feb. 1862 to Jan. 1863				15,281,400	39,262	1,129	40,391	3,368	20.22		19.65	12
Sep. 1863 to Oct. 1863				7,172,650	17,315	2,248	19,564	2,795	20.86		18.48	7
Nov. 1863 to Dec. 1863				2,346,000	4,820	700	5,520	2,760	18.00		15.67	2
Jan. 1864 to Dec. 1864	54,800	1,586,500	718,000	2,359,300	4,040	407	4,447	2,223 1/2	18.65	3	17.62	2
Jan. 1865 to Dec. 1865	1,259,400	18,730,300	3,287,900	23,277,600	42,176	313	42,489	3,540 3/4	13.96	3	15.64	12
Jan. 1866 to Dec. 1866	2,288,900	25,749,000	3,910,500	31,948,400	47,078	116	47,194	3,933	11.30	3	12.42	12
Jan. 1867 to Dec. 1867	1,806,000	19,939,100	5,440,200	26,885,300	34,726	424	35,150	2,929	10.00	3	11.62	12
Jan. 1868 to Dec. 1868	731,500	16,689,288	9,803,145	26,022,933	23,990	471	24,461	2,038 3/4	7.19	3	9.42	12
Jan. 1869 to Dec. 1869	2,274,208	14,598,800	12,584,722	29,456,730	26,577	51	26,628	2,219 1/2	6.66	2	10.12	12
Jan. 1870 to Dec. 1870	150,000	11,942,175	13,366,000	25,458,175	16,898		16,898	1,408	5.07		8.46	12
Jan. 1871 to Dec. 1871	30,000	12,531,900	8,536,800	21,097,700	14,423		14,423	1,202	6.23		7.42	12
Jan. 1872 to Dec. 1872		13,661,700	8,373,000	22,034,700	18,563	5	18,568	1,547 1/2	6.44	2	9.18	12
Jan. 1873 to Dec. 1873	142,000	12,777,000	8,497,600	21,416,600	18,391	183	18,574	1,548	6.63	2	9.57	12
		8,492,375	8,838,000	17,330,375	11,042		11,042	920	4.87	2	7.56	12
	8,436,808	155,665,938	84,134,807	351,897,055	664,740	8,410	673,150	2,247 1/2	12.46	2 1/2	15.30	562

Product of Enriqueta from 1860 to 1863..... 10,671

Total product of all the Mines on the Company's Property..... 683,721 flasks; of 78 1/2 lbs. each, or 44,654,656 1/2.

rants, the Bay Refinery has given orders for another one of Mr. Partz's machines, which is yet to be supplied with some minor improvements. These machines, and the apparatus used in connection with them, are as simple as they are original in their conception, and we intend giving a detailed description of them and their *modus operandi* on a future occasion.

What we mainly lay stress upon, regarding this invention, is not so much the fine and convenient form in which the sugar is obtained by its application, as that it enables the manufacturer to produce good, hard, white sugar with so much dispatch and at a reduced price. Indeed, sugar discharged from the vacuum-pan at noon may be packed in barrels and stored before night, so that the factory is no further to be encumbered with a large quantity of partly finished sugar, consuming interest on the capital therein invested. The room hitherto occupied by thousands of conical molds can be dispensed with, and men need no longer work all the year around in a temperature of over 100 degrees Fahrenheit.

We understand that Mr. Partz intends to go to the East, and expect in due time to be advised by our exchanges of the introduction of his valuable invention in the refineries of the Atlantic States and Europe.

Why Quicksilver is High.

We have several times of late referred to the subject of the high price of quicksilver, and the influence it has on the mining interests of the coast. We have endeavored also to explain to our readers that the popular idea that it is high because there is a "monopoly," is a fallacious one. We all know that there used to be a "monopoly," but it was broken up some time ago, or fell to pieces when there was no longer a necessity for one. The common laws of supply and demand regulated the matter in such a way that there was no necessity for the three mines forming the "monopoly," to keep up the combination. Moreover, there were so many new mines discovered last year, which produced all the way from fifty to six hundred flasks, that they could undersell the combination. These simple reasons added to those that the supply was already decreasing, and the demand increasing, were sufficient to make the combination of no earthly use. A high price was bound to ensue, and did ensue.

The protective tariff on quicksilver has for a long time operated against the mining interests. The government never made anything by it, as we imported no quicksilver; and it could be bought in Europe, China and Mexico, much cheaper than in this State, where so much of it was produced. In the days of the monopoly, when the price was kept up by that combination, the supply exceeded the demand, and they sold their metal cheaper abroad than they would sell it here, which they could not have done if the tariff had been abolished. We notice that the California Legislature has passed the bill asking Congress to abolish the tariff on this article—a move in the right direction, and one of benefit to the mining interests.

If our capitalists were not so apathetic, and had more confidence in cinnabar mines, a greater number of these mines would be opened. As the wants of the gold and silver mines are increasing from day to day, and from one to two pounds of quicksilver is lost to every ton of ore worked, there is no danger of want of a market for the metal. The only danger is that the supply will still decrease as the demands increase. New discoveries of this metal are made every few days, but very few of the mines are opened and worked systematically, for want of capital. Last week new mines of this character were discovered near Elk Horn station, on the New Idria road, San Benito county; and advices from Mexico say that new quicksilver mines have been discovered in Zacatecas. Still, with all these new discoveries the price does not come down. It is absurd to say that the "monopoly" controls all the capital in the State, or controls all these new mines. The price is high from natural causes, and not from the workings of any monopoly.

The New Almaden mine is one of the richest in the world. It has a world wide reputation, and is the representative mine of California. Its product has been greater than any other mine in America, and though much reduced, this mine still continues to yield more quicksilver than any other in the United States. It gives employment to about 400 men, and has been systematically worked and developed. Through kindness of Mr. J. B. Randol, Superintendent of the New Almaden, we are enabled to lay before our readers a statement of the quicksilver production of the mine for 21 years and three months. The mine was worked from 1845, up to 1850, in a limited way, but no record of the yield kept. From that date to the first of this year, the mine has produced 573,150 flasks of quicksilver, containing 76 1/2 pounds each.

The table appended to this article is a very complete one, and is the first detailed statement of the kind ever published. A simple statement of the product in flasks and pounds with percentage of ore for 17 1/2 years was completed and published in a book called the "Natural Wealth of California," in 1868, but it was incorrect; and, moreover, did not furnish any of the details we now give. In explanation of the table, it may be stated that the "grueso" or first class ore is composed of the largest and richest pieces; the next lower or ordinary grade of ore is called "granza," and the screening and finestuff is called "tierras." These "tierras" are made into "adobes" before being hurled. Under the heading of "flasks from the furnaces" is comprised all the mercury procured in the ordinary way by reduction. "Flasks from washings," indicates the amount of quicksilver obtained from under old furnaces, and about the works at different times, and from the leakage of imperfect furnaces. The amount obtained in this way is quite large. The other columns explain themselves. The mine has been run by the present company, since the first of November, 1863.

The solution of this whole question of high price of quicksilver is seen under the heads of total flasks produced, and percentage of ore. It will be seen that the product has steadily decreased of late years, as has the quality of the ore. In 1850, and 1851, the ore yielded 36.74 per cent. and in 1873 it yielded only 4.87 per cent. In 1867 the mine produced 47,194 flasks of quicksilver, and last year it produced 11,042 flasks. This mine, producing by far the greater proportion of quicksilver in the United States and falling off in its product, while the demand has increased, in even greater proportion than the supply has decreased, furnishes a solution of the whole question to any reasonable mind. Why quicksilver has varied in price is shown in those two columns of figures to which we refer.

The Mechanics' Institute.

The industrial exhibitions held in this city, under the auspices of the Mechanics' Institute, have always been the most successful affairs of the kind on the Pacific slope, and the announcement that another is to be had, is gratifying to every one. The Ninth Industrial Exhibition will open on the 18th of August next, and continue for thirty days. The Board of Managers invite all those interested in the material industries to prepare such productions, natural or otherwise, as may be desirable to exhibit at the fair. They intend constructing an exhibition building having an area of 15,000 superficial feet of floor-room, with a degree of convenience and magnificence never before attempted on this coast. The location of the building is immediately opposite the new City Hall. It will run the whole length of the east side of Eighth street, between Mission and Market.

The exhibition is open to all the world, and all exhibitors are placed on the same footing. Motive power will be furnished free of charge. Bands of music will be in attendance, and the building will be well lighted both day and night. The managers request that persons desiring to exhibit will present their applications at as early a day as possible, addressing their

applications to the "Secretary" of the Board of Managers, Mechanics' Institute, No. 27 Post street, in this city. The following gentlemen are prepared to give any information required concerning the coming exhibition: A. S. Halliday, 113 Pine street; James C. Patrick, 122 Battery street; Henry L. Davis, 421 California street; H. W. Jones, 612 Clay street; Asa R. Wells, Mechanics' Mills; B. P. Cornwall, Spear street, corner Harrison; Chas. E. Elliott, 516 California street; George Spaulding, 414 Clay street; Richard Savsge, 138 Fremont street; A. S. Iredale, 957 Mission street; J. H. McDonald, 217 Spear street; J. P. Curtis, 320 Jackson street; and R. B. Woodward, Woodward's Gardens.

For the benefit of those intending to exhibit, we append the rules and regulations adopted by the Board of Managers of the exhibition.

1. The Pavilion will be open for the reception of goods, on Monday, August 10th. The Exhibition will be open to the public on Tuesday, August 18th, at 11 o'clock, A. M.

2. Applications for space must be made on or before July 20th, stating character of exhibit, amount and kind of space required—wall, table or floor. Blanks will be furnished for this purpose, and a clerk will be in attendance at the Library of the Mechanics' Institute, every day from 12 to 1, and 7 to 10 P. M.

3. All persons presenting articles for exhibition must have been registered by the Reception Clerk, who will give a receipt for the same, which receipt must be presented when the articles are withdrawn, at the close of the Exhibition.

4. The name of every article must be attached by the exhibitor to it, and filed with the Board of Managers.

5. In case of any misunderstanding, application may be made to the Manager of the day, who will at all times be in attendance.

6. Articles intended for sale will be labeled accordingly, but can not be removed until the close of the Exhibition, except by written permission of the Managers.

7. Steam-power will be provided, so that machinery of all kinds may be seen in actual operation, and every facility possible will be given to exhibit working machinery to the best advantage.

8. Perishable articles will be received, or may be removed at any time during the Exhibition, with the consent of the Managers.

9. The most effectual means will be made through the agency of the police and otherwise, to guard and protect the property on exhibition, and it will be the purpose of the Managers that all articles shall be returned to the owners without loss or injury. Still, all articles will be at the risk of the owners.

10. Articles intended for exhibition must be entered and placed on exhibition on or before Friday, August 21st.

11. The Managers are desirous that articles should be presented early. Those from abroad, intended for exhibition, should be properly packed, and if not consigned to the exhibitors must be marked: "Managers of Ninth Industrial Exhibition, San Francisco, Cal." Articles from foreign countries should be accompanied with a certificate by the American Consul, in order that, upon their arrival, the proper course may be taken to have the duties remitted. All articles thus received, arriving too early, will be stored, free of cost, to the exhibitor, and the Managers will have them duly placed in proper position for exhibition. No freight charges will be paid by the Manager; but exhibitors are notified that arrangements are being made with various transportation companies to repay freight charges on evidence of return of goods exhibited.

Information will be furnished on addressing "Managers of the Ninth Industrial Exhibition, San Francisco, Cal."

The New York Hill mine, owned by A. Delano, of Grass Valley, struck a splendid lead this week, after a great deal of time and money had been spent on the claim. The extent of the strike is more fully noticed in our "Mining Summary."

Bad weather retards mining operations in Alpine county as well as other localities.

Remarks Suggested by Dr. J. E. Gray's Paper on the Stick Fish, in "Nature," Nov. 6th, 1873.*

[By ROBERT E. C. STEARNS.]

At a meeting of this Academy on the 31 of February 1873, certain stick-like rods being the axes of some polyp-form, as well as the general characters of Alcyonoid Polyps were considered and discussed for the purpose of tracing by analogy and determining the relations and position of the specimens under consideration at that time, and it may be remembered that a paper was read, in which was given at considerable length a resumé of what had appeared in the columns of "Nature," in the way of notes and comments by several learned gentlemen.

These rods, switches, or wands, as the specimens had been variously called, were first brought to the notice of the Academy on the 5th of June, 1871, when specimens were presented to the Museum, and so far as an opinion was expressed at that time in a general way, the specimens were placed near the group to which it has been subsequently proved, that they belong.

On the 4th of August, 1873, Dr. James Blake submitted an entire specimen of the polyps of which the rods, etc., are the central stalks or axes, that is, one of these rods or switches was presented by him, with the investing soft or fleshy covering, which proved it to be either a *Pavonaria*, or closely related to that genus. Accordingly, I published a description placing it in the genus *Pavonaria*, and gave it the specific name of "Blakei" (*Pavonaria Blakei*) and the same was printed in the MINING AND SCIENTIFIC PRESS of this city, August 9th, 1873.

Before the succeeding regular meeting of the Academy, which took place August 18th, 1873, through access to more recent literature hearing on the subject, I perceived at once that not only was the species new, but that its separation generically was warranted, and the sub-genus *Verrillia* was made by me to receive it, and a description of the genus and species was read at that meeting and printed copies of my paper (dated Aug. 20th) were sent to various authors, societies and scientific journals in advance of the regular publication of the Academy's Proceedings.

Among the many scientific gentlemen who had discussed the character and relations of the so-called switches, Dr. P. L. Sclater of the Zoological Society kindly gave publicity to *Verrillia Blakei* in *Nature* for October 9th, 1873.

In the same journal of date Nov. 6th, 1873, Dr. J. E. Gray, of the British Museum, publishes a communication "On the stick-fish, (*Osteocella septentrionalis*), and on the habits of sea-pens," in which he refers to a specimen presented to the Museum by Mr. Cooté M. Chambers, and of which he says: "Unfortunately the specimen did not arrive in a good state for exhibition. The greater part of the animal portion had been washed off, probably by the motion of the solution during the transit; only about a foot of the flesh which was loose on the axis, and the thick, swollen, naked, club-shaped base, without polypa remained; but it was in a sufficiently good state to afford the means of determining its zoological situation and of examining its microscopical and other zoological characters."

In the next paragraph, of which I quote a portion, Dr. Gray says: "Mr. Chambers' specimen is the animal of the axis or stick, that I described as *Osteocella septentrionalis* (Ann. and Mag. Nat. Hist., 1872, ix. p. 406). * * * * and is evidently the same animal as *Pavonaria Blakei*, described by R. E. C. Stearns."

"Two days after I received this specimen, I received by post, Mr. Stearns' description of the stick fish (*Pavonaria Blakei*), from the San Francisco Mining and Scientific Press, August 9th, 1873."

Towards the close of his article, Dr. Gray writes: "Mr. Stearns' paper, in the Proceedings of the California Academy of Sciences, is a re-print of the paper in the San Francisco Mining and Scientific Press, with a few additions, and the addition of a new sub-genus, *Verrillia*, although he quotes *Osteocella*. "To this paper, Dr. Gray gives what he considers "the synonymy of those animals;" first, the genera, and next, the species; placing my first generic determination, *Pavonaria*, and my subsequent sub-genus, *Verrillia*, in the order as recited, as synonyms of his genus *Osteocella*.

While asking Dr. Gray by what warrant either of science or justice he places *Pavonaria* or *Verrillia*, definitely described genera, as synonyms of his indefinite and vague *Osteocella*, which latter he publishes as a genus, for it can not be said he describes it, in the "Catalogue of Sea-Pens—or Penatulidae—in the British Museum" 1870, page 40. Gray's genus *Osteocella* is based upon a "bone," (probably the axis of a polyp), which was sent to the British Museum "many years ago," from Australia, by a gentleman named Clifton. The investing fleshy substance, or soft portion of the animal, of which said bone formed a part, had not been seen by Dr. Gray at the time he invented the name *Osteocella*, and even to this date no additional light has been furnished by him regarding the Australian form. He was not even positive that the "bone" belonged to a zoöphyte, for he says: "or, it may be the long conical bone of a form of decapod cephalopod which has not

yet occurred to naturalists, as Mr. Clifton spoke of its being a free marine animal it has a cartilaginous apex like the cuttle fish."

In which of the great divisions of the animal kingdom does Dr. Gray place it, or did he place his Australian bone in 1870?

Courtesy and fairness suggest that as he

How the Eucalyptus Should be Planted.

In answer to many inquiries from all sides concerning the Eucalyptus, in which so much interest is shown at present, Dr. William H. Gibbons, of Alameda, has kindly furnished us



PROPER AND IMPROPER CULTURE OF THE EUCALYPTUS.

EXPLANATION OF ENGRAVINGS.—Figure 1 represents the tree which has been raised in a pot or box, with its halled roots thrust in the ground, just as they sometimes come from an inexperienced nurseryman. Figure 2 represents a tree resulting from such improper planting, top-sided and ill-shaped. Figure 3 shows one properly planted, with suitable excavation filled with mold at the bottom. Figure 4 exhibits the result of proper culture—a symmetrical, shapely tree.

printed it in the Catalogue of *Penatulidae*, it should be conceded, as I have written, in a previous paper, "that, in his mind, the balance of reasoning tends in that direction."

Admitting this latter, what then? The Australian bone upon which rests his genus *Osteocella* is described by Dr. Gray as being "thick, about eleven inches long, tapering at each end." Subsequently he has received one of the stalks, or axes, of what I have named *Verrillia Blakei*; of the latter he says, it is "long, slender, about sixty-four inches long, attenuated at the base, and very much attenuated and elongated at the other end." "Mr. Carter" examined both of the bones referred to, microscopically, and "finds them" to "present the same horny structure," etc. An examination with acid was made, but as it would be rather difficult to comprehend in what way generic or specific determinations within any related groups could be determined by acid, this test may be allowed to pass.

The reference of *Verrillia* to *Osteocella* as a synonym, or otherwise, must rest on this microscopic test, as the soft investing portion of the animal, the perfect or complete polyp or polypidom of the Australian form, to which the bone, if the axis of an alcyonoid belongs and upon which Dr. Gray made his genus *Osteocella*, has not, as yet, been seen by him, or brought under scientific observation. He can not aver, because he does not know but that it may be a species which belongs to some genus already described, or that it may properly fall in as a sub-genus of some of the genera of Alcyonoids previously known; he does not know but what its relationship may be nearer to any of the other groups than to *Pavonaria*. No description sufficiently accurate to be worthy of consideration, can be made from the axial rods or bones alone, of this class of animal forms, nor can species be satisfactorily determined without the fleshy portion; nor, in the present state of our knowledge, can the microscope determine these points.

In his genus *Osteocella*, which it must be borne in mind, rests solely on the naked Australian bone or axis, which he says is "thick," "eleven inches long," as published in the British Museum Catalogue of *Penatulidae*, no information is furnished as to the soft investing portion, for the very good reason that it had not been seen by him; yet in the number of *Nature* last quoted, he speaks of "the complete polyp-mass," thus clothing his west Australian *Osteocella* with the fleshy covering of the west North-American *Verrillia*. So much for his generic synonymy. As to the species, the North-American form, as referred to by him, could not be definitely placed, by anything written by Dr. Gray prior to the date of my description.

This is a matter, not of personal pride, but of scientific accuracy, and scientific naturalists should not lose sight of, or be diverted from this *sine qua non*, or palliate individual idiosyncrasies, which involve integrity, and which should not be allowed to pass without challenge or comment.

*Read before the California Academy of Sciences, March 16th, 1874: Figure 1 of the cuts, shown on this page, gives the general appearance of the zoöphyte, reduced to one-twelfth natural size. Fig. 2 shows a section across polypiferous portion, natural size.

The Hollister Enterprise of the 14th says that the Cerro Bonito Quicksilver Mining Company is taking out some very fine cinchabar. It is working from forty to fifty hands at the present time, and intends to increase the force to 150 during the coming summer.

with the following hints concerning its growth: The habits of the trees, like the habits of animals, differ. The full development of any

Fig. 1.



Fig. II.



ALCYONOID POLYPS.

organized structure depends on the being placed under conditions which best coincide with its natural habits. Our common oak (*Quercus Alrylops*), scarcely ever attains a height exceeding fifty feet. It has no central axis, its numerous branches are regularly uniform in size,

and singularly erratic in regard to direction. You cannot train one of these trees when a sapling, and make it assume the form of a chestnut, a poplar, or an Eucalyptus. Nor can you trim an Eucalyptus and make it assume the form of an oak. The roots of different trees also vary in direction, in depth and in bifurcation, according to the soil in which they grow. By nature, the relation between the form and mass of a tree and of its roots, as a general rule, is uniform. Should there be deficiency or poverty of soil, neither root nor top is developed. Should the trunk be deprived of its small branches and leaves, there follows a deficiency in the new wood of the tree, which is apt to be brittle and succulent. Again, a young tree has more rapid growth of root, than of top. But the root derives its pabulum from the leaves which prepare, or assimilate the sap. Whatever deprives the young tree of its natural proportions of leaves, interferes not only with the growth of the tree itself, but with the extension of the root. Whatever impairs the growth of the root, impairs the general health and vitality of the tree.

The Eucalyptus, in its natural localities, attains a height of from 300 to 400 feet, with a diameter of 40 feet. Its first two years' growth from the seed is largely occupied in making root. Cut off its side branches; and you cut off the organs which supply the roots with food. Dwarf the root, and you produce a tree, ill-shaped, ungraceful, which having no firm support in the ground is liable to be blown over by any high wind.

There is too much carelessness on the part of some, too much ignorance on the part of others, in transplanting and cultivating trees; our gardeners ball up the roots of our Eucalyptus like a mass of worms, and sell them thus, ready for planting. Many purchasers dig a small, shallow hole and set the trees in just as they bring them from the nurseries and cover them up. They grow, but having no extension of root, and no more depth of soil than the gardener has depth of brain, they grow until a heavy wind comes round and blows them over. They are re-set, their tops are cut off and they grow again, looking as much like an Eucalyptus as a jackass does like a philosopher. The hole for a tree should always be from 18 in. to 2 ft. square and of like depth; it should be filled to within 8 inches of the top with good vegetable mold or compost. The root should be trimmed so as to leave no accumulation of twisted roots, and the tree then planted so as to be about one inch below its earth line. So planted, it cannot fail to grow, and with ordinary care it will never blow over. By reference to the accompanying engraving the reader will be able to see the difference between the growth of a young tree planted properly and left to nature, and one planted according to prevailing custom.

[We think the Doctor is a little too severe on a majority of our nurserymen and gardeners. Many of them are wiser now-a-days—Ens. Press.]

RAITISH COLUMBIA MINES.—The "Clean-up," for the week ending March 16th, at the Lightning creek mines, B. C., were as follows: Spruce mine, 96 ounces; Perint, 72 ounces; Van Winkle, 130 ounces; Victoria, 90 ounces; Vancouver, 332 ounces. The Vulcan company struck slum in their shaft last week, and there were fears that they would lose the shaft, but by great exertions they managed to save it.

THE PAUL PROCESS.—The Miners' Foundry are now getting up a large mill for the Silver Sprout Mining company, of Inyo county, California. The machinery is adapted for working the wet silver ore of the mine by Paul's Dry Process. This company have tried pan and furnace working, and have concluded that the Paul system will prove the most profitable to them.

An immense cave occurred in the hydraulic claim of Veith & Co., in Tunnel Ridge Calaveras county, last week. About thirty feet in thickness of the bank, which is from eighty to one hundred feet high, came down like an Alpine avalanche, completely burying the "Little Giant" nozzle and a portion of the pipe.

The \$20,000 suit of Knox & Osborne against the Phoenix Mining Company, for furnaces supplied, was last week compromised by the defendant paying \$8,000. The company claimed damages over the amount plaintiffs sued for, alleging that the furnaces were improperly constructed and leaked quicksilver.

MINING ACCIDENT.—A man named George Williams was killed in the Oregon shaft, Austin, Nevada, on Monday, by falling from the 500-foot station.

The Owyhee Avalanche states that the mining prospects in Idaho were never better, and predicts a splendid turn-out of the precious metals the coming season.

One hundred men are employed at the California Powder Works at Santa Cruz. The company are making and selling large quantities of powder of different kinds.

The snow slides in the mining cañons in Utah, are of almost daily occurrence, rendering travel exceedingly dangerous.

A MINERS' Union was organized in Lynn county, Nevada, last week.

The Esmeralda.

The *Alpine Miner* gives the following description of the Esmeralda mine, upon which work has recently been started up:—It is always our intention and desire to keep the public advised in respect to what may from time to time be transpiring in the mining business in our country—an industry in which many of our people are bending their energies and staking their hopes of ultimate reimbursement for large outlays in the prosecution of this alluring and intoxicating pursuit. But we have been remiss in the particular of the recent commencement of work on the Esmeralda claim—a mine which has long been considered one of the most valuable in Monitor district, and which years ago gave evidences of extreme richness of ore. The Esmeralda adjoins the Silver Glance mine. It was located in 1862, as Esmeralda No. 2, the Silver Glance property being recorded as Esmeralda No. 1. The original locators were John D. Marks, Jacob Braudeberry, Warren Burright, Frank Lang and David Warwick. The mine is now in the control of David N. McBeth and Thomas Leggett. Several weeks ago men were put on and did considerable preparatory work, but the severity of the winter was such as to induce suspension of operations, but since the weather has permitted, active prosecution of the work has been going on at the Esmeralda. Already some thirty feet of shaft has been sunk in hard rock, and indications of a flattering character brought to light. A first-class gang of miners are employed, and "go ahead" is their watchword as well as instructions. McBeth has the superintendency. "Old Bob Turner," as his friends like to call him, an experienced miner, is his foreman, while the heavy men on duty are Joe Soper, Billy Ward and Harry Hilton, —all bang-up miners. We understand that this start-up means business, and we must wish the enterprising owners a full measure of success. We just now learn that another shaft will be put on at an early day.

Since the above was written a gentleman has handed us these additional particulars: At the bottom of the shaft, as abandoned in '63, Mr. McBeth took out samples of ore that assayed \$86 73 per ton. Since then some ten feet have been sunk, and assays this week show \$149 31. The ledge is large, well defined, and can be traced the whole length of the Esmeralda location. It is intended to sink 100 feet, and then drift east to the wall-rock, which is a well defined porphyry. It is the opinion of experts that the great ore body will be found adjacent to this wall, as is the case in the Tarshish.

Capitalists from Virginia City have their eyes upon this mine, and if the showing at 100 feet is proportionately as favorable as since work started up, all the capital wanted for the extensive and complete development of the mine will be forthcoming.

PUREIT OF KNOWLEDGE UNDER DIFFICULTIES.—The Nevada Transcript, having had some difficulty in obtaining mining intelligence, expresses a determination to get at the facts in some way. It says: Our people want to know what is going on in that branch of business, and capitalists want to know, in order to find a place to invest their money. * * * One of the highest Courts in this State has decided that a local reporter can visit any place in search of items, without having the least suspicion cast upon him, if any wrong has been done. So, readers, we shall act upon the presumption that we have a right to go into diggings and try and find out how they pay. Miners have the strangest ideas of a reporter in search of items, of any class of persons we come in contact with. Some say, "I don't want you to say anything about my claims, if you do, people will think I want to sell, and I don't want to do any such thing." Others—"Well, now, look here, reporter, I don't want my diggin's puffed up; it's my private property, and its none of anybody's business whether I am making one dollar or one thousand dollars per day." Others—"I don't want anything said about my diggin's, if you do, all my creditors will be after me for their pay, when I am trying to pay them as fast as I can; but they will expect more from me, and if they don't get it, they will say I am squandering or sinking it for future use." Others—"It won't do, for you only advertise my claims for the benefit of robbers." Others—"Well, don't say anything just now," and giving a sly wink, as much as to say, "the Assessor will be around shortly, and he will assess our claims like thunder, if he sees the account of how much they are paying." Others—"I don't want to see my name in print." These, and a thousand other reasons are given why we should not publish mining items. We will take none of these excuses hereafter, and shall endeavor to get every mining item we can.

ONE of the infinite variety of swindling dodges is now being tried on many a Yankee inventor in the shape of a circular from a fictitious "Mississippi Valley Manufacturing Company," of Vicksburg, desiring to buy the right to manufacture his invention for the trade of the South; offering him very advantageous terms, and requesting five dollars to help pay for examining the patent. The fraud is transparent.

A WIRE rope is being manufactured at Wilkesbarre, composed of six strands of nineteen wires each, and which, when completed, will weigh twenty-two and a half tons. It is two and a half inches thick, and will be over a mile long.

Quicksilver Mines.

The Vallejo Chronicle has the following: Calistoga is highly excited over cinnabar. From one end of her limits to the other, one hears nothing but cinnabar, cinnabar, cinnabar. The men talk of nothing else, neither do the women; and the children discuss the subject with the same voluble earnestness as the old folks. All are, of course, deeply versed in the geological phase of the subject, and rattle off ponderous technical phrases with an ease which to the stranger is something more than astonishing. It is needless to state after this, especially to those who are acquainted with the operations of mining excitements in California, that Calistoga is rich. All of her citizens of high and low degree are rolling in (prospective) wealth. Mr. Fisher remarks with reference to the new born millionaires who make up the population, that "you can't now judge of a man (financially) by the clothes he wears." Perhaps one of the worst dressed you meet has a claim, which, in a short time, will make him one of the blindest of capitalists. The stranger will not proceed out of Calistoga but a few miles before he will see the landscape dotted with prospectors, each with his little hammer pegging away industriously and enthusiastically at some geological formation imagined to contain cinnabar. One of the hotel proprietors of the town who has caught the fever, is negotiating a "dicker" by which he is to part with his establishment for a cinnabar mine. Calistoga is the great center of operations for the whole surrounding district, and is the great rendezvous of prospecting expeditions. Naturally, therefore, the aggregated excitement of the whole section is all focused in this spot; so that it is no wonder the little village is red hot on the subject. The mineral region of which we are speaking is, as far as is shown from present prospecting, from three or four miles wide, to fifty miles long. That it is an extremely rich section, abounding in mineral wealth, with many good mines, there is no question.

Pine Flat.

Pine Flat is the name of the mining settlement which has grown up since last November, and now lays claim to the dignity of a town. Pine Flat is situated on the Geyser road a few miles from Calistoga; there are some ten buildings in the place, of which there are one store, two saloons, two blacksmith shops and one restaurant. Some of the best mines of the district are located within a few yards of the town.

Missouri Mine.

This is one of the most promising mines of the district, and is owned by Mr. Wm. A. Stuart of San Francisco; a tunnel has been run in over seventy feet at which distance the ledge containing the cinnabar is struck. The correspondent of the *Napa Register* says the view of ore where it is exposed by the tunnel widens out "to one solid body of ore, and ore that exceeds any I have ever seen." This mine can safely be put down as the banner mine of Cinnabar District. Under its present able management it has been a success. Less than \$5,000 has been expended to date, and over \$3,500 worth of quicksilver has been taken out in less than three weeks." The monthly product of the mine is fifty flasks of quicksilver. They have only two small retorts but will soon put up three more; some fifteen persons are employed at the mine. One day last week 800 pounds of fine looking ore were placed in the retort as it came from the mine and produced 128 pounds of metal.

Miscellaneous.

The entire product of quicksilver of all the mines of Napa and Lake, including the Redington, is estimated to be about 1,200 flasks per month. The product of the Redington alone is 500 flasks per month.

On Friday last one shipment of quicksilver from the Redington passed through Vallejo to San Francisco, which was valued at \$10,000.

The famous Rattlesnake mine at Pine Flat has been bonded for a short time for \$52,000.

Mr. Clark the superintendent of the Sonoma, was one of the original locators of the Redington mine.

Mr. John Neat of the St. John Mine of Vallejo, returned Saturday evening from a week's tour among all the mines of Lake and Napa county. Mr. N. is satisfied from what he saw that the Vallejo mine is second to none worth of San Francisco.

AUBURN MILL COMPANY.—We understand that the Auburn Mill Company have made arrangements to secure a regular supply of high grade ores from the Dayton Gold & Silver Mining Company, Silver City, and from a series of mines at Terrace, Utah, owned by Thos. H. M. Winn & Co. Being so far removed from its source of supply this mill has heretofore labored under many disadvantages, but from present indications their liberal terms offered to mine owners have secured for them the prospects of a most successful business during the season. This will add greatly to the general prosperity of Reno, and prove that, with good management and fair dealing, this property may be made profitable to its managers.—*Nevada State Journal*.

A CONTEMPORARY states that balky horse may be overcome in the most perverse fit of obstinacy, if a rope is passed under the belly and sawed gently across the inside of the fore-legs. Upon feeling the rope, the horse takes a step or two forward, and a little more sawing sends him ahead all right.

Sponges.

Sponges are the active eliminators of the salts of the ocean. In a large laboratory certain substances are kept in solution so as to be ready to the chemist's hands. Nature's grand laboratory is the sea. There her little economic chemists are ceaselessly busy extracting and putting into solid forms, the various mineral substances held in solution. Thus the coral polyps eliminate the carbonate of lime with which to build their beautiful structures. And the Alcyonarian polyp in this way builds up the delicate sea-fan, with its skeleton of keratose, or horn-like substance. And so it is with the sponges. They, too, are elaborators of the mineral treasures of the sea. Hence it has been attempted to group them upon considerations of their special building propensities. In this way the toilet sponges, and in general, those of commerce, which all affect horn or keratose, in the structure of their skeletons, would be grouped together as the Keratosa, while those which choose lime would be called Calcareia; and those which build up with silicea would be known as Silicea. We have mentioned these groups in their order of rank. The highest is the vitreous, or glass sponge.

It is amazing that a creature so simple that it has been called structureless, should surpass all other organisms in its capacity of rearing exquisite fabrics. And, now that we have had time to sober down a little in our raptures over its structural beauty, and, so to speak—like one that has passed from the pleasant contemplations of art to the graver meditations of philosophy—to listen with composure to its deeper teaching, we find it casting new light upon the inquiries of science—even lifting a corner of the veil of the covered past. So little, until lately did we know about the glass sponge, that were like the purblind pre-historic man, working patiently at his flint nodule, to fashion it into an implement for use, little dreaming that some glass sponge had been the ancient eliminator and conservator of the solvent silicea of the sea, and had, through subsequent geological action, preserved its skeleton for the service of that ruder artisan. What a freight of precious knowledge will that be when the good ship Challenger shall have returned from her four years' dredging around the world, among that newly-opened "Abyssal Fauna," whose province covers 140,000,000 square miles beneath the blue mantle of "the myriad smiling sea!"

MINING SUIT.—Peter Winants has instituted suit in the United States Circuit Court against John Whalen, D. W. Taylor, T. W. Tripp, Robert Hanuegan, M. Gately and the Bandarita Gold and Silver Mining Company. He alleges that on the 12th of July last he was the owner and in possession of the Eclipse mine and mill, on the Merced river, in Mariposa county; that a few days afterwards he made an agreement in writing with the personal defendants, constituting them his agents, and authorizing them to organize and incorporate a company to be known as the Bandarita Mill and Mining Company. The capital stock was to consist of 20,000 shares of the par value of \$50 per share, and according to the averments in the complaint of the plaintiff, were authorized by the terms of the agreement to subdivide and use as many shares of the stock as might be found necessary to raise funds to develop the mine and make it self-sustaining, and the remainder of the stock was to revert to the plaintiff. Winants further alleges that in pursuance of this agreement the company was incorporated, the stock was issued in his name, and he donated 4,000 shares of it to the company to be sold at not less than one dollar per share, the proceeds to be used in developing the mine. The defendants were made Trustees of the company, Gately being President and Tripp Secretary, whereupon the plaintiff confided to the care and custody of the defendants, the remaining 16,000 shares of stock to be held and retained for him until the mine was developed and made self-sustaining. Plaintiff alleges further that the sale of the 4,000 shares realized a sum sufficient to develop the mine, and ever since September it has been self-sustaining. He alleges that the defendants confederated to convert his 16,000 shares of stock to their own use, and being a majority of the Board of Trustees, caused new certificates of the stock to be issued to themselves and to be entered on the books in their own names and those of their associates, for their own use and benefit; wherefore the plaintiff prays for a decree declaring him the owner of the stock and commanding the defendants to surrender it to him, and that, pending the suit, they be enjoined from making any entry or transfer of the certificate on the books. He also hints at further general relief from the Court.

It appears from experiments made in St. Petersburg that, contrary to the opinion generally entertained, gold coin wears away faster than that of silver. Twenty pieces of gold half imperials and as much of silver coopeks—coins of about the same size—were put into new barrels, mounted like churns, which were kept turning for four hours continuously. It was then found on weighing the coins that the gold ones had lost sixty-four grammes—the silver ones only thirty-four; but as the number of gold pieces was 28 per cent. less than those of silver, the proportion is of course greater to that amount in favor of the latter. The silver also contains more alloy than the gold.

The Stickeen fever has reached Idaho, and a number of miners are preparing to take their departure for the newly-discovered gold fields.

Hydraulic Diggings.

The Sierra Nevada company are now engaged in running a tunnel into Cedar Hill under the large gravel deposit near their old works. The tunnel starts in below the Geiger grade, and will pass about ten feet underneath the basin of the gravel deposit. It is being made large enough to admit of a string of large sluices being placed in it, and these sluices will be provided with undercurrent and all the latest California improvements in hydraulic mining, with arrangements for saving all the quartz there may be in the dirt washed. Although called a gravel deposit, the rock shows but little indication of a "wash," all being in angular fragments and more resembling the debris of a big slide from the hill; though Cedar rapids may at one time have passed along where the deposit is now found. About 150 inches of water will be used in washing the bill, and this will be sufficient to bring down everything and do great execution. The ground is known to be very rich, and in early days paid immensely with but twenty or thirty inches of water. When the present owners get to work with 150 inches of water, they expect to lay bare the bedrock the whole side of the hill. Thus will doubtless be discovered some rich pockets of quartz. They expect to be ready to commence operations about the middle of April. When they start 150 inches of water down the cañon there will be a chance for others to work gravel deposits below, in the banks of the ravine, wherever it will not interfere with the rights of the mill-owners. If there should not be sufficient gold to pay for working, there must be, in places beyond Six-mile cañon, some big deposits of quicksilver and amalgam. As Six-mile cañon was the favorite stamping ground of Jack Davis and his band of stage robbers in the early days, a silver brick might be turned up occasionally.—*Virginia Enterprise*.

Corundum.

This rare and valuable mineral is found in but few localities. As it is the hardest known substance, with the exception of the diamond, it has always been in demand for the purpose of cutting and polishing precious stones.

Corundum is an almost pure, crystallized oxide of aluminium. It gradually passes on the one hand into the sapphirine and ruby, which are pure and translucent, and on the other into emery, which is massive and generally contains magnetite and other impurities.

The principal mine of this substance is in Newlin, Chester county, Pennsylvania. This locality was discovered by L. W. Williams about forty years ago, and was afterwards worked by him to a considerable extent, until the vein gave out. Many stray holders of the mineral were also gathered up and shipped to England, where Corundum is used for cutting plate-glass. Among those boulders was one specimen that weighed between four and five thousand pounds. At various times since that date, different parties have prospected in that neighborhood for another vein that would pay for working, but with small success until last September, when a large vein was struck.

The vein is extremely difficult to work, from the great hardness of the mineral. Drills will not touch it, and sledge-hammers last but a short time; it is therefore worked by taking advantage of the natural seams and crevices in the rock. It is worth from three to five hundred dollars per ton, delivered at the railroad station within half a mile of the mine.

DESILVERIZATION OF LEAD.—A process for the desilverization of lead by zinc has been described by E. Kocb in the *Berg-und Huettenmaennische Zeitung*. In order to make the process a continuous one, the author liquates his lead from copper in a reverberatory furnace with an inclined hearth. The liquated lead is received in a Pattinson kettle, which when it contains a charge is emptied by a syphon tap into a lower kettle. In the second kettle the antimony is oxidized by steam, and the lead then syphoned into the lower kettle, where it is desilverized by zinc, the latter being fastened in front of the lower mouth of the syphons, so as to bring it into intimate contact with the lead. The desilverized lead is then syphoned into a still-lower kettle, where the zinc is removed by steam and then syphoned into a still lower kettle, whence it is syphoned into iron moulds. The advantages claimed for this method of plant are, a more perfect utilization of heat, greater production of metals before the addition of zinc (i. e., copper and antimony), saving in the amount of zinc, less wear of kettles and a more suitable shape of these last.

THE PORTLAND STRIKE.—There can be no better proof of the reality of an alleged strike than to see the ore. Seeing is believing and if there are any who are incredulous in regard to the late strike in the Portland mine, they can satisfy themselves and receive an ocular demonstration of the reality, by visiting the dump, upon which there are now 20 tons of ore of the new strike. The stock of this company is still on the rise. Pioche owners of Portland stock are holding it firm.—*Pioche Record*.

FLOWERY DISTRICT.—Preparations are being made to resume operations on several mines in this mining district this spring. Such mines as work shall be resumed upon, will be opened in accordance with the light of the present times, not in the bungling style in vogue in the early days.

Inland Navigation in Japan.

Quite a considerable number of the rivers of Japan are navigable for short distances by vessels of light draught and small dimensions, and the Japs are not slow in introducing steamboats wherever practicable. Of course these Lilliputian leviathans are of the cheapest and flimsiest style of naval architecture, and quite in accordance with the usual baby-play style of things in use by the natives. On Lake Biwa, at the present time, no less than seven steamboats ply between various points. One of them is so small that the "saloon" cabin is but ten feet long, six feet wide and three feet high. A platform occupying half the saloon and covered by a rug, is "first class," the matted floor is "second class," while a sort of black hole in the "forecastle" is assigned to "third class" passengers. The cabin is furnished, beside the rug and matting, with a once handsome mirror, two feet square, with the gilt rubbed off. The host, in spite of its gorgeous mirror, is not calculated to soothe nervous people, as it has the heart disease badly, i. e., the boiler leaks in several places, and the machinery jars and wobbles, in a manner more lively than secure. In fair weather, the length of the lake, about 54 miles, is made in eight or nine hours. When contrary winds blow, two days are required. It is not wonderful that such steamers come to grief occasionally. Though the way is smoothed for explosions, yet a genuine blow-up is shy of intruding itself upon the owners of such craft; or, if victims lose their lives, we do not hear of them.

The oft-repeated assertion (by themselves as well as others) that the natives of Dai Nippon are a brave people, seems to have some truth in it, when we consider with what nonchalance they go on board of these floating traps; and the perfectly native manner in which the Japanese play with steam, and machinery forces the suspicion that they do not consider themselves highly civilized unless they have a few first-class explosions. If there is an inspector of steam-engines and boilers in Japan, we have not yet heard of him.—*Japan Gazette*.

ROBINSON DISTRICT.—J. R. McCreary, a miner of long experience, just in from Mineral City, talks very hopefully to the *White Pine News* of the future of Robinson District. He has been employed for a long time in the Antman mine, of the Canton company, and says the property never looked better than at the present time. Experimental assays have been made during the winter from every portion of the mine showing mineral, as also of other locations, belonging to the company with splendid results. The average of all the samples is said to be \$64 in silver, and from \$60 to \$100 in gold. The latter result is not over estimated, of our own knowledge, as we have witnessed the "panning out" of a small lot of dirt taken from the dump, which averaged 30 cents gold to the pan. It is expected when the season is further advanced, work will be resumed on this property, under different management from that of last year, when splendid results may be anticipated. A company, owning such valuable mine as does the Canton, should not allow the same to remain idle when success is to be obtained by working. Mr. Underhill is now in charge of the company's works, but nothing is being done at present. It will be a matter of impossibility to do much in the mining way at Robinson until May, as weeks of fine weather will be necessary to get the roads in good order and condition; meanwhile ore will constantly be taken out by the various companies engaged there.

FLY BLOW.—It is a common idea that the appearance of maggots in meat, cheese, etc., is the cause of the taint which is always found when they present themselves; but it is just the contrary, for the odor caused by the commencing decay is that which guides the parent insect to the depositing of its eggs in situations where its offspring will find congenial nourishment, and where they will exert a beneficial influence by reconvertng into a living structure much that would otherwise pass into utter decay, and by thus diminishing, if not entirely checking, the obnoxious effluvia that would be given off during the process. The voracity of these larvae is enormous, and the rapidity of their growth and complete development is most wonderful. They have been found to increase in weight as much as two hundred times in the course of a single day, and a few days are sufficient for them to go through all the stages of their growth and transformation, and to produce another generation. Three flesh-flies and their immediate progeny (each female giving birth to at least 20,000 young) would devour the carcass of a dead horse with greater celerity than a lion would accomplish the same feat.

WATERPROOFING BOOTS.—Paraffine is recommended for this purpose in an English journal. The writer says: "Melt thoroughly the paraffine, and, having well warmed the boot, apply the paraffine with a brush or piece of flannel before a fire, to allow of the leather absorbing the liquid. I have tried the above, and it answers admirably, resisting snow-water during a week's shooting."

AUSTRALIAN METHOD OF COOLING WATER.—The water is placed in large cloth buckets 1.2 metre deep, and 0.4 metre diameter, covered with a flannel strainer, and furnished with a siphon and cock for drawing off. The bucket is hung up in a tree in a shady place, and the evaporation from the moist surface cools the water several degrees below the air.

SCREW PROPELLERS.—The report of Mr. W. C. Seldea, Chief Engineer of the Navy, considers, among other things, the question of screw propellers, and embodies the results obtained in certain changes made in the screws of vessels—from four to two blades—with a view of rendering such vessels more efficient when under sail alone. With equal propelling surfaces it has been determined that no advantage whatever can be derived from using a screw of two blades, instead of four, when sailing; because when screws are uncoiled and revolving freely, those of four blades oppose no greater resistance to the vessel than those of two. When fixed and held stationary in a vertical position behind the stern post, the loss of speed, due to the resistance of the screw, expressed in percentage of speed, has been shown by careful experiment to be 18-20 per cent.; while the four or two bladed screw, revolving freely by the pressure of the water, gives a resistance of only 9-96 per cent., being nearly two to one in favor of the revolving screw. The four-bladed screw also produces less vibration in a ship than one of three, and the latter less than one of two blades. The propelling efficiency of a screw is entirely independent of the number of its blades, but is wholly dependent upon the area, the pitch, the fraction of the pitch used, and the area of the circle described by the blades.

RECENT experiments in England in the preservation of iron surfaces show, it is said, the advantage of coating such surfaces with heavy mineral oil. The action of such oil is said to be two-fold. It is detergent when freely and vigorously brushed over an already rusted surface, seemingly loosening the bulk of the rust, while it also darkens that which remains; and it likewise acts as a varnish if applied after the cleansing has been effected, or to new and bright work. Its superiority to vegetable or animal oils depends upon the fact that the bulk of the oil evaporates, and it leaves only a very fine film behind. If the oil is light, and fully refined, it evaporates so completely as to do but little good in this way; but, if tinged or "once run" oil of sufficiently high gravity be used, the resins or carbonaceous matter which gives the tinge to the oil remains behind and forms the thin protecting film of varnish. Ordinary varnish leaves far too thick and obvious a film, while the film of the once-run oil does its work of protection without displaying itself. As regards the density of the oil required for this purpose, that which stands between the burning oil and good lubricating oil is found to be the best.—*Iron Age*.

A CURIOUS circumstance was noted by an observer, Mr. N. M. Lowe, during the great fire at Boston, last year. He found that at places where a small street entered, but did not cross a larger one, it frequently happened that a current of air was generated, which carried the flames across the wide street at the point of junction, and fired the opposite buildings, even though that whole side of the street except at that point was not effected by the fire. Owing to this, a wide street did not always offer as certain a check to the progress of the conflagration as might have been expected.

THE influence exercised by the moon on meteorological phenomena has been the subject of a communication to the Academie des Sciences of Paris, by M. Maclaud. From examining the distribution of storms between the years 1785 and 1872 he supposes that he detects some relations between the appearance of storms and the age of the moon, and he attempts to show by tables that the moon has an appreciable influence on the temperature and pressure of the air, on the state of the sky and the distribution of rain.

MOTH PREVENTIVE.—The following recipe for keeping moths out of clothing is a favorite in some families: Mix half a pint of alcohol, the same quantity of spirits of turpentine, and two ounces of camphor. Keep in a stone bottle, and shake before using. The clothes or furs are to be wrapped in linen, and crumpled-up pieces of blotting paper dipped in the liquid are to be placed in the box with them, so that it smells strong. This requires renewing about once a year.—*Jour. of Chemistry*.

TO PREVENT WOOD FROM CRACKING.—A correspondent of the *English Mechanic* writes: "Having a great deal to do with the seasoning of the harder and better kinds of wood, I find that they are all liable to crack badly at the ends. I generally give them three or four coats of glue on the ends only, which I find is a sure preventive, till the wood is well dry, and then cut on the quarter."

TO correct the weight of a platinum crucible, Dr. F. Mohr recommends that a brass or leaden weight be prepared a little heavier than the crucible. This is placed on the right hand pan of the balance, and the crucible exactly counterpoised by a rider on the left hand side of the beam. Some advice is also given as regards the correction of the weight of the crucible after the weighing.

IMPROVED UMBRELLA.—A new invention consists of an arrangement of an umbrella top, so as to revolve upon the handle to relieve it when strong gusts of wind blow against it quartering, or when the top strikes against other umbrellas, or other objects in crowded places. The said arrangement consists of a notched revolving ring for the ribs, between two collars on the handle, and a revolving notched ring on the runner, also between two collars.

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CALIFORNIA THEATER.

BUSH STREET, ABOVE KEAR

JOHN McOULLOUGH.....Proprietor and Manager.
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OPEN EVERY EVENING.

With the best Dramatic Company in the United States. Box office open from 9 A. M. to 10 P. M. Seats may be secured six days in advance.

MISS ADELAIDE NEILSON.

Prices of Admission:

Dress Circle and Orchestra.....	\$1 00
Dress Circle and Orchestra, Reserved.....	1 50
Balcony.....	50
Balcony, Reserved.....	75
Family Circle.....	25
Boxes, according to location.....	\$10 & \$5

Doors open at half past seven; Commence at eight o'clock. ja24-tf



The object of this school is to impart a thorough education in business affairs. It is open to persons of both sexes and of all ages. There is an English Department for those not sufficiently advanced for the Business Course. Sessions continue day and evening throughout the year. Students can enter at any time. All wishing to be successful should secure a practical education at this College. Send for "Herald's College Journal," and learn full particulars. Sent free to all by addressing E. P. HEALD, Pres. Business College, San Francisco, Cal. 2v27-ly

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Course of 15 Lectures on Popular Science,

BY THE

PROFESSORS IN THE STATE UNIVERSITY,

Commencing Saturday Evening, Jan. 3, '74.

Tickets for the course, Two Dollars. The number of tickets being limited, application should be made at once to the Librarian's desk, Mechanics' Institute. ja10-tf

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The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

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MANUFACTURERS OF ALL KINDS OF

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OF SAN FRANCISCO.

Capital, One Million Dollars.

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Allow interest at the rate of Four per cent. upon daily balances of Gold and Currency.
Receive consignments of Gold, Silver and Lead Bullion, and make Cash advances thereon.
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Refers to Dewey & Co., Patent Agents; Judge S. Heydenfeldt or H. H. Haight. 6v28-3m

THOMAS V. O'BRIEN,

ATTORNEY AT LAW,

712 Montgomery St.

PATENT LAW A SPECIALTY. 11

Information Wanted of Ezra S. Gaver.

When heard from last, ten years ago, was at Pikes Peak, Colorado. Any information of him, or his fate, will be thankfully received by his brother, JOHN GAYER, at 1309 Vallejo street, San Francisco. 25v27-3m

ATWILL & CO.'S

WESTERN MINING AGENCY,

No. 240 Montgomery street, S. E. cor. Pine, opposite

Rue House, San Francisco.

Mining Stocks bought and sold. Offices in New York, Philadelphia and London. Visitors to the city invited to call and make our rooms their headquarters. Mining Companies incorporated and Working Capital furnished. Interests of Locators and Shareholders attended to. Mines registered and described. Information relative to Mines, Ores, etc., given. P. O. Box 771. oc18-ly

WATER PIPE,

FOR SALE CHEAP.

WE HAVE ON HAND

5,000 FEET OF 4-INCH PIPE,

5,000 FEET OF 5-INCH PIPE,

Made of No. 16 Sheet Iron, which we will sell at a very

low price. FRANCIS SMITH & CO.,

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OUR SPECIALTY: "BEYOND THE MISSISSIPPI!"
"GO WEST, YOUNG MAN! GO WEST!"
Gold by the Bushel! Silver by the Ton!
Capital required? Nerve and Honest Industry.
THE FAR WEST,
The Great Treasure Chamber of America.
All about its Resources, Mines, Railroads, Lands, Indians, Climate, and Development Illustrated and Described in
CROFT'S "WESTERN WORLD,"
for \$1.50 a year. With \$10 Premium Chromo,
"AMERICAN PROGRESS,"
free to each subscriber.
Two sample Worlds sent for 10 cents. Agents wanted.

ALEXANDER G. BLACK, assignee in bankruptcy of the **Napa Quicksilver Mining Company**, has instituted suit against **Sheriff Zollner**, of Napa county, and **Victor Fernback**, to enjoin the sale under judgment and execution of the property known as the **Oakville Quicksilver mine**, alleged to have been deeded to him by the bankrupt company.

SAN DIEGO is experimenting with iron and copper ore, taken from mines in Lower California, 80 miles from San Diego.

1840. 1874.

PAIN-KILLER, THE GREAT **FAMILY MEDICINE OF THE AGE.**

TAKEN INTERNALLY, IT CURES
Dysentery, Cholera, Diarrhea,
Cramp and Pain in the Stomach,
Bowel Complaints, Painters' Colic,
Liver Complaint, Dyspepsia, Indigestion,
Sore Throat, Sudden Colds,
Coughs, &c., &c.

Used Externally, it Cures
Boils, Felons, Cuts, Bruises, Burns, Scalds,
Old Sores, Sprains, Toothache, Pain
in the Face, Neuralgia, Rheumatism, Frosted Feet,
&c., &c., &c.

PAIN-KILLER,
After a thorough trial by innumerable living witnesses, has proved itself THE MEDICINE OF THE AGE. It is an internal and external remedy. One positive proof of its efficacy is that its sales have constantly increased and wholly upon its own merits. The effect of the

Pain-Killer
Upon the patient when taken internally. In case of Cold, Cough, Bowel Complaint, Cholera, Dysentery and other affections of the system, has been truly wonderful, and has won for it a name among medical preparations that can never be forgotten. Its success in removing pain, as an external remedy, in cases of Burns, Bruises, Sores, Sprains, &c., Stings of Insects, and other causes of suffering, has secured for it such a host of testimony, as an infallible remedy, that it will be handed down to posterity as one of the greatest medical discoveries of the nineteenth century.

The Pain-Killer

Derives much of its popularity from the simplicity attending its use, which gives it a peculiar value in a family. The various diseases which may be reached by it, and in their incipient stages, eradicated, are among those which are peculiarly fatal if suffered to run, but the curative magic of this preparation at once disarms them of their terrors. In all respects it fulfills the conditions of a popular medicine.

Be sure you call for and get the genuine Pain-Killer, as many worthless nostrums are attempted to be sold on the great reputation of this valuable medicine.

Price 25 cts., 50 cts., and \$1 per Bottle.

Sold by all Medicine Dealers.

A NEW BOOK ON MINING.

SECOND EDITION—REVISED AND ENLARGED.

The Explorers', Miners' and Metallurgist's Companion; comprising a Practical Exposition of the Various Departments of Exploration, Mining, Engineering, Assaying, and Metallurgy. The Most Practical and Comprehensive Work on Mining Subjects Extant. Compiled by J. S. PHILLIPS, M. E. Price, bound in cloth, \$1.50; in leather, \$12 (currency). Forwarded by mail for 50c. extra. For sale by Dewey & Co., Patent Agents and Publishers Mining and Scientific Press, S. F.

A Good Binder for \$1.50.

Subscribers for this journal can obtain our Patent Elastic Newspaper File Holder and Binder for \$1.50—containing gilt title of the paper on the cover. It preserves the papers completely and in such shape that they may be quickly fastened and retained in book form at the end of the volume, and the binder (which is very durable) need continuously for subsequent volumes. Post paid, 26 cts. extra. It can be used for Harper's Weekly and other papers of similar size. If not entirely pleased, purchasers may return them within 30 days. Just the thing for libraries and reading rooms, and all who wish to file the Press.

SHAREHOLDERS, TRUSTEES, AND SECRETARIES OF ALL MINING COMPANIES.

Should see to it that their Notices are advertised legally in the **MINING AND SCIENTIFIC PRESS**, at much less cost than the usual rates of daily publications. Every person interested in the prosperity of legitimate mining enterprises should favor such practical economy. Send for circular of convenient dates for advertising, free blanks, and a copy of the New Code Corporation Assessment Law.

Mining and Other Companies.

Due to the time necessary to mail the present large edition of the **M. & S. Press**, we are obliged to go to press on Thursday evening—which is the very latest hour we can receive advertisements.

Black Mountain Coal Mining Company.

Principal place of business, City and County of San Francisco, Cal. Location of works, Santa Cruz County, California.
Notice is hereby given that at a meeting of the Board of Directors, held on the 25th day of February, 1874, an assessment of three (3) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at his office, No. 402 Montgomery street, Room No. 23, San Francisco, California.
Any stock upon which this assessment shall remain unpaid on the 6th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expense of sale.
F. N. WELLS, Secretary.
Office, No. 402 Montgomery street, Room No. 23, San Francisco, Cal. m14-4w

Commercial Coal Mining Company of San Francisco.—Principal place of business, City and County of San Francisco, California. Location of works, Santa Cruz County, Cal.
Notice is hereby given, that at a meeting of the Board of Directors, held on the 25th day of February, 1874, an assessment of 3 1/4 cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary at his office, No. 402 Montgomery street, Room No. 23, San Francisco, California.
Any stock upon which this assessment shall remain unpaid on the 6th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expense of sale.
S. B. HANSON, Secretary.
Office, No. 402 Montgomery street, Room No. 23, San Francisco, California. m14-4w

Buena Vista Petroleum Company.—Location of principal place of business, San Francisco, Cal. Location of works, Kern County, Cal.
Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 28th day of January, 1874, the several amounts set opposite the names of the respective shareholders as follows:
Names. No. Certificate. No. Shares. Amount.
J. W. Adams, (not issued) 50 \$70 00
John Hambleton (not issued) 30 30 00
W. S. Kavanagh 37 10 10 00
J. O. Lovelock 256 5 10 00
J. O. Lovelock 254 20 20 00
D. M. Baldwin 219 1 1 00
D. M. Baldwin 222 20 20 00
N. G. Woodward 236 90 90 00
Alex. Deering 238 5 5 00
Jas. Hambleton, (not issued) 30 30 00
C. E. Farnsworth 246 50 50 00
C. E. Farnsworth 256 30 30 00
J. B. Mills 256 10 10 00
J. B. Mills 257 10 10 00
J. B. Mills 258 10 10 00
J. B. Mills 259 10 10 00
And in accordance with law, and an order of the Board of Directors, made on the 28th day of January, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the company, No. 430 Jackson street, in the City and County of San Francisco, State of California, on Monday, the 30th day of March, 1874, at the hour of 1 o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.
L. AGUAYO, Secretary.
Office—No. 430 Jackson street, San Francisco, California. m14

Enterprise Consolidated Mining Company, Location of works, West Point, Calaveras county, California. Principal place of business, San Francisco, Cal. Notice is hereby given that a meeting of the Stockholders of the Enterprise Consolidated Mining Company will be held at the Company's office, 234 Montgomery street, (up stairs), San Francisco, California, on Tuesday, March 19th, 1874, at 2 o'clock P. M. of said day. Said meeting is called for the purpose of adopting a code of By-Laws for the government of said corporation.
FRED. MORRIS, Acting President.
San Francisco, March 5th, 1874. m17

Germania Mining Company—Location of

principal place of business, San Francisco, Cal.
Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 13th (3d) day of February, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Wm. Lapham	10	25	\$12 50
Wm. Lapham	185	100	50 00
Wm. Lapham	190	100	50 00
Wm. Lapham	194	100	50 00
Wm. Lapham	206	100	50 00
Wm. Lapham	209	30	15 00
Wm. Lapham	223	30	15 00
H. H. Savage	35	20	10 00
Maud Tavidge	38	15	7 50
Joseph Chamberlain	39	1000	500 00
Joseph Chamberlain	40	500	250 00
Joseph Chamberlain	41	500	250 00
Joseph Chamberlain	42	100	50 00
Joseph Chamberlain	43	100	50 00
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Joseph Chamberlain	46	100	50 00
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Wm. H. Chamberlain	93	100	50 00
Wm. H. Chamberlain	94	100	50 00
Wm. H. Chamberlain	95	100	50 00
Wm. H. Chamberlain	96	100	50 00
Wm. H. Chamberlain	97	100	50 00
Wm. H. Chamberlain	98	100	50 00
Wm. H. Chamberlain	99	100	50 00
Wm. H. Chamberlain	100	100	50 00
Wm. H. Chamberlain	101	100	50 00
Wm. H. Chamberlain	102	100	50 00
Wm. H. Chamberlain	103	100	50 00
Wm. H. Chamberlain	104	100	50 00
Wm. H. Chamberlain	105	70	35 00
Fred'k Winkelman	247	20	10 00
Samuel Purdy	2	500	250 00
Edward Dieven	196	10	5 00
L. A. Terry	224	26	12 50
T. J. Brown	107	50	25 00
T. J. Brown	108	50	25 00
T. J. Brown	109	100	50 00

Names. No. Certificate. No. Shares. Amount.
T. J. Brown 110 100 50 00
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Quartz, Flour and Saw Mills,

New Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard street, San Francisco. 3-47

THE RISDON

Iron and Locomotive Works.

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....\$1,000,000.LOCATION OF WORKS:
Corner of Beale and Howard Streets,
SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors: Joseph Moore, Jesse Holladay, O. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
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PACIFIC

Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of
RAILROAD AND OTHER IRON
AND
Every Variety of Shafting,Embracing ALL SIZES of
Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames

HAMMERED IRON

Of every description and size.

Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention.

The highest price paid for Scrap Iron.

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Sacramento.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

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CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston Packing, for new and old cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,
SACRAMENTO CITY.

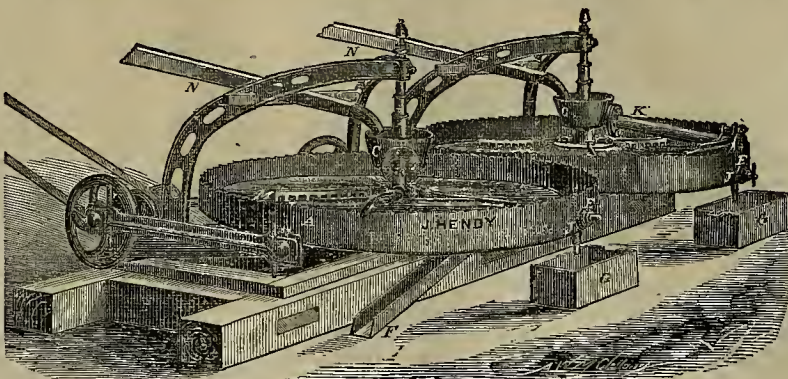
Miners' Foundry and Machine Works,

CO-OPERATIVE,

First Street, bet. Howard and Folsom, SAN FRANCISCO

Machinery and Castings of all kinds.

OVER \$3,500 PER MONTH SAVED BY THE USE OF HENDY'S IMPROVED CONCENTRATOR.



Can be seen at the Manufactory, 32 Fremont Street, San Francisco.

JOSHUA HENDY, Esq.—Dear Sir:—As a practical miner and millman, I take pleasure in recommending the use of your Concentrators in all mills where gold or silver ores are reduced. No mills should be without them for the following reasons:

1st. They are good sizers (no perfect concentration in pulverized ores can be effected without first sizing).
2d. The best Concentrator I have ever known—(the concentrated stuff only containing 5 per cent. of sand).
3d. They are good amalgamators, light (feather) particles of amalgam and particles of coated gold, by attrition are brightened, and from their specific gravity and the action of the pan, fall to the bottom and adhere.

4th. They require but little power and attention to run them, and with ordinary care will last for years. I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oaks and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,

Yours respectfully,

JAS. H. CROSSMAN, M. E.

409 California street, or Cosmopolitan Hotel.

SAN FRANCISCO, February 10, 1874.

OFFICE SUPERINTENDENT OF KEYSTONE CON. M. CO., AMADOR, AMADOR COUNTY.

MR. J. HENDY—Dear Sir:—In answer to your inquiries as to your concentrators furnished our company last July, I would say that I am more than pleased with them; and the saving to the company has been over \$3,500 per month more than with the blankets and huddles formerly in use.

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References:

References are made to the following mills, some of which have had HENDY'S CONCENTRATORS in use for over four years:

EMPIRE MILL. (8 Concentrators).....	Grass Valley, Nevada County.
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ST. LAWRENCE MILL.....	Newcastle, Placer Co.
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CAUTION—All of HENDY'S PATENT CONCENTRATORS are marked thus: "J. HENDY, Patented April 17th, 1866, and May 19th, 1868."

For full description send for Circular. Orders or letters of enquiry, address,

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22727-2am-1f

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WARING ROCK DRILL COMPANY.

SOLE PROPRIETORS AND MANUFACTURERS OF

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Rock Drill,

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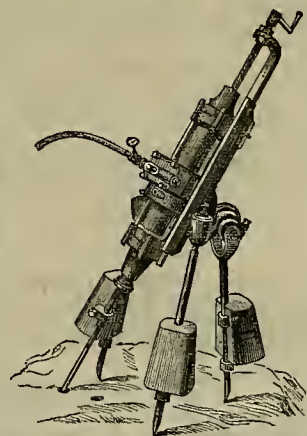
Simple and Effective Machine

FOR ALL DESCRIPTIONS OF

MINING, RAILROAD AND QUARRY WORK.

Office, 835 Broadway, Cor. 13th street,

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10v28-6m

CAST STEEL SHOE AND DIE COMPANY,

OFFICE—Room 28, Hayward's Building, 419 California St., S. F.

Patented CAST STEEL SHOES & DIES for Quartz Mills.

Price, 20 cents per Pound.

An improvement greatly needed—being Stronger, more Durable and Economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as bar steel; never break, keep their full striking surface. Battery of five shoes crushes one-ton more ore in 24 hours than Cast Iron Shoes, will wear as long as four set of Cast Iron Shoes, and can be worn down to 1/2 inch in thickness. The studs can be welded into Picks, Hammers, etc.

—ALSO—
Cast-Steel Tappets, Cams, Hammers,
Gearing and Castings

OF ALL KINDS, A SPECIALTY.

It takes forty days to fill orders.

CAST STEEL DIE.

CAST STEEL SHOE.

ALL KINDS OF Brass, Composition, Zinc, and Babbit Meta Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Belles and Gongs of superlotion. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch.

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N. E. corner N and Front streets.....SACRAMENTO.

SACRAMENTO FOUNDRY,

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Steam Engines—all Kinds of Mining Machinery.

SHIP, AGRICULTURAL, STOVE, RANGE AND HOUSE CASTINGS.

Iron Railings and Ornamental Work of every description

At the Lowest Rates.

WM. GUTENBERGER.

Dunn & Kewin, Pattern and Model Makers,
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OCCIDENTAL FOUNDRY,

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STEIGER & BOLAND,

IRON FOUNDERS.

IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Rolling Pan and Callahan Grate Bars, suitable for Burning Screenings.

Notice.—Particular attention paid to making Superior Shoes and Dies.

20v26-3m

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LIGHT AND HEAVY CASTINGS,

of every description, manufactured. 24v16or

Machinery.

TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

All persons infringing on either of these patents

WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under Craig's, Rice's, Macey's and Hoskin's patents.

I Guarantee Full Indemnity to all my Customers.

Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an Improved LITTLE GIAN.

For further particular supply to

R. HOSKIN, Dutch Flat,

O. E. R. & J. CRAIG,

Room 6, 240 Montgomery st., S. F.

WILLIAMSON & CORY, Marysville. } Agents

Dutch Flat, Angus. 10, 1873. 6v27-2m

STEEL SHOES AND DIES

FOR QUARTZ MILLS.

Made by our improved process after many years of patient research and experiment. We have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for

Strength,
Durability
and
Economy.

Will wear three times longer than any iron Shoes.

BUILDERS AND CONTRACTORS

Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and general Mining Machinery in all its details and furnishes of Mining Supplies.

All orders promptly filled.

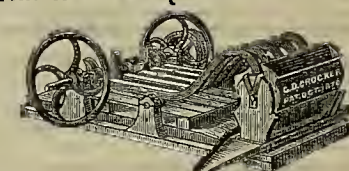
MOREY & SPERRY,

Liberty St., N. Y.

Examination solicited.

9v28-1y

CROCKER'S PATENT TRIP HAMMER QUARTZ BATTERY.



This machine, complete, weighs 1,500 lbs. Has an iron frame, five steel arms with stamps weighing 17 lbs. each, which strike 20-30 blows per minute, in a mortar provided with screens on both sides, and crushes FINE 600 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$500.

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STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

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THE SELDEN
DIRECT-ACTING STEAM PUMP,
A. CARR, Manufacturer & Proprietor.

Patented
Aug. 2d. 1870.
Dec. 20th, 1870.



Combining simplicity and durability to a remarkable degree. Its parts are easy of access, and it is adapted to all purposes for which Steam Pumps are used.

As a Mining "Pump" it is Unsurpassed.

—ALSO—
STEAM, GAS & WATER PIPE, BRASS WORK STEAM & WATER GAUGES, FITTINGS, ETC.
CARR PATENT STEAM RADIATOR.
Send for Price List and Circulars. Address,
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EAGLE IMPROVED CHLORINIZING AND
DESULPHURIZING FURNACE.
(Patented July, 1873)



The Cheapest and Most effective Furnace now in use. Parties desirous of building above furnace, or for any information on same, address,
I. T. MILLIKEN,
ja31-21am No. 302 Montgomery et., room No. 14, S. F.

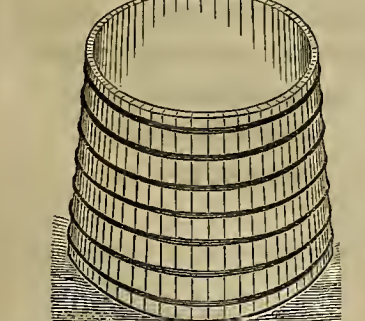
THEODORE KALLENBERG,
MACHINIST,
and Maker of Models for Inventors. All kinds of Dies
Stamps and Punches made. Also, all kinds of
Small Gears Cut.
Repairing done on very Reasonable Terms and in the
best manner. No. 32 Fremont street, S. F. 19v23-3m

PACIFIC LAMP MANUFACTORY.
EMILE BOESCH,
PATENTEE AND MANUFACTURER OF
LAMPS, LANTERNS AND REFLECTORS,
802 MONTGOMERY STREET, SAN FRANCISCO.



New Mining & Mill Lights.
21v27-cow-3m

WELLS, RUSSELL & CO.,
Mechanics' Mills, Cor. Mission & Fremont Streets.
3v23-3m-sa



WATER TANKS of any capacity, made entirely by machinery. Material the best in use; construction not excelled. Attention, dispatch, satisfaction. Cost less than elsewhere.

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Metallurgy and Ores.
JOHN TAYLOR & CO.,
IMPORTERS OF AND DEALERS IN
ASSAYERS' MATERIALS
Chemical Apparatus and Chemicals,
Druggists' Glassware and Sundries,
PHOTOGRAPHIC GOODS, ETC.,
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We would call the special attention of Assayers, Chemists, Mining Companies, Milling Companies, Prospectors, etc., to our large and well adapted stock of
ASSAYERS' MATERIALS
—AND—
Chemical Apparatus,
Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.
Our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for completion of assays in Grains Grammes, will be sent free upon application.
7v25-1f JOHN TAYLOR & CO.

Varney's Patent Amalgamator.
These Machines Stand Unrivaled.
For rapidly pulverizing and amalgamating ores, they have no equal. No effort has been, or will be spared to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits. They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.
This Amalgamator Operates as Follows.
The pan being filled, the motion of the muller forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular flow between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.
Settlers made on the same principle excel all others. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed.
Mill-men are invited to examine these pans and settlers for themselves, at the office, 229 Fremont Street, San Francisco

Important to Miners and Mill Men.
Silver-Plated Copper Amalgamating Plates,
for Saving Gold.
Of all sizes and in any quantity, furnished to order. Full instructions sent for operating.
Particular attention given to plating goods for Builders, Plumbers, etc. Hotel and Restaurant work replated.
SAN FRANCISCO GOLD AND SILVER PLATING WORKS,
656 Mission street, San Francisco,
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CHARLES F. KIRCHNER,
Sampler and Crusher of Ores,
NO. 11 DRUMM STREET,
San Francisco.

ORE BAGS FOR SALE
IN QUANTITIES TO SUIT.
Apply to
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RICHARDSON & Co. have been for thirty years established in Swansea as Agents for the preparation Sampling, Assaying, and sale of Copper, Silver, Gold, Lead, Zinc, and all other Ores and Metals, for which they have extensive Warehouses and Wharves under cover, 1,000 feet of Quay Frontage within the Floating Dock, and the most complete Machinery and Appliances. They are also prepared to make advances against Ores in anticipation of realization, and to guarantee all payments when required.
2v25-1y

RODGERS, MEYER & CO.,
COMMISSION MERCHANTS,
ADVANCES MADE
On all kinds of Ores, and particular attention
PAID TO
CONSIGNMENTS OF GOODS,
4v16-3m

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STRONG & CO.,
Metallurgical Works,
No. 10 Stevenson Street, near First, San Francisco.
We purchase high grade Gold and Silver Ores, Bullion, Etc. Ores worked and tests made with care; also, Ore Assays of Gold, Silver, Copper, Lead, Tin, Iron, Manganese, Olinabar, Nickel, Etc.

LEOPOLD KUH,
(Formerly of the U. S. Branch Mint, S. F.)
Assayer and Metallurgical
CHEMIST,
No. 611 Commercial Street,
(Opposite the U. S. Branch Mint,
SAN FRANCISCO CAL. 7v21-3m

CALIFORNIA
Quartz Crushing & Ore Sampling
MILLS.
Nos. 413 & 415 Mission st., bet. First & Fremont, S. F.



Ours is the OLDEST, LARGEST and MOST EXTENSIVELY KNOWN establishment of this kind on the Coast.
Our mills are under the direct supervision of one of the most experienced Samplers and Millmen in the country, and we purpose carrying on the business upon a scale commensurate with the wants of the mining public.
We have the best facilities for Crushing, Sampling and Pulverizing all classes of Gold, Silver, Copper and Lead Ores and other minerals.
We also crush and pulverize all kinds of Marble, Fire-Clay, Bricks, Coke, Cement, etc., upon the shortest notice, for which we have special mills.
Reliable information furnished to miners and ore dealers concerning shipments, freights, prices, etc.
Prompt execution of all orders. Faithful attention to business entrusted to us.
Abundant storage room without extra charge.
ja31-1f "JIM" WHITLATCH, Sup't.

AUBURN MILL COMPANY,
Reno, Nevada.
Purchase Silver Ore in quantities of ten tons and upward, delivered on board the cars at San Francisco or Oakland at the annexed Net Rates, WITH NO CHARGE FOR SAMPLING OR REDUCTION. On lots of less than 10 tons, freight to Reno will be deducted.
Special Rates for Gold Ores.
On Gold contained in Silver Ore to the amount of \$30 and upward, 63 per cent. will be paid. When less than \$30, and above \$10, the amount will be added to the Silver value. Sacks promptly returned free of charge. Ores sampled by Battery or Sampling Mill as shipped may elect, and returns made promptly by cheque on San Francisco.
Rates:

Silver		Gold		Silver		Gold		Silver		Gold	
Assay	Value	Assay	Value	Assay	Value	Assay	Value	Assay	Value	Assay	Value
60	25	\$80	38	\$125	47	\$160	57	\$250	66	\$450	76
68	27	83	39	129	48	175	58	263	67	500	77
70	28	85	40	133	50	188	59	275	69	520	78
73	30	88	41	137	51	200	61	288	70	700	79
76	31	100	42	142	52	210	62	300	71	800	81
80	33	107	43	146	53	220	63	320	72	900	82
84	35	112	44	150	54	230	64	340	73	1000	83
88	37	119	45	158	56	240	65	400	75	2000	84

And on intermediate values in proportion.
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S. O. BROWN, Manager,
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Nevada Metallurgical Works,
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Ores worked by any process.
Ores sampled.
Assaying in all its branches.
Analysis of Ores, Minerals, Waters, etc.
Plans furnished for the most suitable process for working Ores.
Special attention paid to the Mining and Metallurgy of Quicksilver.
E. N. RIOTTE,
C. A. LUCKHARDT,
Mining Engineers and Metallurgists.

Morris' Settler and Amalgamator.
An important improvement in milling. Cheap, light, efficient and durable. Gains Quicksilver on working tailings. Is discharged from the surface in the center instead of the side, by means of a Siphon which extends to near the center of the Settler. Heaviest casting weighs only 125 pounds. The sides and bottom of the Settler are made of wood, as also Mullers, placed vertically—the friction of which brightens the quicksilver. One of these machines is in daily operation at No. 618 Merchant street, (basement), San Francisco. Parties desiring information as to rights of use, purchase, etc., can address,
FREDERICK MORRIS,
616 Merchant St., S. F.
Ores Assayed and Amalgamated. 8v28-3m

THE PACIFIC REDUCTION WORKS,
GUIDO KUSTEL, Sup't.
Will purchase Gold and Silver Bearing Ores; also, Cupiferous Silver Ore and Gold Sulphurets, etc., at the highest rates, or work the same for owners' account. The works will commence operations on or about the 1st of April. Sampling Assaying of all kinds of ore, and working of small lots of ore in any desired way will be promptly attended to and reliable results returned. Office, 210 Front street, S. F. 10v28-3m

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Vessels, Apparatus, Sheet, Wire, Etc., Etc.
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Platinum Scrap and Native Platinum purchased.

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SEAL ENGRAVER AND DIE SINKER,
The Best SEALS, MONOGRAMS, BOOK DIES, and General Engraving done in the city, at the most Reasonable Prices.
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6v23-3m

California Assay Office—J. A. Mars & Wm. Irelan, Jr., Chemists and Assayers, Rooms 47 and 48 Merchants' Exchange, San Francisco. Analysis of Ores, Mineral Waters, Etc. 8v28-3m

The California Powder Works
No. 314 CALIFORNIA STREET,
SAN FRANCISCO.
Manufacturers and have constant on hand
SPORTING,
MINING,
And BLASTING
POWDER,
Of SUPERIOR QUALITY, FRESH FROM THE MILLS. It being constantly received and transported into the interior, is delivered to the consumer within a few days of the time of its manufacture, and is in every way superior to any other Powder in Market.
We have been awarded successively
Three Gold Medals
By the MECHANICS' INSTITUTE and the STATE AGRICULTURAL SOCIETY for the superiority of our products over all others.
We also call attention to our
HERCULES POWDER.
Which combines all the force of other strong explosive now in use, and the lifting force of the BEST BLASTING POWDER, thus making it vastly superior to any other compound now in use.
A circular containing a full description of this Powder can be obtained on application to our Office.
18v20-3m JOHN F. LOHSE, Secretary.

BLACK DIAMOND FILE WORKS.

G. & H. BARNETT,
Manufacturers of Files of every Description,
Nos. 39, 41 and 43 Richmond street,
Philadelphia, Pa.
Sold by all the principal hardware stores on the Pacific Coast. 18v25-1y

San Francisco Boiler Works,
123 and 125 Beale Street.....SAN FRANCISCO
F. I. CURRY.
(Late Foreman of the Vulcan Iron Works,) Proprietor.
High and Low Pressure Boilers of all Descriptions.
SOLE MANUFACTURERS OF THE CELEBRATED SPIRAL BOILER.
SHEET IRON WORK of every description done at the shortest Notice.
All kinds of JOBBING and REPAIRING promptly attended to. 17v25-3m

Steam Boiler Manufactory
—OF—
JAMES H. SHANLEY, Successor to D. McDougal,
Oregon street, below Front, San Francisco.
All Sorts of Steam Boilers Made to Order and Repaired.
Also, all kinds of Sheet Iron Work done promptly, and at prices to suit the times. 1v27

McAFEE, SPIERS & CO.,
BOILER MAKERS
AND GENERAL MACHINISTS,
Howard et., between Fremont and Beale, San Francisco.
SHEET IRON PIPE.
THE
Ridson Iron and Locomotive Works
Corner Howard and Beale Streets,
Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.
Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.
All kinds of Machinery made and repaired.
2v22-3m JOSEPH MOORE, Superintendent.

San Francisco Cordage Company.
Established 1856.
We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special length and size. Constantly on hand a large stock of Manila Rope, all sizes; Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.
TUBBS & CO.,
de20 611 end 613 Front street, San Francisco.

MINING AND SCIENTIFIC PRESS

An Illustrated Journal of Mining, Popular Science and Progressive Industry.

BY DEWEY & CO.,
Patent Solicitors.

SAN FRANCISCO, SATURDAY, MARCH 28, 1874.

VOLUME XXVIII
Number 13.

An Iron Fastened Wood Pavement.

The people of San Francisco have probably been as much exercised on the subject of street pavements as have the people of older and larger cities; and, moreover, they have come no nearer a solution of the question as to which style of pavement is best. It is claimed for one kind, that it is the most durable; another, that it is the cheapest; another, that it is easier on the horses; and, in fact, all kinds have something to recommend them. We have not space to spare to describe the different varieties of pavement now in use in this city; and, if we did, we should have a score of contractors on our heels, each denying the claims of the others, and extolling his own special pavement. There is no subject, perhaps, which excites taxpayers more than this question of pavements; unless, perhaps, it is what the legislature is going to do next. Our intention was, on commencing this article, to describe a new style of wooden pavement just being introduced before the public.

The pavement in question, is the invention of Edwin W. Perrin, formerly of Portland, Oregon, who claims to be able to do away with the main objections to the wooden pavements already in use. These objections are that in a short space of time, under the influence of our long wet winters and long dry summers, the ordinary wooden pavements "bulge up" in spots and ruin the roadway. This peculiarity may be fortunate for the poor families who carry off the blocks, but is unfortunate for the tax-payers who foot the bills. Mr. Perrin thinks he has overcome this difficulty in a very simple manner, and will shortly have some of his pavement down, and give it a practical trial. This general plan is to set a series of wooden blocks on the road-bed and connect them by a system of rows which will prevent them settling, thus keeping the surface in its original shape.

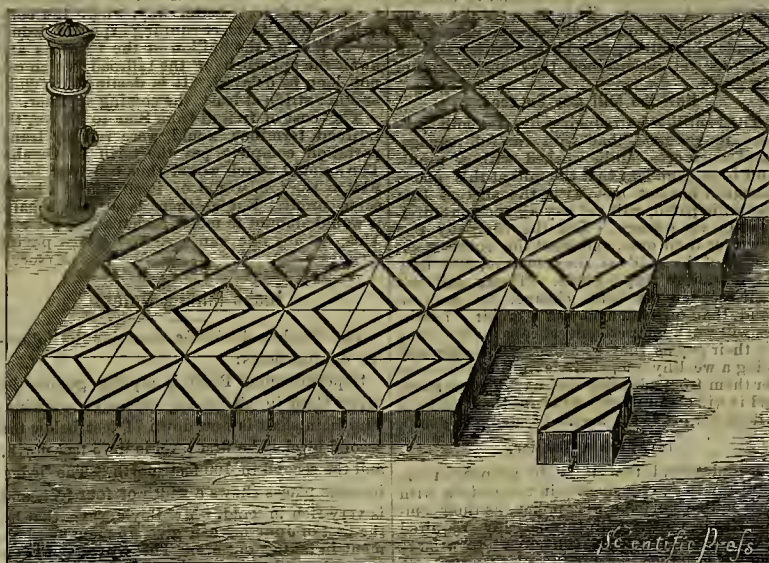
The engraving on this page will give a good idea of the general plan of Mr. Perrin's pavement, and will also explain its construction. The blocks are made about 16 inches square, and of a depth suitable for strength. The upper surfaces of the blocks are channeled, or grooved, when the block is made, and these grooves serve to hold sand, gravel, asphaltum, or other suitable substance, to give a foothold for animals. Below the bottom of the channels, the blocks are pierced with holes horizontally, and at right angles with each other, and through these holes rods are passed, so as to unite the blocks in every direction. These rods are merely stout iron pins, joining each block to another on all four sides. There being no small pieces of board between the blocks to sink down, this pavement is not liable to bulge up. The asphaltum, or other substance, is so thoroughly boxed in, there is no chance for it to be driven down in summer, when the blocks contract, as in some of the wooden pavements in use. When this is the case, and the blocks swell in winter, the pavement bulges up. In the construction of this pavement, the inventor claims to obviate this difficulty, as the asphaltum can go no further than the bottom of the grooves in the blocks.

By this construction the inventor is able to form his pavement with any ordinary solid foundation of earth or sand, and, from the size of the blocks and method of uniting them, he claims that they are prevented from turning up or becoming irregular upon the surface from the unequal settling of the bottom. When it becomes necessary to take up any part of the pavement to put in a sewer or gaspipe, it can be done by pushing back the short rods and relieving each separate block, when it can easily be raised. A peculiar instrument is used for this purpose. This is done by removing a portion of the asphaltum or gravel down through the side groove, and inserting a chisel, by which means the rod may be pushed back sufficiently to relieve the block. These rods are only six inches long and may be pushed back easily into the hole when it is necessary to replace the blocks. The principal point claimed, by the invention is, that by means of the iron rods the blocks are all joined together in such a manner that they will not bulge or

become depressed, but will remain solid and secure. The channels in the blocks are cut by machinery, and the holes are bored by the same agency. Sidewalks may be made in the same manner, the blocks being smaller and no nails being used. The feature of the block is, that no solid bed has to be made, as in one block there are four, or a number of ordinary blocks, turned on edge, and the lower part being in one piece, makes a bed for itself. The rods join the different blocks together in such a manner as to keep them in their places. Parties desirous of further information can address the inventor at No. 729 California street, in this city.

Mine Ventilating Machine.

A correspondent, speaking of our illustration of Williams' mine ventilating machine, which



PERRIN'S IRON-FASTENED WOOD PAVEMENT.

appeared in the Press of March 14th, says that a single acting machine of the same character has been in use in the vicinity of West Point, Calaveras county, for some years. He says:

In an upright box, say four feet square, an inner watertight compartment is made, about three feet in height, leaving a space of six inches between it and the outer box, which is filled with water to the depth of about two feet. A hole, say four inches square, is cut in the center of the bottom of the innermost compartment from whence the air is taken to the mine. An inverted box, having one or more valves in its top, is placed over the inner box and constitutes the piston. The valves are open when the piston is at rest or going up, but shut on the down stroke, when the air is forced into the mine.

This is the most simple form, although its construction admits of variety. The power required to work this cheapest and withal very powerful machine is nearly nominal. We mentioned in the article in question that Mr. Williams was also the original inventor of the single acting machine and had used it for years in mining in England. The double acting arrangement, however, doubles the capacity of the machine, while the power required to run it is very little more than when single acting. The apparatus is, as our correspondent says, very easily run, and is so simple in construction that any carpenter can make it.

PROTECTION TO MINERS.—The Assembly Bill for the protection of coal miners has passed the Senate. It requires all miners to keep in good order and operation two shafts of ingress and egress; means of ventilation sufficient to give each miner 230 feet of pure air each minute; keeping hoisting machinery in good order; and overseers of mines to be deemed guilty of manslaughter if death occur from want of attention to its provisions.

The Approaching International Exposition of Chile.

Some of our local contemporaries have given this proposed exposition a passing notice, but it is evident that the importance of the matter has not been duly considered. Fairs or exhibitions, general and local, are among the most powerful means employed by modern civilization, for the purpose of bringing the people of various countries together, and of promoting their advancement by the means of the interchange of ideas and of products, thus secured. The republic, (Chile) which does not omit any measure to strengthen its ties with the States of this continent, is now preparing one of those grand, civilizing fairs, and calls the attention

neighbors to go beyond their absolute wants in making their purchases. Especially is this a mistake when applied to Chile. Her imports of articles of luxury, compared with those of necessity, are remarkably large. Jewelry, costly furniture, gold and silver-ware, wines and tobacco, are among the articles which the people buy largely, and pay for liberally.

The American exports to Chile of the more substantial articles of trade, during the fiscal year ending June 30, 1873, range as follows: agricultural implements, \$75,713; barley, \$12,178; coal, \$5,100; railroad cars, \$31,106; cotton, raw and manufactured, \$249,053; iron, and manufactures of, \$401,763; refined illuminating oils, \$126,933; lubricating oils, \$6,970; lar-l, \$43,608; sewing machines, \$43,321; spirits of turpentine, \$10,295; sugar and molasses, \$290,575; tobacco and manufactures of, \$36,000; wood, and manufactures of, \$212,262; household furniture, \$150,638. The exports of Chile are also worthy our commercial consideration. Her production of copper alone is equal to two-thirds of all the rest of the world.

This is the second International Exposition of Chile, the first occurring in 1869. It is by the decree, and under the protection of the government. The approaching exposition is to be opened at Santiago, September 16, 1875. The rules that have governed International Expositions throughout the world have been adopted, and have been published in a neat pamphlet, which contains a full programme, list of officers, and explanations of the objects and general management of the exposition.

Those of our readers who are more particularly interested in this matter will receive the requisite information by calling on Francisco Casanueva, Consul-General of Chile, at his office, 506 Battery street, Room 27, San Francisco. This officer deserves the highest commendation, both from the government which he represents, and from our own citizens, for the zeal which he has manifested in this matter, as well as for the thorough and agreeable manner in which he has fulfilled the duties of his office during the two years of his official residence here. And we can insure the prospective exhibitors of American products at the coming exposition, that they will meet with a pleasant reception, and receive the hearty co-operation of this efficient and gentlemanly official.

Copper.

James Lewis & Sons' monthly report on ores and metals in Liverpool, states that the value of copper declined during the month of February to the extent of £4 10s. per ton, and this in the face of moderate charters, considerable exports and no material increase in the stocks of Chile, money being cheap and plentiful. The principal cause assigned for this depreciation was the forced sale of several large parcels of bars held by some of the sufferers from the late London failures; but it would appear more likely that copper is affected by the usual depression that pervades trade there generally, and the fall in value of almost all articles of produce, and of metals more especially. The sales of bars amount to about 3,500 tons, at £83 down to £76 10s., according to brand. The market closed 10s. to 20s. per ton better than the lowest point. The sales of furnace material in February composed 554 tons of ore at Swansea on the fourth, at 15s. 6d.; 200 tons regulus to arrive at Swansea, at 16s., on the eleventh; 450 tons regulus in Liverpool at 15s. 9d., on the seventeenth; 300 tons regulus at Liverpool and 800 tons in Swansea at 15s. 6d., on the nineteenth. The average of the Swansea tick-ling of the tenth, was 14s. 9½d. for 17½ per cent. produce. The Cape ore realizing 15s. 7½d. per unit.

Latest quotations in Liverpool were:—ore, 14s. 9d. to 15s.; regulus, 15s. to 15s. 3d. per unit; bars, good ordinary brand, £77 to £77 10s.; special brands, £80 to £81 per ton. Chile exports to the first of February amounted to 4,444 tons, loading on the first of January, and 1,689 tons, chartered to the first of February. Stocks of west coast produce are estimated, by Messrs. Lewis & Son, at 20,370 tons fine, against 20,063 tons on the first of February.

A chromic iron mine near Cloverdale is turning out 20 tons of ore per day.

of the world, and especially America, to the fact.

The coming exposition affords an opportunity by which America's business enterprise can secure both honor and profit. The efforts of those who have looked after the interests of our foreign trade, have hitherto been too exclusively devoted to securing a few "big customers," for a limited number of our products, to the neglect of numerous moderate buyers, by whom we could secure a more diversified trade.

Probably no country in the world is in closer sympathy with ours, by the form and character of its government, than the Republic of Chile. Added to this, which is a decided advantage to start with, the people of Chile are particularly well disposed toward Americans; and we speak advisedly when we declare that if the trade representatives of all the nations of the earth were to offer their respective products in the markets of Chile, the merits and prices of the articles being equal, those of the Americans would meet with a decided preference. Yet our government, by being too much absorbed in its dealings with the "great powers," and our commercial representatives, by failing to realize even the present importance of the trade with Chile, have derived but little profit from these advantages.

Californians especially are too much inclined to slight all commerce which is not in direct communication with the port of San Francisco; but, if they will take, for instance, Chile's import of American wines, which is already considerable, and is steadily increasing, they will be able to realize that the wine-producers of California may receive substantial benefits from its trade with Chile, even though the wine be sent thither from Eastern ports. We are assured that there is here an opening market for California wines which we should be careful about slighting.

There is evidently a popular mistake in regard to the ability of our South American

CORRESPONDENCE.

Knox & Osborne vs. Phoenix Mining Company.

EDITORS PRESS:—I notice a paragraph in your last issue (March 21) referring to a suit recently decided in Napa, entitled "Knox & Osborne vs. Phoenix Mining Company," in which the published statement (not original with you) does not in any particular represent the facts. The suit was commenced for an amount less than \$3,000, and afterwards, by agreement, submitted to arbitration. The result was an award to plaintiffs of \$5,000.

It was attempted to be proved by the P. M. Co., that the furnace (the pay for building which was in controversy) was badly constructed, and that the company lost large amounts of quicksilver, and hence resisted payment for balance due. In trying the case, the following evidence was put in, showing the quantity of the ore, and results of the furnace working.

An assay was offered by plaintiffs, made by Rietoe & Luckhardt, in May, from a sample taken from about 60 car loads, about May 4th to 7th; of what is called coarse ore; also from a portion of about 20 skodes, taken from different parts of the pile by myself, and as fairly selected as a sample could be. R. and L. testified to the correctness of the assay, and certified the result viz:

Coarse ore, 46-100 of 1 per cent.; fine ore, 1.53 of 1 per cent.; fine ore, 1.55 of 1 per cent.; average 1.54. The superintendent for defence testified the following yield from the furnace in January and February: 600 tons coarse ore; 58 flasks cleaned up. Percentage, 3697 $\frac{1}{2}$ -10,000, or, in round numbers, 37-100 of 1 per cent. April, 297 tons run, 32 flasks put up; 412-1,000 of 1 per cent. May, 281 tons run, 70 flasks put up; 953-1,000 of 1 per cent. The 281 tons in May, was one-half from the coarse ore and one-half from the adobes, making an average by assay of 1 per cent.

The foreman in the mine, and others testified that the ore on the dump, and that taken from the mine from the first of January to the first of July, was of the same grade, or richness. The assay in May shows what the ore contained. The result shows that in January and February, while the new condenser of sixteen chambers was being tested, the yield was 37-100 of one per cent. assay, 46-100, or a loss of 9-100 of one per cent. In April, it shows 412-1,000 of one per cent., or less than 5-100 loss from assay. In May the result is 953-1,000 of one per cent., assay one per cent.—loss less than 5-100 of one per cent. Now, Mr. Editor, if this result is had in a badly constructed furnace, what may those expect, who have good structures of our patent? For a badly constructed furnace, (as this one is claimed to be), I am satisfied with the result, till something better is found. It is true that there will be a little more waste, and loss in drying out a new furnace and getting it up to the standard working heat, which will occupy from forty to fifty days, than ever afterward, but the 9-100 loss in January and February, over and above 5-100 of one per cent., was in costing the condensers. What one other furnace has done, is shown by a communication in your valuable sheet, of October 4th, 1873, from Hubert Bankert, Mining Engineer, and Superintendent of the Napa Quicksilver Mining Company. He says: "In our works, out of sixteen hundred tons, worked in this way," (through their furnace), "only an average of eight and one-half pounds per ton was obtained, where the ore treated contained by repeated assays from twenty to eighty pounds per ton." Now, I will take the twenty pounds per ton, or one per cent. as the fair assay of the ore treated, the yield was eight and one-half pounds, or 42-100 of one per cent., while the loss from assay is 58-100 of one per cent., or nearly three-fifths of the whole. I might refer any who are curious to know what other processes lose in the reduction of cinnabar, to an article on "quicksilver extraction," in your paper, August 23d, 1873, without copying it here. Wishing all parties erecting reduction works, may have the good luck to get a furnace that will make returns only 5-100 of one per cent., short of the assay, and they will prosper. R. T. Knox.

COLORADO MINING INTEREST.—It is a matter of congratulation that our mines, throughout the winter season have been steadily and profitably worked, showing far better results than in any like season before. The shipments from the Stewart reduction works, at Georgetown, for February, were forty-seven bars, containing 49,396 ounces—\$52,154.57 coin value. The currency value of the shipments of gold and silver bullion from Gilpin county was \$180,652. The currency value of the stamp-mill gold was \$93,852. The total amount is in advance over the shipments of January of \$13,876. The advance in the amount of mill gold over January is \$28,837. The receipts of the Denver mint for January were \$25,923.99 in excess of the same month last year; and February shows about fifty per cent. increase.—*Denver Tribune.*

The Kelsey mill, Silver City, has started up on ore from the Consolidated Virginia mine. As soon as the roads will permit of hauling in that direction, the Occidental mill will be started up on ore from the same mine.

Smelting in North Star District.

A correspondent of the Salt Lake Tribune writing from North Star, Beaver county, Utah, says: In relation to the present outlook in Star, doctors are somewhat disagreed, but the writer, with many others, think it the brightest day the district has ever seen. The spring will open with two smelters, and a ten-stamp mill in successful operation. True, money just now is scarce, but we are not alone in this difficulty. Our neighbors are as bad off as ourselves, and throughout the country there appears to be a lack of currency. The financial panic has affected the mining portions of this country as much perhaps as any other. This is owing to the fact that a large amount of ready money is always necessary to carry on mining successfully, and in new districts it has to come from abroad. Such is the case in Star. It is only within the last few months that money could be realized from the sale of ores. A considerable amount has been sold to companies operating here on a credit, which has not only introduced all the inconveniences arising from doing business on "tick," but payments having been delayed in some cases, has given rise to distrust, and furnished employment for that chronic member of society, the grumbler. It is to be hoped that this very objectionable method of doing business is drawing to an end. The interest of companies, as well as individuals, is promoted by making immediate payment for whatever they purchase. Every article can be purchased from five to ten per cent. cheaper, to say nothing of the life and activity which the pay-down principle infuses.

Labor and Character of Ore.

More work has been done on the mines during the winter, now drawing to a close, than at any previous period of time, and with a few exceptions, the developments are encouraging. One thing is being demonstrated daily, if indeed it is not already an established fact, that Star is a base metal region, requiring furnaces to work its ore. Lead predominates everywhere, and its value is quite equal to that of silver. To throw away the lead, would, in a majority of cases, prove a prodigal waste, and leave a slight margin for profit above costs of mining and milling. This view of the case, no experienced miner will gainsay. There are considerable milling ores in the district, though as far as yet ascertained, they are of rather low grade.

How the Mill may Succeed.

The facilities for reducing by the mill process are so good, that with careful management, such ores can be worked with a profit. And I am confident that the mill at this place, though it has not met with the success that was anticipated, will yet pay a handsome dividend to its owners. Let the company pay down for their ores, and meet the running expenses of the mill as they mature, and they can not fail to reap a profit. Miners will sell their ores ten per cent. cheaper for cash in hand, than on even a month's credit. Laborers will work ten per cent. cheaper when they get their pay as they go along. The company being a wealthy one, there is nothing to hinder them from adopting the pay-down system, and it will certainly put wind in their sails if it does not prove the means of saving the ship.

To Attach a Smelter.

I understand that it is the purpose of the company to erect a smelter in connection with their mill. This is a wise policy, as their ample steam power will furnish any required blast, and the site is convenient to a large number of mines that produce lead ores. So far, the mill has been kept in constant operation, and the prospect is that there are sufficient ores in reach to keep it pounding away through the year '74, at least.

Thus, with the bow doubly strung, our Canadian friends ought to make money, and find their Utah property a paying investment. Such, I am warranted in saying, is the general hope of the miners at Star; for the company is a most honorable one, and withal, the pioneer of quartz milling in Southern Utah.

More Money for the Enterprise.

Dr. McHattie, one of the principal owners, heretofore the company's agent, is expected within the next week from Canada. He comes with money; and lively operations are anticipated. The doctor has many friends in Star who are looking forward to his return with considerable pleasure.

The Furnaces.

The furnace at Shaunty springs has been running the greater portion of the time during the winter, turning out several hundred tons of bullion, the precise amount I do not know. The ores used have been from a great number of mines, so that the value and character of the mineral of the district has been pretty extensively tested. These ores readily flux by mixing, though it has been found necessary to roast some of them to destroy the sulphur and arsenic which existed in sufficient quantity to choke the furnaces. I am informed that the bullion carries 90 ounces of silver to the ton. This is worth \$1.25 per ounce in New York. The lead is worth \$4.5 cts. per lb., which brings the value of the bullion up to \$228 per ton in New York, in gold. The outlay I cannot definitely state. The charcoal costs, at the furnace, 25 cts. per bushel. The hauling of the ore from the mines is done by the Mormon citizens at a very low figure. The freight on the bullion to the terminus of the Utah Southern has been about \$23 per ton.

The Wah-wah Furnace.

This furnace, which is situated at Wah-wah Springs, has been running the most of the time for about six weeks, and has turned out 200 tons of bullion, all of which has been shipped to the railroad at a cost of \$25 per ton. This bullion is the product, exclusively of ore, from the Mountain Queen mine, situated in Piute District. The value of the bullion in silver is not known here, but I think that it is not greater than that produced by the Shaunty Smelter, if indeed it be equal to it.

What has Been Accomplished.

In relation to this works at Wah-wah, it is but just to the company to state, that they have been constructed, and so far, operated under the most unfavorable circumstances. The first blow was struck in the middle of the winter, (the most severe for a dozen past), since which time has been erected and operated the most successful furnace ever built in Utah. Its capacity is four tons of bullion in five hours, or fourteen tons in 24 hours. The character of the ore has had much to do, no doubt, with the quantity of bullion produced. The former, from the Mountain Queen mine, and charcoal from piñon pine were thrown into the furnace together, and lo! the bullion by the hundred tone. The company has now commenced to mine ores from the San Francisco district, which will, no doubt, increase the value of their bullion, so this district produces some very fine mineral.

The Mountain Queen Mine.

This mine has generally been considered one of the big things of the country, though it has not yet been thoroughly prospected, a depth of seventy feet only having been reached. The yield has been immense, and the ore is said to still show in great quantity. It is mostly a carbonate and decomposed-like soil.

A Field for Operations.

There is abundant room for other furnaces in Beaver county. Beaver lake, San Francisco and Lincoln districts need one or more furnaces each. I am convinced that smelting can be made to pay with present facilities, by shipping the bullion, as Shumer & Co. are doing, direct to New York. A better way, where the company is able to meet running expenses, would be to pile up the bullion at the furnaces and await the approach of the railroad, which can not long be delayed. It is destined to make another stride at least, the coming summer.

The cost of freight from Star to Provo, the railroad terminus, would, were railway transportation complete, pay the tariff to Omaha. The amount which would thus be saved, being \$14 to the ton, would of itself afford a handsome profit. But, as there is already a gain, it would amount to more, perhaps \$20 per ton. This, so any one can see, would be a paying business.

Idaho Mining Notes.

The Owyhee *Avalanche* contains the following mining notes:

Superintendent Boyle is rapidly getting the Silver Cord in shape for extensive working. The main shaft is now down 74 feet below the second level. The first level is in 75 feet north, and the second in 100 feet north. The ledge in some places shows a width of four feet, and is very rich in gold. Mr. Boyle says that by the first of June he can give 75 men employment in taking out ore. The Silver Cord is a very easy mine to work; and, judging from present appearances, will turn out plenty of bullion next summer.

They cleaned up the last run of Belle Peck ore this week, and it panned out handsomely. The crushing of 28 $\frac{3}{4}$ tons at Trask's arrastra yielded \$5,948.44, or at the rate of \$206.55 per ton. The bullion assayed about \$11.50 in gold per ounce. The Belle Peck will make things lively in Webster Gulch next summer.

The South Chariot Company have purchased from H. S. Cheasbro the engine and boiler which belonged in the Morning Star mill, and will put it on their mine as soon as some additional machinery can be had from San Francisco. The mine is proving richer and richer all the time, and we should not be surprised to see the stock go up to \$100 per share next summer.

Mr. Cheasbro has purchased the hoisting works at present used on the South Chariot, and will put them on the Illinois Central as soon as the new hoisting works of the former are ready to run. The Illinois Central is yielding richer ore and more of it than ever.

They have finished crushing the Rising Star ore at Flint district, and will have about two tons of crude bullion over here in a few days. The mill handle all came over to Silver on snowshoes day before yesterday.

Judging from the amount of rich ore now in sight in the various mines of this camp, it is estimated that at least twice as much bullion will be shipped next summer than during any previous season.

Two miners at Hit or Miss Gully, Vaughan, Australia, a gully noted for nuggets, by the cradle obtained over fifty ounces from the bank of the gully, in four feet sinking. The gold was of a very nuggety description, there being pieces of 12 oz., 11 oz., 3 $\frac{1}{2}$ oz., 3 $\frac{1}{2}$ oz., and 3 $\frac{1}{2}$ oz., whilst scarcely any gold was less in weight than 2 dwts. It is somewhat remarkable that the party have been washing day after day since without obtaining the color of gold.

Reduction Works of Pelican Mine.

The Colorado Miner gives the following account of the reduction works of the Pelican Silver Milling Company: Some time since, brief mention was made of the fact that the Huepeden mill, which had been lying idle so long, had been secured for a new career of usefulness, and that Dr. Munson was engaged in putting it in good repair for active work.

We are glad to say that now the old property at the head of Alpine street, no longer represents inactive capital, for it has been put in thorough order and is doing good and faithful work under the control of parties who will not be likely to suffer its machinery to rust for want of use. As its new name imports, it is employed in producing silver from the ores of the Pelican mine.

In company with the Manager, Dr. G. C. Munson, we have made a thorough inspection of the mill and its workings, and take pleasure in announcing that Georgetown has another silver reducing establishment in successful operation. At present the machinery is driven by steam, but there is a large water wheel connected with the works which will furnish all the power required during the summer and fall.

The ore is delivered at the south end of the mill, and is transferred to ovens where it is heated until all the moisture is driven off. It is then pulverized in a Dodge crusher, and conveyed by an elevator into a ball pulverizer—a revolving cylinder in which loose balls of cast iron complete the work of powdering it—thence another elevator carries it up to the screens, where it is brought to a uniform size, the particles that are not fine enough to pass through being returned to the pulverizer for further treatment, while the remainder is conveyed into two large iron roasting cylinders, of the Brunswick patent, which are caused by the proper gearing to revolve on friction rollers. In front of each cylinder is a furnace, the heat from which pours continuously through the cylinder, and a peculiar arrangement on the inside causes the powdered ore to be gradually worked from end to end, while the revolving motion by subjecting every atom to the uniform action of intense heat, secures the thorough desulphurizing of the mass. Salt is added in proper proportion to secure the thorough chloridizing of the powdered ore. A "charge" for each cylinder varies, according to the quality of the ore, from three and one-half to eight tons. When the proper tests show the "charge" to be "cooked," it is discharged into a car, which runs upon a railway below the cylinders, and is conveyed to a brick cooling floor. When it is cool it is passed through another screen, and the lumps that will not pass through are mixed with the ore and again go through the fiery ordeal. The fine stuff is transferred to a couple of revolving barrels, mixed with water and escape of iron which facilitate the precipitation of the base metals; and after revolving for several hours, the mass becomes of a pulpy consistence, when quicksilver is added and again the barrels are permitted to revolve until the quicksilver has taken up every particle of metallic silver precipitated by the action of the iron from the state of chlorides in the mass of three thousand pounds—this being the capacity of each amalgamator. When the amalgamation is complete, the quicksilver is drawn off, and the "tailings" are discharged into a tank. Careful assays of these tailings are made, and if it be found that enough silver remains to justify further treatment, they are saved, but if otherwise, they are disposed of by being shoveled into the stream which dashes along outside the works. The quicksilver drawn from the barrels is then strained, and that portion with which silver is combined—the amalgam—is conveyed to the assay office to be re-treated.

The department through which the reader has followed us is under the immediate supervision of Mr. Charles E. Sherman, a gentleman who has had extensive experience in the business, and is thoroughly competent to discharge the responsible duties of his position.

The tubular boiler which furnishes the power generates steam sufficient for a 45-horse power engine, which is in fine order, and works so smoothly that neither noise nor vibration is perceptible. Mr. C. P. Storm, the master mechanic of this establishment has charge of this department. So carefully has everything been arranged for the economy of heat and fuel, that one and a half cords of wood only are consumed in twenty-four hours in the boiler furnace and for warming the building. About the same amount is required to dry the ore and run the cylinder furnaces.

The assay department, which is in the rear of the office, is in charge of Mr. Ben. F. Napeyes, a good metallurgist, who thoroughly understands his business. His position is no sinecure, for assays are to be made at every step in the progress of the work, from the raw ore to the tailings.

Mr. E. Y. Naylor, one of the owners of the Pelican mine, has his headquarters in the office. He showed us the result of several "retorts," masses of beautiful metal which retained its whiteness and lustre, showing the fineness of the mass.

We hope soon to add to our reports of "bullion shipments," a weekly statement of bars from the Pelican Silver Milling Company.

CARSON RIVER is yielding a bountiful supply of water for milling purposes.

A COMPANY has been organized in Marysville for the purpose of engaging in hydraulic mining, in Baker county Oregon.

SCIENTIFIC PROGRESS.

Molecules.

Professor Clark Maxwell lately delivered an interesting lecture before the British Association, upon molecules, by which is meant the subdivision of matter into the greatest possible number of portions, similar to each other. Thus, if a number of molecules of water are combined, they form a mass of water. Molecules of some compound substances may be subdivided into their component substances. Thus, the molecule of water separates into two molecules of hydrogen and one of oxygen.

The ancient atomic theory, described more than two thousand years ago by Lucretius, was that the molecules of all bodies are in motion even when the body appears to be at rest, and this is the accepted theory of to-day. In the case of solids, these motions are combined within such narrow limits that we cannot, even with the microscope, detect any alteration in their positions. But liquids and gases may be subjected to experiments which afford convincing proofs of molecular motion. If the gases of ammonia and hydrochloric acid, for example, be placed in a glass tube, with a stratum of air between, the lighter gas, ammonia, above, the gases diffuse through the air and produce a white cloud when they meet. Air confined in a vessel presses, as we say, against the wall thereof. What we term pressure is simply the impact of the moving molecules against the interior surfaces of the vessel. The amount of the pressure depends upon the number of molecules of air or gas within the vessel. By the application of heat, the movement of the molecules is increased in velocity, and such increase, of course, causes each molecule to strike harder against the walls of the vessel; in other words, the pressure is increased; the law of such increase of pressure being as the square of the velocity of the molecules.

Dr. Joule has calculated the velocity of hydrogen molecules, at the temperature of melting ice, at a little over 6,000 feet per second. The molecules of ammonia move about 2,000 feet per second. The molecules of common air move with a velocity of seventeen miles per minute; and, if they all moved in the same direction, nothing could stand such a wind. But molecules constantly impinge against each other; and, by this contact, their directions of motion are incessantly changed.

Professor Maxwell has calculated the size, and weight of hydrogen molecules, and finds that about two millions of them, placed side by side in a row, would occupy a length of about one twenty-fifth of an inch; and that a package of them, containing a million, million, million, million of them, would weigh 62 grains, or not quite one-eighth of an ounce.

Each molecule throughout the universe, says our author, bears impressed on it the stamp of a metric system as distinctly as does the meter of the archives at Paris, or the double royal cubit of the Temple of Karnac.

No theory of evolution can be formed to account for the similarity of molecules, for evolution necessarily implies continuous change, and the molecule is incapable of growth or decay of generation or destruction. None of the processes of nature, since the time when nature began, have produced the slightest difference in the properties of any molecule. We are therefore unable to ascribe either the existence of the molecules or the identity of their properties to the operation of any of the causes which we call natural. On the other hand, the exact equality of each molecule to all others of the same kind, gives it, as Sir John Herschel has well said, the essential character of a manufactured article, and precludes the idea of its being eternal and self-existent.

Thus, we have been led along a strictly scientific path, very near to the point at which science must stop. Not that science is debarred from studying the internal mechanism of a molecule which she cannot take to pieces any more than from investigating an organism which she cannot put together. But in tracing back the history of matter, science is arrested when she assures herself, on the one hand, that the molecule has been made, and on the other, that it has not been made by any of the processes we call natural.

Science is incompetent to reason upon the creation of matter itself out of nothing. We have reached the utmost limit of our thinking faculties when we have admitted that; because matter cannot be eternal and self-existent, it must have been created. It is only when we contemplate, not matter in itself, but the form in which it actually exists, that our mind finds something on which it can lay hold. That matter, as such, should have certain fundamental properties, that it should exist in space and be capable of motion, that its motion should be persistent, and so on, are truths which may, for anything we know, be of the kind which metaphysicians call necessary. We may use our knowledge of such truths for purposes of deduction, but we have no data for speculating as to their origin. But that there should be exactly so much matter and no more in every molecule of hydrogen is a fact of a very different order. We have here a particular distribution of matter, a collocation, to use the expression of Dr. Chalmers, of things which we have no difficulty in imagining to have been arranged otherwise. The form and dimensions of the orbits of the planets, for instance, are not determined by any law of na-

ture, but depend upon a particular collocation of matter. The same is the case with respect to the size of the earth, from which the standard of what is called the metrical system has been derived. But these astronomical and terrestrial magnitudes are far inferior in scientific importance to that most fundamental of all standards which forms the base of the molecular system. Natural causes, as we know, are at work which tend to modify, if they do not at length destroy, all the arrangements and dimensions of the earth and the whole solar system. But though, in the course of ages, catastrophes have occurred, and may yet occur in the heavens, though ancient systems may be dissolved and new systems evolved out of their ruins, the molecules out of which these systems are built—the foundation stones of the material universe—remain unbroken and un worn. They continue this day as they were created, perfect in number, and measure and weight.—*Scientific American*

Application of Solar Heat as a Motor.

G. A. Bergh argues in a German scientific paper, the practicability of applying the sun's heat to drive engines; a plan which has been long advocated, but which seems as far from being put into practice as ever. He says: That the heat of the sun may be transformed into mechanical force no one can doubt; for we see daily what masses of water, solar heat raises into the air, to be precipitated to the earth; and we know what an enormous mechanical force is here represented.

But while solar heat is the cause of nearly all mechanical force developed on the earth, we have yet hitherto known of no means whereby it may be directly utilized for mechanical work. It has been proposed, indeed, to employ solar heat, concentrated by lenses or mirrors, for driving a steam or caloric machine. These machines, however, are not suited for this, as they involve too great a waste of heat. Moreover, in concentration, a large quantity of heat must be lost.

Machines which serve for the transformation of heat into mechanical work, rest on the principle that a liquid or gaseous substance, acted on by the heat, undergoes a molecular change, through which a certain mechanical force is developed. The changes of solid bodies, under influence of heat, are too small for transformation of the heat into mechanical work, or to render them means of movement; although, through such molecular change, a certain mechanical force is developed. Gaseous bodies have been applied as a means of movement in the caloric and gas machines; but, with the small differences of temperature which occur in some machines, they cannot be employed as such, with advantage. Thus nothing remains but to employ a liquid; and it must be one whose boiling point is very low. There are several such liquids, sulphurous acid, methylic chloride, methylic ether, etc. Of all these, sulphurous acid best deserves attention, as it has several useful properties for the end in view. It is not difficult to condense. The keeping of it presents no difficulties, and it may quite well be put in ordinary steam boilers.

Take a vessel, A, filled with sulphurous acid, exposed to the sun's rays: the tension of the sulphurous acid vapor, if the temperature of this vessel exceeds that of the surrounding air by 10 or 20 degrees, must be from one to three atmospheres higher than that of the sulphurous acid vapor in another vessel B, similarly filled with sulphurous acid, but which has only the temperature of the surrounding air. We can thus arrange an engine, which agrees in principle with the steam engine, with merely this difference: that the water is replaced by sulphurous acid, the fuel by the solar heat; while the vessel exposed to the sun's rays represents the steam boiler, the vessel kept at ordinary temperature may represent the condenser. The sulphurous acid, condensed after doing work in vessel B, could easily be driven back by a force-pump into the boiler representing vessel A. The capability of work of such a machine must naturally increase with the amount of the heat communicated to vessel A, or be proportional to the surface exposed to the solar rays.

If now, we conceive a factory or shop, the roof of which is covered with vessels containing sulphurous acid, and which is furnished with a sun machine, made on the above principle, such a machine might indeed work while there was sunshine; but, in default of this, the establishment would be brought to a standstill. True, the solar heat might be replaced by the heat of the air, if the temperature of the air were pretty high, and one had at hand a cooling substance like ice. But as this is not always the case, the establishment should have, besides the sun machine, an apparatus which might "store up" some of the work done by this. As such, Natterer's apparatus for condensing carbonic acid might with great advantage be used. If a supply of carbonic acid were kept in a large gasometer, like those in ordinary gasworks, the Natterer apparatus might be fed from this. In a wrought-iron vessel thus filled with liquid carbonic acid, we should have an enormous store of mechanical force, which might be made to replace the action of solar heat in the sun machine, partially or wholly. After work done, the carbonic acid, becoming gaseous again, might be collected in the gasometer. Or, again, the sun machine, while in action, might drive an ice machine, and might, in default of sunshine, profit by the ice it had produced, for maintenance of its working.

We thus see that, from the present standpoint of science, it is possible to construct a constantly working sun machine.

MECHANICAL PROGRESS.

Hollow Walls.

It is well known that walls of extra thickness, made of brick, are very apt to be weak and fall to decay in a comparatively short space of time. This fact may be accounted for at once, when one remembers that mortar requires the free action of the atmosphere, without which it will not harden. It is true that the brick will absorb the moisture, but the lime and sand will become disintegrated, and crumble away without effecting the purpose required, namely, that of forming a binding joint. Walls three feet thick have been taken down after twenty years' standing, and found to be little more than rubbish at the core. Such brickwork is sure to be weak; for the damp increased in it will work ruin most effectually, both inwardly and outwardly.

In the construction of fortifications, this existence of damp at the core of the wall is avoided by using water-lime cement, instead of quicklime, as the former will indurate under the very influence that proves an insuperable obstacle to the hardening of the latter. Besides, the courses of brick masonry in fortifications are raised so slowly that it gives ample time for the setting of each course before the enceding one excludes it from the action of the atmosphere.

To give an opportunity to ordinary walls of dwellings, etc., to receive the full benefit of the air on the interior, a method of hollow-wall has been introduced in building, and this is accomplished either by a novel article of brick or block, cast with an elongated aperture within itself, or it is brought about by so using ordinary bricks as to leave a hollow space varying from two to four inches in the rear of the wall.

The great difficulty to be encountered in the formation of hollow walls is found in the fact that there must be binders, or bricks laid crosswise, at every fourth or fifth course. Such bricks serve as ducts to convey moisture from outside to inside. And, as there must necessarily be a great number of these, it is very evident that the transit of damp is not wholly prevented by the system of hollow walling. It is to avoid this mischievous intervention of the binders that a patent mode of hollow-wall has been introduced in the West, by a builder of much experience, at San José, California. His plan is to substitute for brick binders, laid diagonally, reversing the slope every second course, or alternately.

These ties are simply laths such as are used in plastering. They are four feet long, and are cut three times, so as to give four ties of a foot in length to each lath. But for twelve-inch walls it is proposed to make the lath ties sixteen inches. They are scattered along every fourth or fifth course, throughout the wall; and spaced about ten inches apart on the wall.

This is certainly a very economic way of treating this matter, and the binding principle must surely be preserved by it. But in the event of fire, how inevitably would the devouring element seize upon the very vitals of its prey, and, in the destruction of these laths, most effectually disintegrate the wall.

However, the plan is nevertheless a good one, and the substitution of hoop-iron would guard against the fearful eventuality alluded to in the use of laths.

As to any sanitary benefit being derived from the use of hollow walls, their efficiency is doubtful; indeed, one may incline to the opinion that these same intervals or spaces in walls are dark chambers for the generation of poisonous gases, which are apt to find an entrance through the porous brick into the dwelling apartments and bed-chambers of houses, superinduced by the attractive atmosphere there. To be sure, this objection might be obviated by ventilating apertures. But these, again, admit the external cold, and permit the escape of the internal heat.—*American Homestead*.

PNEUMATIC CALL BELLS.—A French inventor has lately brought out a novelty in bells for houses. A series of small leaden tubes proceed from the kitchen to each room, one to the sitting-room, one to the drawing-room, and one to each bed-room. Attached to these tubes in each room are a few feet of India-rubber tubing, suited in color to the paper of the room. To the end of the tube a syringe is fixed airtight, and this hangs similar to an ordinary bell-rope. In the kitchen is a case containing the bell, which serves for all the rooms, the distinction being effected by tickets with the names of their respective rooms printed on them, held down by springs. They work in this manner: the India-rubber syringe is pressed, and the air by this means is forced through the tube into a corresponding India-rubber syringe or ball in the case in the kitchen. This, of course, expands, and forces up a small rod, which moves a cog-wheel and rings the bell, and at the same time sets free the spring which retains the ticket of the room in which the bell is rung; this starts up into a square in the glass door, and at once indicates in a simple manner the room. These ingenious bells act as effectively as electric bells, without their trouble and expense, and not getting out of order like our wire bells and cranks.—*Iron Age*.

Railway Brakes.

We take the following from an editorial in the *London Times*: The chief features of a good continuous brake are that its application is effected by one hand of the engine driver himself, and that it can be applied instantly and simultaneously to every carriage in the train. The present engine brake acts with comparative slowness, so that a certain amount of time is lost in screwing it up. It is reinforced by one or more brakes of the same construction, which are under the control of the guards. If a driver perceives that a collision is imminent, he orders his stoker to put on the engine brake, and he blows a whistle which directs the guards to put on theirs. If the guards hear and heed the signal, they have still to tighten their brake screws by several turns of their handles; and, practically, many precious moments are lost before such brake power as the train possesses is brought to bear in retarding it. Moreover, this power is only enough to arrest motion very gradually; for the new wheels which are checked or skidded will be carried along by the momentum of the train acting upon the many wheels which are still free to revolve. With a continuous brake, however, the driver who sees danger ahead can apply the blocks to every wheel, by a single movement of his hand, in less time than it would take him to give an order to his stoker, or to sound a signal for his guards.

The result is that a powerful retarding force is actually brought to bear. Before, under the old system, a single hand would be placed upon the levers by which the brakes are governed. A saving is thus effected equivalent to the time and distance which the train would have run between the driver's first perception of danger and the full operation of the brakes that were screwed down in response to his orders. A further saving is effected, dependent upon the exercise of a retarding force upon every carriage, instead of upon, say, two brake-vans only; and, on account of this part of the arrangement, it is scarcely more difficult to stop a long and heavy train than a short and light one. It is impossible to express the retarding force in very definite terms, because it will depend partly upon the state of the rails, and partly upon the momentum of the train, which, in its turn, is dependent upon the speed and upon the load conveyed by the carriages. Momentum is weight multiplied by velocity, and a train of empty carriages, drawn at 20 miles an hour, would be stopped by any brake in a shorter distance than would be required for the same train when its speed was increased to 30 miles, and its weight by the addition of a full load to every carriage. As weight and velocity are matters which vary continually, it is obviously impossible to say that any brake would stop a train in any given distance; but it would be quite correct to say that any continuous brake would stop a train of moderate speed almost instantaneously; or, at most, in its own length, unless the rails were unusually slippery. Collisions were once very frequent in America, where they are now exceedingly rare; the general adoption of the air-brake having given drivers such command over their trains that nothing but a dense fog, or a sharp curve in a deep cutting, or some other condition presenting an impenetrable obstacle to vision, could render a collision possible. When the pneumatic brakes were first used in the States, the newspaper space, which had previously been devoted to collisions, was for a time occupied by narratives of the circumstances under which collisions had been avoided. Now, however, the subject has passed beyond this stage; and it is as much a matter-of-course to pull up a train that is rushing upon danger as it would be at a crowded corner to rein horses which were well in hand.

A DESTRUCTIVE ENGINE OF WAR.—The recent trial of the Taylor battery gun, upon which the Colt company, of Hartford, has, for some months, been engaged, shows it to be the most formidable weapon of war that has yet been invented. Its barrels are twenty-four in number, and are arranged in two concentric circles. They are also regulated so as to radiate their fire, covering a horizontal line of twenty-two feet, at a distance of five hundred yards. The gun fires with great rapidity, by fusillade or by volley, at the pleasure of the operator, while the cartridges are fed into the barrel from suitable charging cases, which are introduced into the interior of the breech cylinders. The results at the late trial were astonishing. In firing a single barrel, at a distance of five hundred yards, bullets were repeatedly sent into an eight-inch hull's-eye. In firing the fusillade, the twenty-four balls were distributed on a horizontal surface, twenty-two feet long, at a distance of a foot apart, and firing by the battery, the same results were accomplished. The rapidity of the fire was remarkable, being at the rate of seven hundred shots per minute. The terrible effectiveness of this weapon in battle, and the utter powerlessness of charging columns in the face of a fire, can be seen by the fact that every second sweeps over twenty feet in length, and mows men down at the rate of a regiment a minute. The inventor of this remarkable weapon is Colonel James P. Taylor, of Knoxville, Tenn. His invention was conceived in 1870, and patented in July, 1871, and it has since been improved until its present extreme simplicity, have been reached. The manufacture of the gun is to be rapidly pushed and active measures taken for its introduction among foreign governments.—*Am. Manufacturer*.

Weekly Variations in Stocks.

(Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.)
For 6 days ending Wednesday, Mar. 25, 1874.

NAME OF COMPANY.	IN MINES.	SHARES.	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.						
Alamo	300	6000	17 1/2	16 1/2	1 1/2	
Alpha Con.	3800	76000	17 1/2	16 1/2	1 1/2	
Alta	3000	60000	17 1/2	16 1/2	1 1/2	
American Fl.	1800	36000	17 1/2	16 1/2	1 1/2	
Arizona & Utah	1800	36000	17 1/2	16 1/2	1 1/2	
Bacon M. & M.	600	12000	17 1/2	16 1/2	1 1/2	
Baltimore Con.	1000	20000	17 1/2	16 1/2	1 1/2	
Belcher	220	4400	17 1/2	16 1/2	1 1/2	
Best & Belcher	220	4400	17 1/2	16 1/2	1 1/2	
Bowling	1000	20000	17 1/2	16 1/2	1 1/2	
Bowling	1000	20000	17 1/2	16 1/2	1 1/2	
Bullion	2500	50000	17 1/2	16 1/2	1 1/2	
California	3000	60000	17 1/2	16 1/2	1 1/2	
Chollar-Potosi	2800	56000	17 1/2	16 1/2	1 1/2	
Confidence	130	2600	17 1/2	16 1/2	1 1/2	
Con. Gold Hill Quartz	1100	22000	17 1/2	16 1/2	1 1/2	
Con. Virginia	1800	36000	17 1/2	16 1/2	1 1/2	
Cook & Geyer	1800	36000	17 1/2	16 1/2	1 1/2	
Crown Point	600	12000	17 1/2	16 1/2	1 1/2	
Danvers	1200	24000	17 1/2	16 1/2	1 1/2	
Daniels	1200	24000	17 1/2	16 1/2	1 1/2	
Empire	70	1400	17 1/2	16 1/2	1 1/2	
Empire M. & M.	70	1400	17 1/2	16 1/2	1 1/2	
Eschschuer	250	5000	17 1/2	16 1/2	1 1/2	
Fairmount	3000	60000	17 1/2	16 1/2	1 1/2	
Flourery	3000	60000	17 1/2	16 1/2	1 1/2	
Franklin	2000	40000	17 1/2	16 1/2	1 1/2	
Globe	1200	24000	17 1/2	16 1/2	1 1/2	
Gould & Curry	1200	24000	17 1/2	16 1/2	1 1/2	
Hale & Norcross	400	8000	17 1/2	16 1/2	1 1/2	
Imperial	180	3600	17 1/2	16 1/2	1 1/2	
Indus.	2000	40000	17 1/2	16 1/2	1 1/2	
Insurance	2000	40000	17 1/2	16 1/2	1 1/2	
Jacob Little	3000	60000	17 1/2	16 1/2	1 1/2	
Johns	3000	60000	17 1/2	16 1/2	1 1/2	
Justice	3000	60000	17 1/2	16 1/2	1 1/2	
Kentuck	95	1900	17 1/2	16 1/2	1 1/2	
Knickerbocker	1200	24000	17 1/2	16 1/2	1 1/2	
Kosuth	1200	24000	17 1/2	16 1/2	1 1/2	
Lady Bryan	2500	50000	17 1/2	16 1/2	1 1/2	
McMeans	2500	50000	17 1/2	16 1/2	1 1/2	
Min.	1500	30000	17 1/2	16 1/2	1 1/2	
Nevada	3000	60000	17 1/2	16 1/2	1 1/2	
New York Con.	3800	76000	17 1/2	16 1/2	1 1/2	
Occidental	300	6000	17 1/2	16 1/2	1 1/2	
Ophir	2400	48000	17 1/2	16 1/2	1 1/2	
Overman	1200	24000	17 1/2	16 1/2	1 1/2	
Phil. Sheridan	1200	24000	17 1/2	16 1/2	1 1/2	
Potosi	2000	40000	17 1/2	16 1/2	1 1/2	
Rock Island	1000	20000	17 1/2	16 1/2	1 1/2	
Sage	500	10000	17 1/2	16 1/2	1 1/2	
Seg. Belcher	160	3200	17 1/2	16 1/2	1 1/2	
Seg. California	1000	20000	17 1/2	16 1/2	1 1/2	
Seg. Rock Island	1000	20000	17 1/2	16 1/2	1 1/2	
Senator	2000	40000	17 1/2	16 1/2	1 1/2	
Sierra Nevada	2000	40000	17 1/2	16 1/2	1 1/2	
Silver Hill	1000	20000	17 1/2	16 1/2	1 1/2	
South Osmont	2400	48000	17 1/2	16 1/2	1 1/2	
South Overman	2400	48000	17 1/2	16 1/2	1 1/2	
Succor M. & M.	7600	152000	17 1/2	16 1/2	1 1/2	
Tateno	250	5000	17 1/2	16 1/2	1 1/2	
Trench	250	5000	17 1/2	16 1/2	1 1/2	
Tyler	2200	44000	17 1/2	16 1/2	1 1/2	
Union Con.	800	16000	17 1/2	16 1/2	1 1/2	
Utah	1000	20000	17 1/2	16 1/2	1 1/2	
Woodville	1400	28000	17 1/2	16 1/2	1 1/2	
Yellow Jacket	1200	24000	17 1/2	16 1/2	1 1/2	
NEVADA.						
Adams Hill	1000	20000	17 1/2	16 1/2	1 1/2	
Alps	800	16000	17 1/2	16 1/2	1 1/2	
Amador Tunnel	1000	20000	17 1/2	16 1/2	1 1/2	
American Fl.	1000	20000	17 1/2	16 1/2	1 1/2	
B. & C. Con.	300	6000	17 1/2	16 1/2	1 1/2	
Belmont	1000	20000	17 1/2	16 1/2	1 1/2	
Bowling	1000	20000	17 1/2	16 1/2	1 1/2	
Bowling	1000	20000	17 1/2	16 1/2	1 1/2	
Chollar Oak	1000	20000	17 1/2	16 1/2	1 1/2	
Chief of the Hill	1000	20000	17 1/2	16 1/2	1 1/2	
Chief East Extension	1000	20000	17 1/2	16 1/2	1 1/2	
Columbus M. & M.	1000	20000	17 1/2	16 1/2	1 1/2	
Condor	1000	20000	17 1/2	16 1/2	1 1/2	
El Dorado South	1000	20000	17 1/2	16 1/2	1 1/2	
Eschschuer	1000	20000	17 1/2	16 1/2	1 1/2	
Harper	1000	20000	17 1/2	16 1/2	1 1/2	
Harnes	1000	20000	17 1/2	16 1/2	1 1/2	
Home Ticker	1000	20000	17 1/2	16 1/2	1 1/2	
Huhn & Hunt	1000	20000	17 1/2	16 1/2	1 1/2	
Ingram	1000	20000	17 1/2	16 1/2	1 1/2	
Intano	1000	20000	17 1/2	16 1/2	1 1/2	
Jackson	1000	20000	17 1/2	16 1/2	1 1/2	
Josephine	1000	20000	17 1/2	16 1/2	1 1/2	
Junata Con.	1000	20000	17 1/2	16 1/2	1 1/2	
K. & C. Con.	1000	20000	17 1/2	16 1/2	1 1/2	
Kentucky	1000	20000	17 1/2	16 1/2	1 1/2	
Kinston	1000	20000	17 1/2	16 1/2	1 1/2	
Lehigh	1000	20000	17 1/2	16 1/2	1 1/2	
Lillian Hill	1000	20000	17 1/2	16 1/2	1 1/2	
Louise	1000	20000	17 1/2	16 1/2	1 1/2	
McMahon	1000	20000	17 1/2	16 1/2	1 1/2	
Mayon	1000	20000	17 1/2	16 1/2	1 1/2	
Meadow Valley	1000	20000	17 1/2	16 1/2	1 1/2	
Mocking-Bird	1000	20000	17 1/2	16 1/2	1 1/2	
Monitor-Belmont	1000	20000	17 1/2	16 1/2	1 1/2	
Monterey	1000	20000	17 1/2	16 1/2	1 1/2	
Newark	1000	20000	17 1/2	16 1/2	1 1/2	
Pacific Tunnel	1000	20000	17 1/2	16 1/2	1 1/2	
Page & Farnes	1000	20000	17 1/2	16 1/2	1 1/2	
Payson	1000	20000	17 1/2	16 1/2	1 1/2	
Phoenix	1000	20000	17 1/2	16 1/2	1 1/2	
Potosi	1000	20000	17 1/2	16 1/2	1 1/2	
Potosi West	1000	20000	17 1/2	16 1/2	1 1/2	
Potosi-Phoenix	1000	20000	17 1/2	16 1/2	1 1/2	
Portland	1000	20000	17 1/2	16 1/2	1 1/2	
Raymond & Ely	1000	20000	17 1/2	16 1/2	1 1/2	
Rye Patch	1000	20000	17 1/2	16 1/2	1 1/2	
Silver Peak	1000	20000	17 1/2	16 1/2	1 1/2	
Silver West Con.	1000	20000	17 1/2	16 1/2	1 1/2	
Standard M. & A.	1000	20000	17 1/2	16 1/2	1 1/2	
Star Con.	1000	20000	17 1/2	16 1/2	1 1/2	
Stratight	1000	20000	17 1/2	16 1/2	1 1/2	
Stirling	1000	20000	17 1/2	16 1/2	1 1/2	
Spring Mount	1000	20000	17 1/2	16 1/2	1 1/2	
Spring Mt. Tunnel	1000	20000	17 1/2	16 1/2	1 1/2	
Ward Beecher	1000	20000	17 1/2	16 1/2	1 1/2	
Washington & Copie	1000	20000	17 1/2	16 1/2	1 1/2	
Watson	1000	20000	17 1/2	16 1/2	1 1/2	
Yellowstone	1000	20000	17 1/2	16 1/2	1 1/2	
CALIFORNIA.						
Alpine	1200	24000	17 1/2	16 1/2	1 1/2	
Bellevue	1200	24000	17 1/2	16 1/2	1 1/2	
Calaveras	1200	24000	17 1/2	16 1/2	1 1/2	
Cedarberg	1200	24000	17 1/2	16 1/2	1 1/2	
Chollar Hill	1200	24000	17 1/2	16 1/2	1 1/2	
Con. Amador	1200	24000	17 1/2	16 1/2	1 1/2	
Oostonwood Creek	1200	24000	17 1/2	16 1/2	1 1/2	
Dorandberg M. & M.	1200	24000	17 1/2	16 1/2	1 1/2	
Eureka	1200	24000	17 1/2	16 1/2	1 1/2	
Gillis	1200	24000	17 1/2	16 1/2	1 1/2	
Independent	1200	24000	17 1/2	16 1/2	1 1/2	
Keynote	1200	24000	17 1/2	16 1/2	1 1/2	
Mt. Jefferson	1200	24000	17 1/2	16 1/2	1 1/2	
Oakville	1200	24000	17 1/2	16 1/2	1 1/2	
St. Lawrence M. & M.	1200	24000	17 1/2	16 1/2	1 1/2	
St. Patrick	1200	24000	17 1/2	16 1/2	1 1/2	
Tecumseh	1200	24000	17 1/2	16 1/2	1 1/2	
Yule Gravel	1200	24000	17 1/2	16 1/2	1 1/2	
UTAH.						
Deseret Con.	1200	24000	17 1/2	16 1/2	1 1/2	
Wellington	1200	24000	17 1/2	16 1/2	1 1/2	
OREGON.						
Virgo	1200	24000	17 1/2	16 1/2	1 1/2	

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq't.	Sale.	Secretary.	Place of Business.
Alpha Gold M & M Co	Amador Co Cal	6	1.00	Mar 10	April 14	May 7	J. F. Lightner	433 California st
Alps S. M. Co.	Ely District	1	25	Feb 10	Mar 13	April 6	C. F. Balcom	426 Montgomery st
American Fl. M. Co.	Gold Hill	1	50	Feb 10	Mar 16	April 6	G. W. R. King	434 California st
Amador Tunnel & M Co	Ely District	2	1.10	Feb 5	Mar 12	Mar 31	L. Kaplan	Merchants' Ex.
Andes S M Co	Washoe	1	50	Mar 2	April 6	April 6	Edward Lenders	307 Montgomery st
Arizona and Utah M Co	Gold Hill	8	75	Mar 11	April 16	May 4	J. C. O'Connell	419 California st
Baltimore Cons. M Co	Washoe	5	1.50	Jan 31	April 7	April 27	W. H. Watson	302 Montgomery st
Chief of the Hill	Ely District	4	50	Mar 5	April 15	May 5	C. S. Neel	419 California st
Concor S M Co	Ely District	2	25	Jan 27	Mar 7	Mar 27	C. T. Grimes	240 Montgomery st
El Dorado South Cons M Co	Nevada	4	30	Feb 26	Mar 31	April 1	W. Willis	419 California st
Eschegger M Co	Gold Hill	10	30	Feb 10	April 13	May 4	D. T. Barlow	419 California st
Flourery & Hunt S M Co	Gold Hill	6	75	Mar 11	April 16	May 4	J. Maguire	419 California st
Hubb & Hunt S M Co	Ely District	9	30	Mar 9	April 16	April 27	J. L. Kimball	419 California st
Ida Elmore M Co	Idaho	12	1.00	Feb 12	Mar 18	April 11	W. Willis	419 California st
Independent M Co	Nevada	10	1.00	Mar 19	April 20	May 11	T. T. Grimes	240 Montgomery st
Julia M. S. M Co	Nevada	10	1.00	Mar 19	April 20	May 11	David Wilder	Merchants' Ex.
Julia M Co	Washoe	17	1.00	Feb 10	Mar 16	April 16	A. Noel	419 California st
Kentucky G. S. & M. Co.	Ely District	7	25	Jan 3	Mar 16	April 6	R. Goldsmith	419 California st
Knickerbocker M Co	Gold Hill	1	50	Feb 10	Mar 18	April 11	Henry Boyle	234 Sansome st
Knickerbocker S. & M. Co	Idaho	1	50	Feb 10	April 7	April 27	T. J. Owens	215 Sansome st
Mammoth S M Co	White Pine	10	1.00	Mar 3	April 13	May 4	J. L. King	136 1/2 434 California st
Mint G. S. & M Co	Washoe	10	Feb 5	Mar 13	April 27	May 5	D. A. Jennings	401 California st
Newark S M Co	Ely District	6	1.00	Feb 10	Mar 25	April 15	D. T. Bagley	419 California st
New York Cons. M Co	Gold Hill	8	1.00	Feb 17	April 20	April 27	H. O. Kibbe	419 California st
New Belmore M Co	Nevada	1	1.10	Mar 17	April 18	May 5	D. L. Thomas	419 California st
Ophir S M Co	Washoe	28	1.00	Feb 19	Mar 25	April 14	Joseph Marks	419 California st
Pioche West Ex. M Co	Ely District	8	25	Feb 27	April 6	April 29	L. E. Kimball	419 California st
Quintero M Co	California	1	1.00	Mar 1	May 3	May 3	W. H. Brown	419 California st
Riverbank S. & S M Co	Nevada	2	1.00	Feb 28	April 2	April 24	J. W. Clark	418 California st
Ree Patch Cons M & M Co	Nevada	2	1.00	Feb 25	April 7	April 29	P. F. Vandalen	419 California st
Sage M Co	Washoe	5	50	Mar 5	April 3	April 23	E. H. Holmes	419 California st
Silver Cloud G. S. & M Co	Gold Hill	1	1.00	Mar 2	April 16	May 4	G. T. Grimes	240 Montgomery st
South Ophir M Co	Ely District	4	75	Jan 23	Mar 7	Mar 28	C. T. Grimes	240 Montgomery st
St. Laurence M & M Co	Placer Co Cal	9	2.00	Feb 24	Mar 30	April 27	Frank Swift	419 California st
St. Laurence M & M Co	Placer Co Cal	5	50	Feb 25	April 1	April 27	R. B. Noyes	411 1/2 California st
St Patrick G M Co	Washoe	4	30	Mar 20	April 18	April 27	W. H. Brown	419 California st
St. Patrick G M Co	Washoe	4	30	Mar 20	April 18	April 30	A. K. Durbrow	Merchants' Ex.
Union Cons. S M Co	Washoe	5	50	Mar 2	April 27	April 27	M. W. Burdett	Merchants' Ex.
Virtue M Co	Oregon	4	1.00	Jan 20	Mar 5	April 6	R. H. Brown	402 Montgomery st
Washington & Creole M Co	Ely District	10	1.00	Feb 9	Mar 14	April 6	D. T. Bagley	Merchants' Ex.
Wellington M & S Co	Gold Hill	6	2.00	Mar 9	April 24	May 2	A. Noel	419 California st
Yellow Jacket M Co	Washoe	17	5.00	Feb 10	Mar 14	April 15	G. W. Hopkins	Gold Hill

STRANGE & Co., who, for some time past, have been engaged opening a hydraulic on the west side of Stockton ridge, commence washing to-day. There are now six large hydraulics in full blast within two miles of Mokelumne Hill.

EL DORADO COUNTY.

THE EXCELSIOR.—*Republican*, Mar. 19: We visited this claim on Tuesday, and found the men piping away in the same place where they commenced operations in the early part of the winter, with two six-inch streams. A large mass of rock and earth had to be moved at this point before they could commence operations upon the main bank. It has now been pretty well cleaned out, and a large space of bed rock is visible. In the mean time a flume has been constructed, most of the way under ground, from the north side of the claim, intersecting the present flume near its terminus, and hydraulicing will be commenced at that point in a day or two. They are now using about 900 inches of water; the flumes are four feet wide with several under currents at different points.

AMADOR QUICKSILVER MINING COMPANY.—*Sutter Creek Independent*, Mar. 18: We learn that the work on the quicksilver mine, owned by the company in El Dorado county, is progressing vigorously. The tunnel has been driven 34 feet, at which point the lead is nine inches in width and contains some very rich ore, while in the shaft which has been sunk 10 feet, the lead is eight inches wide, and contains rock much richer than derived from the tunnel. At the present time there is about 60 tons of rock awaiting retorting, and we understand that it is the intention of the company to build retorting works as soon as the condition of the roads improve.

OREGON HILL.—*Mountain Democrat*, Mar. 21: The Oregon Hill Mining Company are drifting from their 300-ft. level, and have already drifted a distance of 150 feet, 100 feet of which distance was on and through a ledge about two feet in width of splendid looking ore. At the distance of 150 feet—the present length of the drift—they have struck a large body of ore, the extent of which has not yet been determined, which from indications will yield \$20 per ton, mill process.

THE "ROSE."—The owners of this mine are still sinking in both shafts, in their claim, and are now down about 75 feet in each. The northern shaft is being sunk on the ledge, following its dips, etc. The southern shaft, which is being sunk for a working shaft, is now being run through bed rock. This shaft is a fine piece of workmanship, and is timbered with an idea to permanency and security. The company have quite a large amount of ore on the dump.

MARIPOSA COUNTY.

PROSPECTING.—*Gazette*, Mar. 21: Numerous urchins are to be seen picking and panning out hereabouts. Industrious habits are commendable, and they may as well become inured to disappointment in early life.

MOUNT OF EXT.—One day last week, George Temple, in walking over his claim, found a piece of gold worth \$3. Mitt Again, on Sunday last, picked up a bit worth \$2.75, in front of George Stewart's saloon. Keep at it, boys.

NAPA COUNTY.

PINE FLAT MINES.—*Cor. Reporter*, Mar. 21: In items of interest to Napa county, I lately noticed an article in a Sonoma paper, in reference to Pine Flat Mines, stating that they were not of as much value as they have been reported. Mr. Editor, allow me to tell your readers (and I hope all are interested) that this is a mistake; we can show as rich mines as have ever been reported, and furthermore, there are a great many claims that are of great value that do not claim Pine Flat as their father or fountain-head. I have, of late, taken quite a trip over this extensive mining region; and find many new discoveries, which seem generally to be second to none previously located. Lake county is beginning to send out her experts in different directions, with hammer in hand, testing rock on her rough hills. There are in our range but two mines reducing ore, but less than three months will tell of at least ten mines in good working order. In ten days not less than ten men will be at work on the Leet Ledge. The Kentuck will, with many others, soon be in operation.

MORE QUICKSILVER.—Last Tuesday, Steve Jones brought some cinnabar to town that was covered with globules of pure quicksilver. The rock appeared to be full of it, as the silver could be shaken out into the hand. This specimen was a piece of surface rock, taken last week from a newly discovered ledge, which lies between Foss and Capella's valleys, and can be easily traced for four miles by its croppings.

NEVADA COUNTY.

REPORTED DIAMOND FIND.—*Graes Valley Union*, Mar. 21: Some round and white stones were brought to town yesterday, and they were very hard and brilliant. Some supposed that the stones are diamonds. We did not learn the exact spot at which the find occurred, but that between this place and Rough and Ready is the favored land; the Golconda of Nevada county. Some of the stones found are to be sent to Crosby, Morse & Foss, of Boston, to be tested.

SPECIMENS FOUND.—Yesterday, a number of loads of rock from the Rocky Bar, old dump pile, were hauled to Main street. The specimen hunters were around as usual, as soon as a wagon load was dumped. We noticed that Andy Stokes picked up a ten dollar specimen from out a pile of waste rock. In that Rocky Bar waste there are many specimens. If we had nothing else to do we would break rock all

day in hopes of finding a specimen worth a day's work.

PLACER COUNTY.

HERALD, Mar. 24: Mining in the upper portions of the county has been much retarded by the continued bad weather and heavy fall of snow, which has blocked the ditches and shut off all supplies of water. All this loss of time, though, will be amply made up as soon as the snow begins to melt. We can safely calculate now that the winter is pretty much over, and with the present prospect for an abundant supply of water for several months, we will have such lively times among the hydraulic and sluice miners as have not been known for years. Plenty of water is all that is needed to insure this, and that we have in the form of snow in abundance, which will wisely be dispensed as needed.

MINING.—Work, in the early part of the week, was expended on the Orleans mine, for a few days, on account of water.

The Crater Hill mine is working about 100 men, and every day's work gives now encouragement to its owners. If this mine keeps up its lick, it will soon be entitled a place in the front rank of mines in the State.

SISKIYOU COUNTY.

FROM THE FORKS OF SALMON.—*Cor. Yreka Union*, March 21: The "Dutch boy's claim," down below "Andy's," is running full-handed. The one-third interest of Louie Hofsetter, lately deceased, is, I understand, to be sold at public sale to a few days. S. Bell has bought I. Lockwood's claims above "Andy's," and has commenced to open them. W. R. Boyd, on Fort Bar, has got his reservoir completed and everything in running order and has commenced to send off the "pay dirt." J. E. Horn, on Stony Bar, has got his "self shooter" finished and his flume in, and is about ready to commence active operations. G. McNeal has got his bed-rock flume in, and is making the gravel "git" in a lively manner. J. S. Egbert has purchased a piece of ground from G. McNeal, and is busy sluicing it off. The Shumway Brothers, up the North Fork of Buckeye Bar, have been annoyed considerably by slides in their ditch during the winter, but notwithstanding, have managed to do considerable work and are now sending off "a right smart chance" of dirt. I understand that they intend next summer to put up a "crossing" to carry the water over from their ditch into Smaspipe Bar, a part of which was formerly worked by drifting and "payed big," and they expect by working it with the improved facilities at their command to reap therefrom a golden harvest.

Bennett & Miller are preparing to put up a "crossing" on the South Fork from Missouri Bar to Stone's Bar, to bring the water of Know Nothing Creek into the South Fork ditch, and enable them to run their lumber from the saw mill to the "Forks," and also another "crossing" on the North Fork, a little above its mouth; to bring the water from their South Fork ditch onto the Forks Bar, which will be its terminus for the present. Messrs. Fairchild & Co. have commenced operations on the red point at the mouth of Know Nothing creek, having been at considerable expense in bringing the water onto it. At the Chicken Roost, on Niggerville creek, the boys, I understand, are busy ground sluicing.

FROM LOWER SONA CREEK.—There are a few miners on Soda creek and they are ground sluicing; Bradberry & Andrews picked up a ten dollar slug this week; they pick up small wages all the time. There are a few men on Hazel creek and they are also sluicing. Robert Pitt at Portuguese Flat is running his hydraulic this winter. Tom Kneel & Dow took out \$200 near Portuguese Flat this winter from a bar on the river. They were making \$10 per day when water failed on them. They must have plenty water now.

HUMBURG.—Thos. McCann informs us that Mr. Robt. Harvey, came down to his place from the Eliza mill on Humburg last Tuesday, the first time he has been able to get out for 3 weeks on account of the great depth of the snow. Mr. Harvey reports about 24 feet of snow at the mill. The miners on Humburg have not been able to do much work as yet, owing to the scarcity of water. A few more pleasant spring-like days, such as we have had during the past week, however, and the water will be "biling" down the gulches and creeks at a lively rate.

TRINITY COUNTY.

A SAMPLE LOT.—*Journal*, March 21: Pete Van Matre came into town last Thursday, bringing with him some gold dust from the claim of W. A. Campbell and Ben Reed. This mine is located on Dutch Gulch, one of the tributaries of Buckeye creek, and from what has already been done, shows itself to be one of the richest in the county. The dust brought in by Van Matre consisted of 54 ounces, all of which had been picked up in the Campbell & Reed claim within the last two weeks. Nine of the nuggets weigh twenty-nine ounces—the largest five and one half ounces, and the smallest of the nine, \$40. The remaining 25 ounces consist of smaller pieces, but no fine gold whatever, as it was all picked up on the bed-rock. No clean-up has been made in this claim, and no estimate can be made of the amount of gold in the ditches and flume. Van Matre says the boys are liable to pick up a chunk of 70 or 80 pounds any day. All the gold brought in has more or less quartz mixed with it. This seems to be a different quality of gold from that usually found here, and Mr. Griffin, banker, will send it direct to the mint in order to ascertain its full value. Whenever water is taken on Buckeye mountain and that section of country

comes to be worked as it ought to be, we will require a small branch mint of our own. There are miles upon miles of ariferous gravel there that to-day remains unprospected, and only awaits development to prove that Trinity county contains one of the richest gravel beds in the world.

OREGON GULCH MOUNTAIN.—A number of white men and 30 Chinamen commenced work for the Weaverly Ditch and Hydraulic Mining Company this week. Owing to the amount of snow on the line nothing has been done on the ditch yet. They are at present engaged in getting out timbers for a reservoir and in making preparations for a start on the ditch.

TULARE COUNTY.

GOLD MINES IN TULARE COUNTY.—*Times*, March 21: A very rich and extensive gold mine has lately been discovered in the mountains near Mineral King mines. It is said to be four miles in length; the lead being four feet wide at the surface. Mr. W. Owens, an interested party, showed us some of the quartz specimens, which were very rich with gold. The discovery is creating a great excitement.

We were informed a few days ago, by a gentleman interested in the new mines, that two new leads have recently been discovered, just below the snow line, on the mountains. Several parties from a distance are here already waiting for the snow to disappear so as to gain access to the mines.

TUOLUMNE COUNTY.

NEW ALBANY MINE.—*Union Democrat*, March 21: Within the last week a rich body of ore has been struck in the south drift of this mine. It has already developed a vein of about 20 ft. in thickness showing gold freely throughout. The vein was worked a number of years ago by Brown & Olney, and then lay idle until recently, after being purchased by some capitalists of San Francisco. The ore now coming out of the south drift is fast demonstrating that the company have a very handsome prospect, with chances entirely in favor that a valuable mine will soon be in full operation.

NEW CHUTE OF ORE.—*Independent*, March 21: The workmen on the Brown & Olney mine have struck a new chute, which shows free gold in abundance. Dr. Faxon thinks it will not go less than \$60 per ton.

VENTURA COUNTY.

OUR OIL INTERESTS.—*Signal*, March 14: We pay 75 cents per gallon for oil and hundreds of dollars each year for lubricating oil, notwithstanding we have thousands of tons of crude petroleum oozing from our hillsides up the Santa Paula and San Antonio creeks. Mr. Surdam, one of our most enterprising citizens, propose to furnish 600 barrels of crude oil per month to any company who will undertake to refine it. Why can not a company be organized here for the purpose? We have the capital—the skill can be secured.

Nevada.

WASHOE DISTRICT.—*Consolidated Virginia*, Gold Hill News, March 19: Sinking the shaft for the 1,500-ft. level is making steady progress. A west drift has been started from the 1,300-ft. station to tap and open the ore body on that level. All the ore stopes and breasts opened, from the 1,000-ft. level down to the bottom of the north winze, which is ten ft. below the 1,400-ft. level, show richer and better as prospecting and developing the mine proceeds. Daily yield 200 tons of ore, which, as soon as mills can be obtained to crush it, can be increased to almost any desirable amount.

CALEBONIA.—As soon as repairing the shaft is completed, and the 4th or 700-ft. station is put in working condition, a drift will be started to prospect the ledge on that level. The lift pumps have been taken out down to the 225-ft. station, where the drain tunnel connects with the main shaft. This is quite a saving in the power necessary to do the pumping, as all the water from the shaft is now drained through the tunnel.

CROWN POINT.—Daily yield, 525 tons of ore, from the 1,000, 1,200, 1,300, and 1,400-foot levels. All the ore breasts in the different levels are looking well. The north winze from the 1,400-ft. level, which is being sunk on a slope, is in rich ore. The middle winze, on the same level, is also in rich ore. The water on the 1,500-ft. level is decreasing. All of the company's mills, viz.: Brunswick, Morgan, Mexican, Pioneer, Atlas, Petaluma, Sapphire and Rhode Island, are running up to their full working capacity.

BELECHER.—Daily yield, 550 tons of ore, from the 1,000, 1,200 and 1,300-ft. levels. The ore breasts are looking fully as well as usual. The winze from the 1,400 has been sunk west of the ore body to the depth of 30 feet. All the machinery of the mine is in the most perfect working condition possible, and the indications never were better for a long, prosperous, and dividend-paying run.

IMPERIAL-EMPIRE.—Sinking both the north and south winze on the 1,700-ft. level is making steady progress. The main east drift on the 1,850-ft. level is indicating a near approach to the ledge.

LADY WASHINGTON.—Slow progress has been made during the past week, owing to the heavy flow of water in the shaft, which is more than the present pump is capable of handling. New and more powerful pumping machinery has been ordered from San Francisco.

INDEPENDENT AND OMEGA.—Negotiations are about completed for the erection of new hoisting works, and large and powerful machinery for sinking the new shaft already commenced. **CHAPIN AND EAST COMSTOCK.**—The new hoist-

ing machinery continues working finely; the water is all out, and sinking at the bottom of the shaft is resumed. The shaft is 162 feet deep to-day.

CALIFORNIA.—Driving the north drift on the 1,300-ft. level, to connect with the south drift on the same level from the Ophir, is making rapid progress. The drift south from the Ophir is also making good headway.

MCMEANS.—A contract being let for that purpose, work was resumed in this mine, running the main tunnel farther ahead.

CHOLLAR-POSTOL.—Daily yield, 95 tons of ore, the assay value of which is \$29 per ton.

JULIA.—The main southwest drift on the 900-foot level, has penetrated the ledge a distance of 12 feet during the week, in fair grade ore, with prospects of a gradual improvement as the work progresses.

NEVADA.—The south drift shows about three feet of good milling ore in its face, being something of an improvement over last week. The ore itself also is of an improved character. The east cross-cut is through the ledge, showing it to be nearly twenty feet wide, all good milling ore.

SOUTH STAR.—The requisite timber for commencing the shaft is secured, and an attempt was made to haul it to the mine, but the state of the road prevented.

SECOO.—The drift for the ledge, from the 300-ft. level of the little shaft, in the canon, is being pushed ahead vigorously, and so also is the sinking of the main shaft, east of the hill.

HALE & NONCROSS.—Sinking the main incline is making rapid progress. There is no change to report of the ore-producing section, on the old upper levels. Daily yield of ore, 40 tons.

DAYTON.—Daily yield, 130 tons of ore, which, with the exception of 10 tons per day, shipped to the Auburn mill, is being reduced at Woodworth's, Devil's Gate, and Briggs' mills. The ore breasts are both looking well, and yielding splendidly throughout the entire mine. A stoop for the extraction of ore has been opened, at a depth of 45 feet in the winze, from the second to the third station level.

GLOBE CONSOLIDATED.—The up-raise from the main tunnel has only about 15 feet more to raise, to connect with the bottom of the winze from above, which will give a fine circulation of good air, and greatly facilitate the progress of the work in that part of the mine. Stations are being opened, and cross-drifts run at different points, in the raise, to aid in extraction of ore, whenever the company are ready to commence the prosecution of that portion of the work.

SAVAGE.—The main southwest drift, at the 1,900-ft. station, which is being run to connect with the north drift, from the bottom of the south winze, from the 1,700-ft. level, is making slow, though steady headway. The heat in this drift is intense, but it is expected that connection with the winze, will be completed by next Monday, which will give a much needed ventilation.

OVERMAN.—Driving the main west drift on the 1,200-foot level is making good progress, the face still in hard blasting rock. The prosecution of the north drift from the 200-foot station in the winze is stopped for the present on account of a slight flow of water from the face.

NEW YORK CONSOLIDATED.—Re-timbering and enlarging the shaft to make room for the new pumping machinery has been completed during the week for a distance of thirty feet. The four new boilers, which are being manufactured in San Francisco, will be ready for shipment in about eight days.

SILVER HILL.—The ore stopes between the first and second levels north of the shaft are looking well and yielding the usual amount of good milling ore. The south drift at the second station, is being pushed steadily ahead, following the vein of white quartz recently struck, which appears to be widening out and giving promise of a good development.

SIERRA NEVADA.—The drain tunnel to connect with the shaft is still driven vigorously ahead. The prospecting work in the old Sacramento ground has been temporarily stopped, but will be resumed again in a very short time. The drain tunnel to connect with the proposed hydraulic works, is being pushed to completion as fast as the nature of the work will admit. Daily yield of ore, sixty-five tons, keeping the mill steadily running.

SOUTH COMSTOCK.—The main east drift, at the 150-foot level, reached the east wall yesterday morning. It shows the ledge to be thirty-four feet wide, all sound quartz, giving low assays, with the exception of a fine streak of brown sulphuret ore near the west wall, which gave very good assays. The general prospect is excellent and very encouraging, and the company have not yet decided whether to sink for a level one hundred feet deeper, or to follow the sulphuret streak at the present level.

OPERA.—Sinking the south winze from the 1,455-foot level, to connect with the main south drift on the 1,700-foot level, for the purpose of ventilating the two levels, is making good progress. Work progressing at all points as usual.

LEO.—The main tunnel or adit, following the lead into the hill, shows a fine streak of ore, from one to two feet thick on its face, which, during the week, has given assays ranging from \$57.70 to \$184.71 to the ton. The ledge matter continues wide between the walls, and the prospect of finding a good chimney of pay ore is very good. The ore in the stopes, above the adit level, is still looking finely.

GOUTA & CURRY.—The flow of water has been so steady from the face of the main north drift, on the 1,500-ft. level, and the heat so great, that

The Silver City Mines.

Many persons, familiar with the region, says the *Enterprise*, are fast becoming firmly grounded in the opinion that Silver City is destined to become, at no distant day, one of the liveliest mining camps in the State. She is certainly, at present making rapid strides in that direction. Many residents of the town have always had the strongest faith in the value of their neighborhood as a mining region, and have always stoutly maintained that the

Hidden Wealth.

In that vicinity would one day be developed to the enriching of thousands; but the town has never contained men of capital, who were, either by occupation or inclination, fitted to undertake any manner of mining enterprise. With the exception of a few merchants and millmen, the inhabitants of the town are, and always have been, men of moderate means. Particularly has this been the case with the miners of the town, and the men who were inclined to venture into mining enterprises. For this reason this district has been so far neglected, until quite recently, as to leave it about where it was in 1860. Save the sinking of a few shafts to the depth of eighty or one hundred feet, it was almost an unprospected region. No rich companies took hold there, as here, and sunk large first-class shafts, to the depth of hundreds of feet.

The Old Circular Shafts.

Looking like as many wells, were all that was to be seen in the district. Now, however, under the impulse of capital, the wealth of the place is beginning to be developed. Mines are being opened in which crowds of men and employment, and yet these, the leading mines of the district, have attained no great depth. The Dayton is down 400 feet, the Buckeye about the same, and the Silver Hill about 360. On the Comstock, in the vicinity of this city, such depths would be counted as a mere nothing, and it would hardly be thought while to run off prospecting drifts until a greater depth had been attained. All about Silver City—in the town, east, west, north and south of the town—the whole surface of the ground is filled with quartz veins, evidently feeders of

An Immense Vein Running Under the Place.

At a considerable depth. Some of the largest of these are six or eight feet wide in places, while the smallest are not thicker than a knife blade, yet there is not one of these but contains more or less gold; some being exceedingly rich. They run in various directions through the surface, and all are evidently feeders of the big mother vein lying far below. Some of these small veins or feeders, as the old Pride-of-the-West and others, have contained pockets that were astonishingly rich; in places paying very high wages in early days when rudely washed in the common rocker. We might give a list of fifty veins and streaks, great and small, in and immediately surrounding Silver City which, in the early days, had names and were scratched over and "coyoted" into. Being mere feeders, and dodging here and there among the

Faults in the Surface Rock.

The miners who claimed them were unable to follow any but the largest, no matter how rich they might be, to a depth of more than twenty or thirty feet, (often not more than ten), before they lost them by a fault which capped them over and made it seem that they had come to a sudden termination. In following them horizontally they had but little better luck, as in accommodating themselves to the surface rock they split up and vanished in all directions.

What is Wanted at Silver City.

Is that which they have never had—deep mining. We believe that were the Dayton company to run a drift northward from their 400-foot level—insignificant as is the depth—beneath Gold Cañon and in such a direction as to strike in just back of the main street of the town of Silver City, a very large and immensely rich vein would be found—the "mother," into which lead all the feeders covering the surface in a perfect network. A cross drift run west from this main north drift, under the Bacon mill and toward the point of the hill which lies in the forks of the two ravines would be very apt to intersect the rich streaks formerly worked in said hill and pitching to the eastward.

An Excellent Site for a Shaft

And hoisting works, by means of which to prospect much of the best of the Silver City mining belt, would be that formerly occupied by John McCone's foundry. However, once sufficient depth is attained it is easy to drift in any direction, and we predict that when a drift shall be carried northward from the Dayton mine—or from some new shaft sunk to the depth of several hundred feet—into the hill on which the town of Silver stands, richer ore will be found than has yet been seen in the district, and an abundance of it. In this region, gold upon the surface is the best possible indication of silver below, and we believe that all the leading mines about Silver City, at the depth of 1,000 or 1,500 feet, will be found to be highly argentiferous.

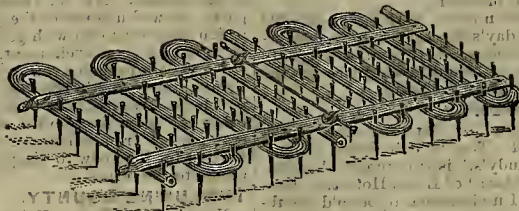
There are over 5,000 mines and prospects within a circuit of twenty-five miles of Salt Lake, says the *Tribune*. The most of these will be actively worked this season, and millions of dollars will be added to the wealth of the Territory.

The Sapphire mill, Lower Gold Hill, has started up on Crown Point ore.

Tubular Iron Harrows.

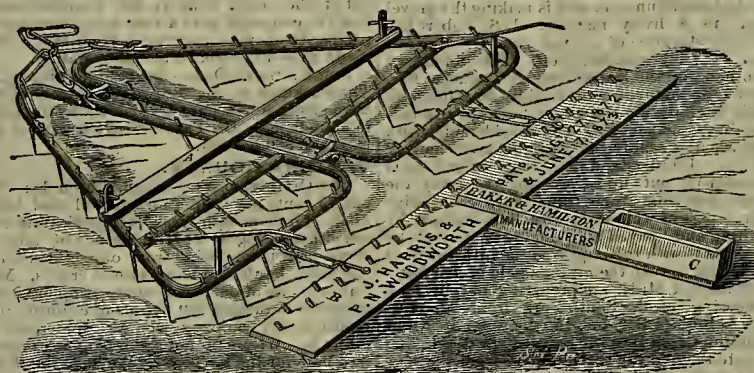
The San José Foundry, at San José, Santa Clara county, and the Petaluma Foundry, at Petaluma, Sonoma county, are both extensively engaged in making tubular iron harrows—a California invention, patented by James Harris, of 216 Perry street, San Francisco. The harrows made on this patent have made a reputation for themselves far exceeding the anticipations of the patentee and manufacturers. The frames being made entirely of iron, and steel teeth being used, the harrows are not affected by the weather, which, in our climate of long, wet winters, and long, dry summers, is a great advantage over those made of wood, since the teeth never become loose and drop out. These harrows are of very light draught, and, being made of round iron, the dirt does not adhere to it and increase its weight.

The advantages of the use of iron over wood



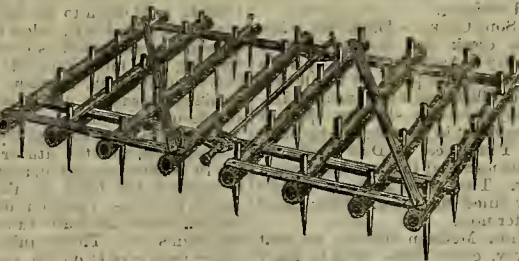
BENT TUBE HARROW.

in agricultural implements is nowhere more apparent than in California, since the peculiarities of the climate are such that wooden implements are soon used up. This particular class of implement is especially liable to become



V-RAKE HARROW.

rickety, since it is used only for a short time, at stated periods, and then laid away. The cuts shown on this page show the three forms of harrows made under this patent by the manufacturers. Their lightness and simplicity will at once be seen. The inventor has a great



STRAIGHT TUBE HARROW.

number of testimonials, referring to the efficacy of these harrows, most of the farmers stating it as their opinion that the yield of grain is increased by using them, more especially when sown in rough land. Several patentees have already adopted Mr. Harris' patent on tubes in their harrows, and he offers it to others for a small consideration. These harrows have now been thoroughly tested, and the tubular iron has proved to be the best material that can be used in the construction of these implements, as it does not warp, check, or loose the teeth. Although an improvement on old styles, they are sold just as cheap.

A STRIKE IN THE HODGDON.—The Eureka Sentinel learns from Nate Diamond that an important development has recently been made, in the Hodgdon mine at Secret Cañon. A body or ledge of mineral, five feet thick, has been disclosed, which is esteemed of great value, as it assays well up into the paying figures. The strike was made in the old workings of the mine. The Hodgdon is one of the oldest mining claims in Secret Cañon, and now bids fair, from all accounts, to take rank as among the best in that locality. The late development was made under the direction and supervision of Boh Mitchell, an experienced miner and superintendent in Eastern Nevada. We are glad to chronicle this favorable streak of luck in the Hodgdon, and the owners of that old-time claim will merit success. They have worked their favorite mine with the utmost vigor for years, and now that it is showing so well, they will doubtless reap a rich reward for their industry and perseverance.

Bingham Canon Items.

We take the following items from the Salt Lake Tribune of the 17th:

The Utah Concentrating Works, which are of very large capacity, have been completed within the last few days, and are ready to commence operations. The building, which covers a considerable extent of ground, is furnished with a large boiler, engine and furnaces, and a new and complete set of machinery, with which to concentrate and separate their ore, much of which has heretofore proved refractory. If the new process succeeds as well as is expected, the property of this company will rapidly enhance in value, and the stock will rise in the London market, from its present low figure.

It is rumored that large concentrating works will be erected during the coming summer, at a few hundred yards below the store of Duncan

& McKee, about a mile and a half above town. There is plenty of water for all purposes, and being directly on the main road, which leads from the principal mines. This locality is one of the most eligible for an

establishment of the kind, in the whole cañon. One of the features of Bingham this season is the influx of Chinamen, who are engaged in working placer mines on their own hook. One claim was sold out to a party of them, a short time since, for \$4,000, and there are about

twenty of them employed upon it at the present time, and although it is impossible to ascertain what they are making, they are evidently well pleased with their purchase. A number of other Chinamen are reported as being on their way from Montana and California, to make investments, and the owners of gravel diggings are running bed-rock tunnels, and opening prospects ready for examination, when they do come.

The road down the cañon is much better than would be expected by a stranger, and the hauling of ore can be carried on as readily as in the summer. There is but little snow, and the road, although somewhat hard and smooth, is entirely free from dust, which is a great annoyance both to animals and teamsters during the dry season. The common idea of blockade in Bingham during the winter, and the cessation of mining operations is incorrect in toto, and as far as the climate is concerned, the atmosphere is so dry and elastic that to most constitutions, it is preferable to the damp and sloppy thoroughfares of Salt Lake city.

RESE RIVER.—It is gratifying to be able to state that at no time in the history of Reese river district has the mining outlook appeared as flattering as at present. The mines on Lander Hill are turning out a large amount of rich ore, and have large quantities in sight. At Yankes Blade, New York Cañon, etc., a great deal of good ore is being produced; and, as a rule, chloridizers are doing well and making money. We are safe in saying that the hullion product for 1874 will exceed that of 1873, by fully one-half.

Napa County Quicksilver Mines.

A correspondent of the Napa Register writes as follows, concerning several quicksilver mines in Napa county.

Great Western Mine.

Mr. Green, the Superintendent, gave us a cordial welcome, and showed us through the works. They are using the Lockhart furnace, and turning out a large amount of quicksilver.

After inspecting the works we were shown the exoavation which has been made preparatory to the construction of a 30-ton furnace of Mr. Green's invention. We were placed in charge of Mr. Kerr, the obliging foreman, and started upon an inspection of the mine. Entering a tunnel known as the first level, with a candle placed in our hands, we followed our guide, and after proceeding about 100 feet, came to the ore, which appears above, below, and to the right and left of us. We went on to the right and left, up hill and down stairs and shafts, till we began to think ourselves a gone correspondent; but our guide told us never to fear, and we should come out all right. So we confided in him and on we went. At last we came to what we supposed to be the end of the tunnel, when Mr. K. suggested that we should now go down to the lower level, and down we went. In making this descent we thought of our wife and babies at home, mentally bidding them good-bye, but after a long lapse of time, which appeared like an age, we struck bottom. We then traversed another tunnel, and after a while, greatly to our surprise, came out into daylight on the opposite side of the mountain. The mine has over 2,000 feet of tunnel, and many shafts, and throughout they appeared to be cut in a solid mass of cinnabar.

After getting a few subscribers for the Register, and thanking Messrs. Green and Kerr for their kind attention, we proceeded to the

Lake County Mine.

Which adjoins the Great Western. Mr. J. Siebeck, the Superintendent, showed us through the grounds, which are mostly yet undeveloped. It is here that poor Mr. Eastman met with his death, by the caving of the mine. The prospect is that the Lake mine will be a valuable piece of property. Returning to

Middletown.

We remained over Sunday, and had a chance to see what the people were doing. Mr. E. Ford has built a comfortable house and saloon. Daly & English are doing a thriving business in the meat line. G. W. Sacra has opened a store in the first story of the Odd Fellows' Hall. Yesterday we left to visit the mines on Pine mountain, and being armed with a letter of introduction to Mr. Paull, the forsmen of the

Kearsarge.

Placed ourselves under his guidance. We climbed up the mountain about a quarter of a mile to the mouth of the tunnel, and lighting candles, went in for a distance of 270 feet. At that depth they have every evidence that the main ledge is struck. Just above this, is another tunnel called No. 1, in which the cinnabar deposit is struck at the depth of 40 feet. Native quicksilver glistens all over the walls of the tunnel, and there seems to be no doubt that the Kearsarge is a rich mine. The owners feel confident that they have a "big thing." About half a mile from here is the

America.

formerly known as the "Dead Broke." This mine, for a year or two back, has been owned and run by Mr. J. Perschbacher. It is now owned by Cross & Company of San Francisco. We did not enter, as we saw a sign "No Admission," at the mouth of the tunnel, which looked as though they meant us. Mr. James, the Superintendent, was absent, and we did not press ourselves upon the men. On the dumps we saw a fine lot of ore. We proceeded up Pine mountain footsore, and anxious to find a resting place. We passed the American Company's saw mill, and in half a mile more reached the summit of the mountain.

A beautiful sight met our gaze. We could in one view behold Knight's Valley, Napa Valley, Russian River Valley, and the Pacific Ocean. Turning around we could see Middletown, Coyote and Pope valleys and Cobb mountain, and as we stood there entranced by the magnificence of the scene, we thought that if we could wield a pen like "Curioso," or even Bret Harte or J. Ross Browne, we would like to stop there and do up a little scribbling; but, knowing our inability, we rushed down the mountain to the

Finlay Mine.

Which has just been sold by Messrs. Gettleston & Company, J. M. Finlay and Mr. Siebert, to a San Francisco company for \$32,000. Passing this we soon arrive at the famous

Bloodhound.

Or Georgia mine, where we were made welcome and staid over night, arriving at Pine Flat this morning—and here we are in the midst of a heavy rain storm. Of the mines here, we will give a full account next week.

NUGGETS.—A nugget weighing 134½ oz. of pure gold has been found at Welcome Lead, Brehman's, Australia, and a 70 oz. nugget a day or two before. Another splendid nugget weighing 152 oz. 8 dwts, has been unearthed in the Slow-and-Sure claim, Napoleon's. The nugget was sold in Ballarat for \$288 15s.

GOOD HEALTH.

Reading to the Sick.

Florence Nightengale gives the following judicious advice on this subject: With regard to reading aloud in a sick room, my experience is that when the sick are too ill to read themselves, they can seldom bear to be read to. Children, eye-patients, and uneducated persons are exceptions, or where there is any mechanical difficulty in reading. People who like to be read to, have generally not much the matter with them; while in fevers, or where there is much irritability of brain, the effort of listening to reading aloud has often brought on delirium. I speak with great diffidence, because there is an almost universal impression that it is *sparring* the sick to read aloud to them. But two things are certain:

(1.) If there is some matter which *must* be read to a sick person, do it slowly. People often think that the way to get it over with least fatigue to him is to get it over in least time. They gabble; they plunge and gallop through the reading. There never was a greater mistake. Houdin, the conjurer, says that the way to make a story seem short is to tell it slowly. So it is with reading to the sick. I have often heard a patient say to such a mistaken reader, "Don't read it to me; tell it to me." Unconsciously he is aware that this will regulate the plunging, the reading with unequal paces, slurring over one part and neglecting of leaving it out altogether, if it is unimportant, and mumbling another. If the reader lets his own attention wander, and then stop to read up to himself, or finds he has read the wrong bit, then it is all over with the poor patient's chance of not suffering. Very few people know how to read to the sick; very few read aloud as pleasantly even as they speak. In reading, they sing, they hesitate, they stammer, they hurry, they mumble; when in speaking they do none of these things. Reading aloud to the sick ought always to be rather slow and exceedingly distinct, but not monotonous—rather monotonous, but not singsong—rather loud, but not noisy—and, above all, not too long. Be very sure of what your patient can bear.

(2.) The extraordinary habit of reading to one's self in a sick room, and reading aloud to the patient any bits which may amuse him, or more often the reader, is unaccountably thoughtless. What do you think the patient is thinking of during the gaps of non-reading? Do you think that he amuses himself upon what you have read for precisely the time it pleases you to go on reading to yourself, and that his attention is ready for something else at precisely the time it pleases you to begin reading again? Whether the person thus read to be sick or well, whether he be doing nothing or doing something else while being thus read to, the self-absorption and want of observation of the person who does it is equally difficult to understand, although very often the reader is too amiable to say how much it disturbs him.

Over-Eating—Scientific Cooking.

Turgot could not work well till after he had dined copiously; but many men cannot think after a substantial meal; and here, in spite of the example set by Scott and Goethe, let us observe that nothing interferes so much with brain work as over-eating. The intellectual workman requires nourishment of the best possible quality, but the quantity ought always to be well within the capacity of his digestive powers. The truth appears to be, that while the intellectual life makes very large demands upon nutrition—for cerebral activity cannot go forward without constant supplies of force, which must come ultimately from what we have eaten—this kind of life being sedentary, is unfavorable to the work of digestion. Brain-workers cannot eat like sportsmen and farmers without losing many hours in torpor, and yet they need nutrition as much as if they had led active lives. The only way out of this difficulty is to take care that the food is good enough for a moderate quantity of it to maintain the physical and mental powers. The importance of scientific cookery can hardly be exaggerated. Intellectual labor is, in its origin, as dependent on the art of cookery as the dissemination of its results is dependent upon paper-making and printing. This is one of those matters which people cannot be brought to consider seriously; but cookery, in its perfection—the great science of preparing food in the way best suited to our use—is really the most important of all sciences, and the mother of the arts. The wonderful theory that the most ignorant cookery is the most favorable to health, is only fit for the dark ages. It is grossly and stupidly untrue. A scientific cook will keep you in regular health, when an ignorant one will offer you the daily alternative of starving or indigestion.—*Herald of Health*.

GLYCERINE IN ASTRINGENT INFUSIONS.—Glycerine has been successfully used for rendering astringent infusions bright. One part of glycerine to nine of infusion of roses is said to be efficient. Mixtures of infusion of rosea and sulphate of quinia, in which a precipitate of tannate of quinia is produced, may be rendered transparent by a similar addition, as also gargles composed of tannic acid and infusion of rosea.

Carbonic Acid Not a Poison.

Dr. Van der Weyde has published a paper containing some very extreme views on this subject. He says: For some time the opinion has become prevalent, among many chemists, that most cases of poisoning usually ascribed to carbonic acid are due to carbonic oxide, the product of imperfect combustion of coal. It is argued, 1st. That if carbonic acid were a poison we would continually be inhaling a poisoned atmosphere, as good air always normally contains one-tenth of one per cent. of this substance, and may contain much more without being injurious to the system. 2d. That the cause of the unpleasant effect of air in a close room, after having been breathed by many persons present in the same, is due to other exhalations—perspiration, flavors, etc., of this different constitutions, and not to the carbonic acid. 3d. That pure carbonic acid only intoxicates, and in this way makes the persons insensible; while, when they are made to breathe pure air afterward no unpleasant effects remain. 4th. That death in those cases of committing suicide by means of a furnace of burning charcoal in a close bed-room is caused by the carbonic oxide produced by the imperfect combustion of the charcoal by the insufficient amount of oxygen in the room, and not by the carbonic acid—carbonic oxide being acknowledged as a virulent poison, of which the presence in the air in a quantity of less than one-fiftieth of one per cent. causes a series of alarming symptoms.

As a companion to this change of opinion comes the announcement of M. P. Bert, who has found that when pure oxygen is inhaled under a pressure of four atmospheres, or more, it becomes a most virulent poison; while common air breathed under a pressure of twenty atmospheres kills, not so much by the mechanical effect of an increase of pressure, to which an animal soon accommodates itself, but to the concentration of the oxygen present in the air to a bulk so small that twenty times as much comes in contact with the surface of the pulmonary cells, as is the case in the normal condition.

In reviewing Dr. Van der Weyde's paper, Professor Wurtz, editor of our valued exchange, the *Gazette*, indorses the position advanced and adds that in his own case, speaking as a chemist, no "change of opinion" has occurred on the point of the non-toxic nature of carbonic acid; as he is not able to remember the time when he was willing to admit it to be a poison, in the true sense of that term.

Cleansing Garments by Heat.

A garment can be freed from odors by exposing it to heat for a few hours. Thus, body and bed-clothing, and indeed all vestures, may be rendered fresh and clean. It is only the odors, and not what remains after they are expelled, that makes the foulness in a garment. Any substance deprived of them cannot be considered filthy or dirty in the true sense. Ground is not offensive, nor wood, nor the metals, nor any texture in its pure native state. It is decomposition that causes the mischief—a rotten carcass, decayed vegetation—it is the essence of these that we bear about in our filthy garments, in our rooms, our bed-clothing, etc. The exhalations and excrementitious matter of the body come under the same head, made worse by decomposition, which readily takes place. Soap and water will remove these more effectually when heated. Heat alone—dry heat—will remove the odors, which are thus sent off in a volatile state. It requires only what the texture will bear to do the work satisfactorily. These bed-clothing may be used, and body garments worn longer, by ventilating with heated air. The obnoxious odor may be removed effectually by exposing for an hour or two to heat.

Why, in view of this, may not a room be fitted expressly for this purpose, or some other room temporarily employed? A few hours' exposure will, in general, be sufficient. Clothes thrown off at night may thus be treated; bed-clothes an hour or two during the day. The sun in its mid-summer fervor, when the air is dry, is a good renovator, but the heat is not strong enough to do it entirely satisfactorily. Garments will bear a much stronger heat.—*Country Gentleman*.

PULMONIC CANDLES.—Under this name, Field & Co., the great English chandlers, have introduced candles containing in their substance some of those gum-resins and balsams, especially benzoin and storax, which from time immemorial have proved useful in chronic bronchitis, and allied maladies. When burnt, the candles yield, by the combustion of these drugs, a pleasing fragrance, and at the same time give a good light. Candles are not much used in this country, but we should not be surprised if some enterprising Yankee adopted the idea to the medication of kerosene; which may thus be compelled to make partial amends for the slaughter it has caused. The aromatic odor alone would be an improvement of the unfragrant combustibles.—*Jour. of Chem.*

A GERMAN chemist has discovered that one of the eatable mushrooms, *Agaricus oreades*, emits, even when freshly gathered, a notable quantity of hydrocyanic acid. After cooking, however, the cryptogam is not poisonous.

USEFUL INFORMATION.

A Day's Work.

The amount of work that a man can do in a day has been the subject of no little investigation and discussion. Some writers on physiology have unquestionably set the average too high, while others have erred in the opposite direction. Among the estimates given by the best authorities, however, there is no very marked discrepancy, and the question may now be considered as quite accurately answered.

In comparing different kinds of muscular labor, it is necessary to fix upon some convenient unit to which they may all be referred. The force required to raise one pound one foot, or a "foot-pound," as it is concisely expressed, is the "unit of work" commonly employed in England and this country. In France, the lifting of one kilogramme (about 2.2 pounds) to the height of one metre (39.37 inches) is taken as the unit. This "kilogrammetre," as it is called, is equivalent to 7.216 foot-pounds. The "foot-ton," which is often mentioned in connection with estimates of this kind, is the force lifting a ton of 2,240 pounds one foot, or one pound 2,240 feet, which is, of course, virtually the same thing.

Now, if a person unfamiliar with these calculations were asked how many foot-tons he considered a fair day's work for an able-bodied man, he would not, probably, guess very wide of the mark. It has been stated in books as high as 1,000 foot-tons, but this is at least twice too much, 500 foot-tons being in reality a daily "stint" which very few laborers could keep up from week to week. Four hundred foot-tons is a hard day's work, and 300 an average day's work for a strong man in good health. Dr. Parkee, who has given much attention to this subject, says that the hardest day's work of twelve hours that he has personally known a man to do, was in the case of a workman in a copper-rolling mill, who stated that he occasionally raised a weight of 90 pounds to a height of 18 inches 12,000 times a day. Assuming this to be correct, the work done would be equivalent to 723 foot-tons. The same man's ordinary day's work, which he considered extremely hard, was raising a weight of 124 pounds 16 inches 5,000 or 6,000 times in a day. Taking the larger number, this would be 442.8 foot-tons.

Conlomb reckons a day's work at pile-driving as 312 foot-tons; Lamande finds it, in another case, to be 352 foot-tons. The work done by porters was calculated by the former authority, in a variety of instances, to be from 303 to 331 foot-tons. Dr. Parkee has known an Indian coolie to travel 30 miles, with an ascent of 5,000 feet, in three days, carrying a load of 80 pounds; which would be at the rate of 500 foot-tons a day.

The work done in walking is greater than many persons would suppose. Rev. Mr. Haughton, to whose elaborate investigations in animal mechanics we have more than once referred in the *Journal*, has shown that walking on a level surface is equivalent to raising one-twentieth part of the weight of the body through the distance walked. In going up-hill a man, of course, raises his whole weight through the height ascended. If a man weighs 150 pounds with his clothes, the work done in walking a level mile is 17.67 foot-tons; for 10 such miles, 176.7 foot-tons; for 20 miles, 353.4 foot-tons. One can readily calculate what the labor would be for a man of different weight or for one carrying a given load. It will be seen that a walk of 20 miles on a level road is a good day's work, and there are comparatively few persons who can keep up such a "tramp" for many days in succession. For a soldier, carrying 60 pounds, a day's march of from 10 to 12 miles is fair average work, being from 247.5 to 297 foot-tons, even if the ground is level.

In these estimates it is assumed that the work is done in the easiest manner for the person concerned, especially as regards the time taken for it. If the time is shortened beyond certain limits, the work becomes more exhausting, on account of the greater strain on the heart and lungs. In a boat-race, rowing at the rate of a mile in seven minutes, the work done in that time is between 18 and 19 foot-tons. This is apparently not a great exertion, but it is very severe for the time, from its effect on the circulatory system.

This reference to the strain upon heart and lungs reminds us to say, that in these remarks upon muscular labor, we have dealt solely with "external work," as it is termed, in distinction from "internal work," or that done by the muscles concerned in respiration, circulation, digestion, and other vital processes. We have before given some facts and figures in regard to the work done by the human heart. The sum total of the mechanical labor performed within the body averages, according to careful estimates, about 260 foot-tons every 24 hours. To this part of the work accomplished by the wonderful machinery of our human organism, and also to the sources whence its motive power is derived—the fuel that feeds its furnaces and keeps up the steam in its boilers—we shall recur at some future time.—*Boston Journal of Chemistry*.

TO DISSOLVE GLUE.—It is said that if one part of sugar is dissolved in three parts of water, and digested with one-fourth part of calcic hydrate, the resulting liquid will readily dissolve glue warm, and the solution will remain fluid on cooling, without having lost any of its adhesive properties.

Fire-Proof Construction.

As a precaution which may be used in lessening the tendency to catch fire in buildings which are not in their nature actually non-inflammable, or intended to be so, it is very desirable, whenever timbers are exposed, to cover them with a coating of common whitewash, which acts doubly as a preservative, both by excluding air from the timber, and from its non-conducting power. This will, of course, be of no use when a fire has once been kindled and got to a head; but, in case of fire, seconds of delay in kindling it or communicating it are of vital importance. In many a workshop or factory, if the floor and roof timbers were kept well whitewashed, the risk would be much diminished. Special precaution should be taken about the floors and fireplaces: there is frequently great carelessness in trimming joists and fixing ground for skirting, etc. It would be very desirable always to skirt chimney-breasts in cement or plaster, and to fill in the place under the hearthstone with cement concrete. Ceilings, again, should be formed with much stronger laths and better nailed; and if about 2 in. of rough mortar, the coarser the better, were laid over the laths between the joists, it would be found very difficult to set fire to them—they would resist for a considerable time even a fierce fire underneath. Again, all rooms should have a good light, otherwise the constant operation of gas-lights is to prepare the timber of the ceiling for combustion on the most rapid scale, if the opportunity be once given. As regards all stoves, great attention should be paid to their being so arranged as to avoid all risk arising from the heat of the stove itself, its fine-pipe, or its ash-pan; no stove should be considered safe, the fine-pipe of which cannot be heated to redness with perfect safety to the building. But in all ordinary buildings the most important point to attend to is the staircase; it should be, if circumstances will admit, closed at top or bottom, cut off from the passage leading into the rooms, and in the construction of it, it is very desirable to lath the soffits with extra strong laths, and fill in from the upper side with concrete, so that all the space at the back of the riser and under the tread shall be a solid mass of non-inflammable material. Such a staircase would probably stand and bear the weight of persons ascending and descending under circumstances where an iron or stone staircase would be destroyed or useless.—*Builder*.

TO DEADEN THE SOUND OF AN ANVIL.—The *Building News* recently remarked upon this subject: "If a chain about one foot long, formed of a few large links, is suspended to the small end of an anvil, it will destroy, we are told, that sharp thrilling noise produced by striking on it with a hammer; the vibrations of the hammer are extended to the chain, which absorbs them, without producing any sound. This is worth trying by any one who has a blacksmith or a coppersmith for a neighbor." [We presume it is intended to suggest that the smith should be induced to use the chain, and not the neighbor; but with reference to this application to the back of an anvil, we may tell our contemporary that, were a chain suspended in that way, the labor of the mechanic would be painfully increased, for the hammer would fall heavily and flat, without that spring or rebound that the active vibration gives to the hammer, and the brawny arm of the smith would be called upon to lift a dead weight every time he struck the iron; instead of having only to catch up the rebounding tool and direct its next blow. For our part, we think there is a very musical sound in the anvil, and certainly can not recommend the use of the chain.—*Iron Monger*.]

COLORING MATERIALS BY WHICH GEMS ARE IMITATED.—The basis of these imitations is a soft white lead glass of highly refracting power, called strass. For imitating topaz, glass of antimony, 37 parts, and purple of Cassius, 1 part is added to 840 parts of strass, or 1 part of orosus martis to 100 of strass. For ruby, the above is fused for 30 hours, or oxide of manganese is used. For emerald, add 250 parts of strass, 2 of verdigris and half a part of orosus martis. For sapphire, add 1 part of oxide of cobalt. In all cases a careful fusing in furnace or blow-pipe is required of the substance before hand, well powdered and mixed; but above all, a considerable degree of experience, obtained by continued practice.—*Manufacturer and Builder*.

NEW USE FOR INFUSORIAL SILICA.—Infusorial silica has been strongly recommended for snoring, ice, ale, and beer cellars, fire-proof safes, steam boilers, and powder magazines. A firm in Germany have recently made a series of experiments on a large scale, and they assert that the use of this earth has reduced the melting of ice in a cellar during the summer from 23,500 to 10,000 pounds. This material is not inflammable, and is not in the least affected by the hottest fire, and it prevents the entrance of rats and mice.—*Scientific American*.

An excellent cement, it is said, may be made from rice flour. It is only necessary to mix the rice flour intimately with cold water and gently eluminate it over a fire, when it readily forms a delicate and durable cement. When made of the consistency of plaster, clay models, busts, bas-reliefs, etc., may be formed from it.

MINING AND SCIENTIFIC PRESS.

W. B. EWER, SENIOR EDITOR.

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San Francisco:

Saturday Morning, Mar. 28, 1874

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It is estimated that the number of railroad ties in present use in the United States is 150,000,000. A cut of 200 ties to the acre is above rather than under the average, and it therefore has required the product of 750,000 acres of well-timbered land to furnish the supply. Railroad ties last about five years, consequently 30,000,000 ties are used annually for repairs, taking the timber from 150,000 acres. The manufacture of rolling stock disposes of the entire yield of 350,000 acres, and a full supply of 500,000 acres more every year. It appears, then, that our railroads are stripping the country of timber at the rate of one million acres per annum, and their demands are rapidly increasing.

QUICKSILVER CONDENSER.—It will be seen by advertisement in another column that Mr. F. Fiedeler, of the New Almaden Quicksilver mine, desires to sell the right to use his patent condenser, patented through the agency connected with this office. We gave an illustration and description of this condenser in an issue of Nov. 15, 1873. It has been adopted at New Almaden, and is also in use at other mines, being highly successful in its operation.

THE GRASS VALLEY AND COLFAX R. R.—About \$70,000 has been subscribed toward the Nevada and Grass Valley and Colfax Railroad in Grass Valley, and \$80,000 in Nevada City. The prospect for this railroad is now very encouraging, and the people are feeling very enthusiastic over it.

At a single mine in Cornwall, England, the monthly product of white arsenic is sufficient to destroy the lives of more than five hundred million human beings, and the amount of the poison sometimes stored in its warehouse would probably be enough to destroy every living creature on the face of the earth.

MINING LAWS.—The several mineral land hills, now before Congress, are attracting considerable attention, and will probably be settled, one way or another, next week. The discussions on the hills have been lengthy and general, but as yet no conclusion has been arrived at.

THE GORHAM SILVER PLATE WORKS, in Providence, now employ 450 skilled workmen, and the daily consumption of silver ranges from 2,000 to 4,000 ounces.

The Geological Survey.

Unfortunately, the action of the Legislature has effectually put a stop, for the present, at least, to the State Geological Survey of California. The enacting clause of the act appropriating money to complete the survey, was stricken out. Since that action was taken, a resolution has been passed requesting Professor Whitney to hand over to the State University all specimens obtained by him during the time he has held the appointment of State Geologist. A bill was also passed providing for the collection of specimens, books and documents of the survey, and surrender all of the same to the Regents of the State University. Charles F. Hoffman has been authorized to complete the field work and drawing for a map of the central portion of the State, and a bill appropriating \$16,000 for the purpose has been passed. At the completion of the work he is to deliver 25,000 copies to the Secretary of State, who is to dispose of them at \$6 each.

This, then, is the end of the Geological Survey, for which the State of California has been so much praised abroad. The work already accomplished has been excellently done, and it seems too bad that the whole work could not have been properly finished. It is highly probable, that with any other man at its head, the survey would have been continued; but the people of this State have become dissatisfied with Professor Whitney, and have probably wanted the survey stopped more to get rid of him than anything else. As far as Professor Whitney's integrity and ability are concerned, they have never been questioned by any one who knew him, or knew the work he had performed. But, at the same time, it is thought that he erred in judgment in the manner in which the survey was conducted, and did not possess the necessary business qualifications to entitle him to the position he held.

He made up his mind to carry the survey on in the order which best suited him, and paid no attention whatever to the suggestions of the people. We wanted the map of the Pliocene rivers, which was of practical value to the mining community, and several of the matters of like character attended to first; but the chief of the survey first detailed the more abstruse scientific matters, to the exclusion of what the people considered practical. The books already published are valuable in their way and well arranged and published; but to the general public they are of little interest. In fact, the general public cannot appreciate them, even if they could afford to buy them. The maps already produced by the survey are models of their kind, and well worth the price charged for them. It has been unfortunate for the survey that Professor Whitney's personal characteristics should have alienated from him many warm friends of the survey; and that he did not possess sufficient forethought to understand that it would be to his advantage to be affable and courteous to the public, in whose employ he was.

If he had deferred even in a light degree to the wishes of the community, and devoted more time at first to what is usually considered practical, the more scientific part of his labors might have been accomplished at leisure, and with a liberal appropriation to assist them. As it is the public has gradually come to the conclusion that the chief of the survey has rather ignored them than otherwise, and they have in consequence become prejudiced against him. That this is the case, may be seen by the debate in the Senate on this question—senseless as many of the arguments were.

It has been charged against Professor Whitney in the Legislature that he drew a salary at Harvard, while in the employ of this State; that he expended a great portion of his time there, and that he had given a portion of the State collection to the Harvard University. In answer to these statements he has published the following card which explains itself.

EDITOR MORNING CALL.—Noting that you in a measure seem to indorse a slanderous statement made in the Legislature of California, that I have given a part of the collections of the State Geological Survey to Harvard College, I beg leave to state that this is entirely false, and that I have given no portion of these collections to Harvard, or any other institution or individual. I also state that I never received any salary from Harvard College or from any other institution, or any pay from any individual when under pay of the State; but, on the other hand, I have given more than a year of hard work to the Survey, for which I received no pay whatever. Yours, J. D. WHITNEY.

San Francisco, March 24, 1874.

It must be a matter of regret to every intelligent citizen that this survey has been stopped before it was completed. However, it is highly probable that when there is a more intelligent and better educated Legislature than the present, and a more popular Geologist than Professor Whitney, the work will be taken up and finally completed.

HYDRAULIC mining is threatening the people living on the river bottoms of Placer, Sutter and Yuba counties. The bed of the Yuba river at Marysville is already sixteen feet higher than it was twenty years ago from this cause.

Tin fell in value about £20 per ton in Liverpool during the month of February, owing to the large arrivals of ore from Australia. The Australian tin mines must be making a pretty good show in the market already.

The imports of silver ore into Liverpool during February amounted to 740 tons, and of silver lead ore to about 20 tons.

Protection to Stockholders.

The Bill introduced by O'Connor for the protection of Stockholders in mining corporations has passed the Senate. This bill as amended requires Secretaries of mining companies to make out a statement on the first Monday in January and July, exhibiting all the business and financial transactions of the corporation for the six months preceding, and containing a full description of all the property of the corporation, which shall be verified by the oath of the Secretary, and shall, together with all the books, papers and records of the corporation, be open to the inspection of any stockholder during the hours of business every day in the year, Sundays and legal holidays excepted. Under section 2, any owner of stock to the extent of \$500 shall have the right at all hours of business or labor to enter upon the property of the corporation, either on the surface or under ground, and it is made the duty of all officers or persons in charge to allow such stockholder to enter as described. The penalty for infringement of the Act is fixed at \$200.

This bill will require secretaries of companies to make semi-annual, instead of annual statements, as is now the case. The election which provides that the owners of stock to the value of \$500 shall have a right to go into the mine at any time, though eminently just, will no doubt cause some inconvenience at the mines. People owning shares in mines which are worked for legitimate purposes never find any difficulty in entering them; those which are worked only for stock purposes are sometimes kept closed for reasons best known to the Directors. Still, if only bona fide owners of stock are allowed to enter, it wouldn't make much difference to these directors, for there is not one man in five hundred who deals in stock that knows the ore from country rock unless it is in a glass case and labeled. If a clique of stockholders kept a special expert fortified with the requisite number of shares, to go into the mine and report for them, it might be all right; but that would in a great measure depend on whether the directors or the stockholders had the most "influence" with him.

Moreover, the principal mines dealt in our Stock Board are several hundred miles distant from where the larger proportion of stockholders resides, and very few will ever avail themselves of the opportunity the law gives them.

Another thing is, that the Comstock mines are invariably the ones that stockholders want to get into, and as they are in Nevada, our State law does not affect them. The California mines, which are ever closed to stockholders, might be counted on the fingers of one hand.

All miners know what an inconvenience the presence of visitors is under ground, and this is especially the case where several hundred men are employed, and the mine is in full working operation. However, it will be a source of satisfaction to many to know that they will be able to enter the mines in which they are interested whenever they choose, even if they never have time to go there, and for this reason O'Connor's bill is rather popular.

IRON IN INDIA.—A statement which is of great importance to the iron trade is made by the Indian correspondent of the *Pall Mall Gazette*, who states that in pursuance of a suggestion made by the late Lord Mayo, a practical mineralogist, has been employed to thoroughly investigate the mineral resources of India, more especially its ironstone and coal-fields. In his report just submitted to the Government, he states that he found inexhaustible stores of rich hematite in the Central Provinces, within easy reach of the Chanda-Berar coal-field, and with limestone in the neighborhood. In the north of India he found that the Kumaon iron ore was abundant as to quantity, but inferior in quality, and distant from the great markets. The most hopeful part of his report refers to the Raniganj coal and iron field in Lower Bengal. The iron ores of this locality resemble the clay ironstones of the European coal measure, but are more concentrated and very cheaply worked. They are within 125 miles by railway to Calcutta. Labor is abundant, and the district is well supplied both with roads and food material for a working population. Goal is already so extensively raised on the spot as to have reduced prices almost below a remunerative point in the present state of the market. The report is merely a preliminary one, and Lord Northbrook has, in a public resolution, declared the necessity of further enquiry, and "considers it of great importance that iron manufacture should, by some means, be established on a large scale in India." He orders the subject to be further carefully investigated by the Geological Survey and other departments concerned.

The Russian Government has offered an order for 450 locomotives to three Russian establishments—the works of General Maltzoff at Briansk, the Koloma works of Messrs. Struve Brothers at Moscow, and the Alexandrowsky works on condition that everything required, iron, brass, etc., be produced exclusively in Russia.

"WHITE COAL" has recently been discovered in Australia. It consists of felted vegetable fibres like peat, with fine grains of sand interspersed. It burns easily with a light flame, exists over large tracts, and is already extensively used. There is a yellowish white coal in Brazil, looking like clay, but burning well.

The Laws the Miners Want.

A communication which appeared in our issue of March 14th, by Julius S. Lloyd, on this subject, has attracted considerable attention. If our legislature would go into the mining regions and talk with practical men, they might become very much enlightened on the subject of mining laws, and learn of some of the defects of the present system. Among the numerous suggestions concerning Mr. Lloyd's article we have received, is one from "F. S." of West Point, Calaveras county, Cal. He says: "I suggest, as the preliminary step in the right and final direction, that the Federal Government offer a prize for the best code of mining laws, applicable to all mineral lands of the United States—say \$5,000 for the best, \$3,000 for the next, and \$2,000 for the third best."

The States and Territories interested should offer additional prizes and facilities for thorough investigation and deliberate adoption of such laws.

The incalculable beneficial results of such offers will be obvious to the most apathetic. The new code should be terse, free of ambiguity, and cover all present and future exigencies.

The mining fraternity of this State constitute only about one-tenth of its population, but its products equal those of agriculture. Why should not, then, the State and Federal Government extend to us at least a portion of that fostering care which they bestow so tenderly on our agricultural brethren?

Mr. A. P. Frary, of the Stonewall mine, San Diego county, California, says: "In your issue of the 14th instant, in an article written by Julius S. Lloyd, are some very good suggestions for mining laws. I am glad to see miners disowning these matters, for certainly they know what we need better than Mr. Ward, or even Sargent. The third section, which Mr. Lloyd thinks should be enacted, is as follows: 'A claim shall not be subject to relocation or jumpable, as long as the number of hundreds of dollars of bona fide labor equals or exceeds the number of years since located; that is, \$200 shall hold a claim two years; \$400, four years; \$500, five years, etc.; but in no case shall a claim hold good seven years without labor.' Lloyd's article 3d, in my opinion, should make all claims jumpable in four years after work has been entirely stopped, instead of seven."

There have been many mining claims partially prospected, and large amounts spent upon them, which have been abandoned by the original parties, and they have left for parts unknown; and, in many cases, heavily in debt, and not likely to return. It is, in my opinion, a damage to the country to let such mines lay idle longer than four years. Let us, by all means, as suggested in Provision No. 7, have the County Recorder, a responsible party, to keep record of our claims and mining laws. Then, when we come into Court, we can find our laws and records without trouble, and not be subject to the carelessness, neglect or villainy of an irresponsible recorder. I have felt the full force of this suggestion, having been sued for \$150,000, where the issue depended upon the Mining Record, and that Record in the hands of my enemies. The suit has been adjusted, but the Records are still missing. We were, of course, obliged to record, in the County Recorder's office. Let us have Lloyd's suggestions with the amendment.

OPENING ROADS IN THE SIERRA.—None save those who are personally familiar with the expense, toil and danger of breaking roads through from five to ten feet of snow, can form an adequate idea of the task devolving upon individuals in this Alpine region. Lumbermen, having mills situated three or four miles from Truckee, have been obliged, after every storm, to turn out with from 20 to 40 yoke of oxen and open communication with town. Thousands of dollars' worth of labor has thus been expended the present winter by our lumbermen. In breaking these short roads, however, there is no special danger to life or health; but in opening communication with Randolph or Loyalton, Sierra valley, or points on Lake Tahoe, where the distances range from 15 to 25 miles, there is real danger. Between Truckee and Sierra valley there are but two or three stations on the route; and none between Truckee and Hot Springs. Parties while at work on these roads, forcing a passage through from six to ten feet of snow, have frequently been enveloped in blinding storms and overtaken by darkness, when it was impossible to get ahead, and extremely difficult to effect a safe retreat. On more than one occasion this winter, these hardy road-breakers have been forced to remain out all night without food or shelter. *Truckee Republican.*

The gold fields of South Africa, which at first disappointed the expectations of the original discoverers, of late have yielded the miners more profitable returns. The most of the gold is in reefs, and extensive veins of gold-bearing quartz have been found, which will probably pay well when they come to be worked by companies having suitable quartz-crushing machinery. But, recently, alluvial gold fields of wonderful richness have been discovered, and these are attracting crowds of gold-seekers, natives as well as Europeans, from all parts of South Africa. Stories are told of nuggets found there, weighing from 16 ounces to two pounds; and it is reported that one fortunate miner secured a nugget weighing 45 ounces.

Both gold and silver mines have been discovered in the hills directly north of Carson City.

Another Home Industry.

The Union Box Factory.

The interest, and apparent anxiety, manifested by the public in regard to our home manufactures, may possibly convey to outsiders the impression that the condition of San Francisco is rather deplorable than otherwise, in regard to this great element of prosperity. But while we heartily join with those who are most clamorous for more, we are not disposed to allow establishments that have done much toward supplying this great want to remain unnoticed. While we are urging capital and enterprise to embark in manufactures, we should not fail to recognize and duly honor the merits of those who ventured to pioneers in local manufacturing, and are now enjoying deserved success.

Swan & Co., Union Box Factory, is among the most noted and successful of our home industries. It was started in 1870, on a scale of not one-quarter its present capacity. Its employees now range in number from seventy-five to one hundred. The factory is three stories high, ninety-one feet front by one hundred and thirty-seven and one-half feet in depth; the lumber store rooms being forty-six feet in front by two hundred and seventy-five feet in depth. They purchase their lumber by cargo. They receive it in pieces varying from six to twelve inches in thickness, and from twelve inches to thirty inches in width. The wood is mostly spruce, but for butter chests, and other articles requiring great strength, they use maple and ash.

The business of this establishment has steadily increased from its origin up to the present time; and they now turn out from twenty-five hundred to thirty-five hundred boxes daily. This immense number is composed of boxes ranging in size from those three inches in diameter, to the largest packing boxes. Their stock is disposed of mostly in San Francisco, portions of it going from here to all parts of the Pacific coast. The San Francisco Packing Co., Cutting & Co., and Lusk & Co., are among their heaviest purchasers. To move their stock they have six horses, which they keep busy throughout the year. Those who are interested in the question

What Shall we do with Our Boys,

Should visit this establishment. They will here find, at different seasons, from twenty-five to thirty-five boys employed in light, healthful labor. Mr. Swan has not hung out the sign "No Chinamen Employed," but he has carried out the principle; and it is really gratifying to the visitor to see these busy, cheerful youngsters, thus employed to the profit of themselves and of the community.

One of the most interesting features in this manufactory is

The Steaming Process,

By which the wood is prepared for cutting. For this purpose large wooden tanks are provided, into which the wood, out the requisite lengths, is placed. The water, into which these blocks of wood are put, is prepared by a chemical process, for which this company possesses a patent. Steam is then forced into the tanks, and after being exposed to this boiling for about thirty-six hours, it is ready for cutting. It is now placed upon the "slicing" machine while steaming hot, and is sliced to any desirable thickness, from one-hundredth part of an inch to one-half inch; this width, in some cases, being eighteen inches. The block being out during our visit was only two feet in length; but a machine is nearly completed which will take a block six feet in length. These large slices are more especially intended for the backs of large mirrors and picture-frames. One of these machines, with the aid of three men, will cut in ten hours, two hundred thousand superficial feet of lumber. The wood is not steamed, but boiled; and the mechanical and chemical appliances combined in this process, have achieved a remarkable success. There are no chips or sawdust, thus avoiding all waste of wood, and the surface is as smooth and clean as the outtings from a new bar of soap. The pliability and toughness produced by Mr. Swan's process are not affected by drying. Among the machines in operation here, is one for cutting up lumber, (their own patent) which will turn out as much work in a given time as twenty men can do by the ordinary process of sawing.

They have a perfect dovetailing machine, the only one of the kind on this coast, used in making butter-chests, tool-chests, office-boxes, and other heavy work. Besides this there is a small machine of the same character for smaller boxes, and still another called the "mitre dovetailing machine," which cuts a groove and tongue which can be placed together with great rapidity, and make a neat and almost inseparable joint. The boxes and chests upon which the above machines are employed can be shipped in parts, thus securing a great saving in transportation, and put together with remarkable ease and rapidity.

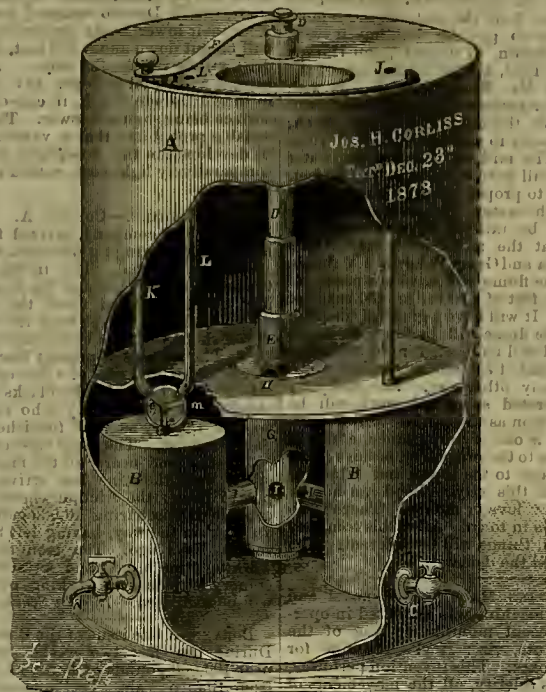
The number and variety of articles made here are so great that it will be impossible for us to give scarcely more than a mere enumeration of them; but as we have on several occasions received from our readers, inquiries as to the supply which our market affords in this line, we will mention some of the articles most in demand; attending first, to the wants of the growers and shippers of fruit.

Beginning with the lowest grade, we have the one-pound fruit box, well adapted to "nesting," which can be bought for one dollar per hundred. Strawberry "drawers," which formerly

sold at ten cents, can now be made and furnished at eight cents, for eight pound drawers, and six cents for four pound drawers. There are other boxes for carrying grapes, cherries, etc., made in two pieces from this "sliced," tongued wood; and being "scored" for their corner joints, they can be packed allmost as compactly as sheets of paper and forwarded in this manner. When wanted for use, a mere novice in mechanics can put them in shape, by using half a dozen tacks, as fast as a grocer can put up his pound packages; these can be bought at from three to four cents, holding from five to eight pounds. The peach basket, standard size, strong, light, and neat, good

Vessel for Measuring and Drawing Liquids.

Mr. Joseph H. Corliss, of Reno, Nevada, has recently patented, through the agency connected with this office, an improvement in combined tanks and liquid measures, for measuring and drawing liquids. It consists of a series of stationary measures of different sizes, which are so connected with the containing can or vessel, that by simply moving a lever, either of the measures can be filled; and, after closing the communication with the containing-can, the



CORLISS' COMBINED TANK AND LIQUID MEASURE.

contents can be drawn off by a cock. By referring to the accompanying cut, the construction of the apparatus will be understood.

Packing Business

Are properly considered here. The most noticeable among the articles in this line are the square lard boxes. They are coated inside with a cement which prevents the soaking of lard by the wood, and are covered with a material which renders them impervious to moisture or air. The top is attached and included in this preparation, only a hole being left, through which the melted lard is poured, when a stopper, which comes with the box, closes the strainer; and it is ready for the purchaser; and if the purchaser don't come, why, the lard can wait. The cement applied to the inside of these "lard caddies" is patented by this company, and is used in various other articles made by them, which require to be impervious to moisture, or which might otherwise impart the taste of the wood to delicate articles.

Pickle kegs, cartoons for jellies and other moist articles, boxes intended to take the place of jars for butter, corned-beef, etc., are to be found here. For uses where extra strength is required, they have contrived upright bars, which are attached to the sides of the box, forming a very strong article. This company have made great efforts toward improving and cheapening butter-chests, and have attained both these objects.

Swan & Co. have been highly complimented by box manufacturers, both from New York and Chicago, who have recently visited their works, and they certainly deserve local commendation for perfecting and cheapening much needed articles, and for imparting increasing confidence in the success of our home industries.

QUICKSILVER.—The New York Shipping List recently published an article from the *Call* under this head and appended the following: We know not what State legislation can effect, but some parties in California call for the repeal of the duty, which is 90 per cent. of 15 per cent., or 13 1/2 per cent. net; but this, we fear, would not remedy the evil complained of, the difficulty being in the curtailed supply from Spain, on account of the war there, and the consequent advance in London to a price which will not admit of its importation thence. In this State of affairs there would seem to be no remedy, unless the supply can be increased by a cessation of the war in Spain, or the opening up of new mines in this country. Many reports have been made from time to time of new discoveries and large supplies to be expected, but they would appear to have been made for a purpose, for no increase seems to have been made in the visible supply. At present London quotations it would cost about \$1.35 @ \$1.36 gold laid down from there.

It is stated that miners' outfits for the Sticksen mines can be procured as cheap at Fort Wrangel as at Victoria. One firm advertises that it has 27,000 pounds of goods at Dease Lake, British

will flow; but, as this tube will always fill to the height of the liquid in the tank, and thus add so much to the measure each time, the inventor prefers to employ two tubes, K and L, one of which has its upper end opening just beneath the top of the tank inside, while the other passes up through the top as shown. These two pipes connect with a stop cock, M, having passages, a, b, c, as shown, which serve to connect the measure alternately with the pipe, K or L. This cock, M, is operated from the outside.

The operation will be as follows: The lever, F, being moved so as to open communication from the tank through the passages, H and I, to the measure, the cock m is turned, so that the air in the measure may escape into the upper part of the tank, until the measure is filled. The pipe, K, will also be filled to the level of the liquid in the tank; the cock, m, is then turned so as to open communication with the pipe, L, and when the discharge-cock is opened air from the outside will supply the space left by the discharge of the liquid, while the liquid in the pipe, K, will be retained there by the closing of the passage in that direction.

By constructing the apparatus in this manner the inventor is able to measure exactly and deliver expeditiously, any liquid contained in the can. There is no necessity of any loose measures standing about dusty and dirty; the whole arrangement being very simple, economical and cleanly. The apparatus is especially adapted for measuring coal oil, but can be used for measuring liquids of any kind. Pint, quart, gallon, or any other sized measure, may be placed in the bottom of the tank when it is constructed, according to the use to which it is to be put. In grocery stores and such places small measures would be desirable, which could be filled twice or oftener to suit circumstances. The machine is a practical and very convenient one. Parties desiring further information concerning it, can address the inventor as above.

Self-Pumping Well-Boring Drill.

With the improved drill represented in the annexed illustrations, the inventors claim that not only faster and better work can be accomplished, but that the apparatus can be more conveniently manipulated, and will penetrate further into the ground before its removal for cleaning is required, than the borers in common use. It is also stated that a hole, with this device, may be sunk by hand a distance of 200 feet, and with a lever to any desired depth; while the operator is enabled, during the progress of the boring, to know exactly the kind and depth of strata through which the tool is passing.

The drill is made tubular and somewhat flaring, so that it forms an orifice a little larger than its body. Its lower edge is serrated, so as to cut a ring groove into the strata, the core of the bore passing up through the cavity in the drill. The upper end of the latter is rabbeted, and, by means of a screw thread cut thereon, is attached to a perforated tube, A, Figs. 1 and 2. The object of the holes in the tube is to allow the water to escape, and thus lessen the weight of the drill as it is moved up and down. To the upper end of the drill is hinged a valve, B, represented in section, Fig. 2, which opens upwards into tube A, so as, when the tool is raised, to carry the contents of the pipe up with it. Sections of tubing—part of one of which is shown at C, Fig. 1—are screwed to the part B, and increase in number with the depth of bore.

When the sectional pipes are too heavy for manipulating, a rope may be attached by means of a swivel to the end of sectional pipe, and the boring may be continued to indefinite depth. In prospecting for coal oil or mineral deposits, as has been stated above, the operator can ascertain the exact nature of strata which he is boring through, simply by means of the pump attached to the drill. The drill cuts a solid core, and when it is taken out so as to clean the pump, the core which the drill has cut, may be removed, and can be examined at pleasure.

In the Pacific States and Territories, where prospecting is carried on and water is needed, the drill would be a useful instrument. Another advantage claimed is that, should the portions of the device become detached, a screw rod may be readily inserted and the separated parts drawn out.

This device was patented by Messrs. Timothy Phillips and Joseph Goletz. Territorial rights and further particulars may be obtained by addressing the inventors at Leavenworth, Leavenworth county, Kansas.

BELL RINGER.—Referring to an article recently published in this journal concerning "Locomotive Bell Ringers," a correspondent writes us that on the Detroit and Milwaukee railroad, in Michigan, nearly, if not all, their engines are supplied with a separate bell situated in front of the boilers, on the platform immediately over the pilot. The bell is so arranged that every revolution of the truck wheels produces a blow. It can be thrown out of adjustment when desired.

The opening of the new mining districts in San Bernardino county will necessitate the shipment of large quantities of ore through Los Angeles, and the

soldered, or otherwise secured to the bottom of the containing-vessel, around its periphery and facets, C, serve to discharge their contents when desired. Through the top of the vessel, A, a stem, D, passes down to the bottom in the center, and this stem operates the plug, E, of the cock, G, being turned from side to side by a lever or handle, F, upon the top of the tank, A. The cock, G, has as many passages as there may be measures; in the manner of a one, two or three way cock. H is the inlet passage from the tank; and I is the outlet passages connecting with the cock, G, and the measures, BB. A single tube, J, may open into the top of the measure and lead upward through the tank in order to supply air to the measure, and a hole supplies air to the tank so that the liquid

Fig. 1

Fig. 2

Self-Pumping Well-Boring Drill.

How to Get to San Juan.

The Colorado Springs *Gazette* sensibly advises people not to start for San Juan too soon, and also gives some figures as to distance, etc., which will be interesting to our readers:

It is not yet time to start for San Juan; it will be some weeks before the roads to the mines are open, and people who go now to Loma or Del Norte are likely to have considerable waste time on their hands. For the service of those, however, who propose to set out before long for the new El Dorado, we subjoin some detailed information as to the best route to take. It has been furnished to us by a gentleman who is thoroughly acquainted with the San Juan country and with the routes thither, and confirms the opinion which has been generally expressed by all who have practical knowledge of the matter—that Colorado Springs is decidedly the best outfitting and starting point, and the road via the Ute Pass decidedly the most advantageous, when all the essentials—distances, quality of road, abundance of grass and water, etc.—are taken into consideration.

From Denver, take the Narrow-Gauge Railway to Colorado Springs, where everything, in this line of "outfit," can be procured as reasonably as at any other point in the Territory. Then by teams through the Ute Pass into South Park, across the park to the Salt Works, leaving Fairplay twenty miles to the right, and on to Chubb's, at the head of Trout creek. Then down Trout creek, (rightly named), to the Arkansas, where there is a good, free bridge. Crossing the river, you go down the valley for a dozen miles or more, and then, bearing to the right, cross Chalk creek, Brown's creek and several other fine mountain streams, striking the South Arkansas near the Punched creek. Here is the post-office and Punched Pass Toll Gate. From this point it is nine miles to the summit of the Pass, and the road is good. At the top you enter the famous San Luis Park, and soon reach the head of San Luis creek. Following this stream for several miles, you finally leave it to the left and cross Alder and Kirber creeks. Passing the Hot Springs and Hunt's Springs, the next halt is at Saguache. From Saguache the route crosses the Carnero and La Garita—considerable mountain streams—and may either go via Del Norte and the Rio Grande Valley, or via Conejos, Tierra Amarilla and Elbert, the new town in the Lower Animas valley. The distance is about eighty-five miles greater by the latter route, but the road is much more practicable and is open, to the mines at least a month earlier than by the former or Rio Grande route.

By this route, via Ute and Punched Passes, Conejos, Tierra Amarilla and Elbert, the scenery is interesting, grass and timber abundant, water is plentiful and of the best quality; and, if desired, good stopping-places occur at convenient distances for the greater part of the route.

The distance and points are as follows: Colorado Springs to Castello's, 33 miles; Castello's to Pulver's, 15 miles; Pulver's to Sulphur Springs, 7 miles; Sulphur Springs to Hartzell's, 6 miles; Hartzell's to Salt Works, 14 miles; Salt Works to Chubb's, 6 miles; Chubb's to Chalk creek, 15 miles; Chalk creek to McPherson's (toll gate), 18 miles; McPherson's to Summit of Punched Pass, 9 miles; Punched Pass to Jack Hall's, (Kirber Creek), 15 miles; Jack Hall's to Hot Springs, 7 miles; Hot Springs to Hunt's Springs, 10 miles; Hunt's Springs to Saguache, 3 miles; Saguache to Carnero, 18 miles; Carnero to La Garita, 2 miles; La Garita to Del Norte, 12 miles, or La Garita to Conejos, 40 miles; Conejos to Tierra Amarilla, 47 miles; Tierra Amarilla to Pagosa Hot Springs, 53 miles; Pagosa Hot Springs to Elbert, 50 miles; Elbert to Baker's Park, 30 miles; Elbert to La Platte mines, 18 miles; Elbert to San Miguel, 27 miles; Colorado Springs to Baker's Park, 416 miles.

By the Rio Grande route, the points and distances are the same to La Garita. La Garita to Del Norte, 12 miles; Del Norte to Wagon Wheel Gap, 30 miles; Wagon Wheel Gap to Antelope Springs, 22 miles; Antelope Springs to Antelope Park, (Franklin's), 8 miles; Franklin's to Beaver Meadows, 17 miles; Beaver Meadows to Lost Trail Creek, 8 miles; Lost Trail Creek to Pole Creek, 12 miles; Pole Creek to Cunningham Pass, 6 miles; Cunningham Pass to Baker's Park, 6 miles; Cunningham Pass to foot of Baker's Park, 12 miles; Colorado Springs to foot of Baker's Park, 329 miles.

This route is not practicable until June, nor is it ever an easy one. A toll-road has been constructed most of the way to Antelope Park, but the remainder of the route is tortuous and rugged in the extreme.

A wagon-road will be completed as early as practicable in the coming season, between Elbert and Baker's Park; and it is expected that this road can easily be kept open for travel all seasons.

A winter road via the Rio Grande route is an impossibility.

Another route can be taken by those who prefer it. It is shorter than the one already given via South Park, Conejos, etc.

Outfitting as before; it is from Colorado Springs to Pueblo, 45 miles; Pueblo to the Greenhorn, 30 miles; Greenhorn to the Huertano, 14 miles; Huertano (via Sangre de Cristo Pass), 24 miles; Huertano, (via Abeto Pass) to Sterne's, 27 miles; Sterne's to Wood's (Ute

Creek), 18 miles; Sterne's to Ft. Garland, 20 miles; Ft. Garland to Conejos, 35 miles; Conejos to Baker's Park, as before, 180 miles; Colorado Springs to Baker's Park, 336 miles.

By this route the distance is shortened about fifty miles, but the road is much less desirable, particularly in crossing the San Luis Park, where it is dry and sandy enough; and the essentials of grass, wood and water, are less abundant—in fact, over a portion of the route, entirely out of the question.

WOOD AND LUMBER COMPANY.—The Nevada Transcript says: Mention has frequently been made of an enterprise about to be begun by parties of this city, the object of which is to convey lumber and wood from the sections too remote from the towns to pay for hauling it with teams. J. E. Brown, of this city, and Harvey Cooper of Blue Tent, are the originators of the enterprise, and Mr. Brown furnishes us with the following particulars: They propose erecting a saw mill at the head of Casado Ditch, having the capacity to saw 15,000 feet of lumber per day. The mill will be run by water power. They will have a pressure of 325 feet, and will use it to propel a hurdy-gurdy wheel of large size. The water, after its passage from the wheel, will be utilized in conveying the lumber sawn at the mill—wood, etc.—to the towns of Nevada and Grass Valley in a V flume. The sides of the flume will have a capacity of running 15,000 feet of lumber or 200 cords of wood per day. It will have a grade of one inch to the rod. The flume will be fourteen miles long. The mill will be located in an extensive timber region, and at a point where it can not be reached in any other way. The company will be incorporated soon, and work will be commenced as soon as the weather will permit. The enterprise is one of importance, and will be remunerative to the projectors, besides being of great advantage to the towns and mines of Grass Valley and this city. Wood can not be had here now for love or money. There is no dry wood for sale in town. After this company get in operation, things will be different. The supply will equal the demand.

NEW BOX-MAKING MACHINE.—A novel and most ingenious machine was exhibited in operation at the recent monthly meeting of the Franklin Institute, viz: Heyl's machine for making paper boxes. This invention performs, with marvellous celerity, all the movements of the human operator, and turns out boxes of any desired sizes ready for use. The inventor at first designed a neat machine for pasting the different parts of a box together, as is now done by hand labor; but, by this machine, he has superseded his former invention, by one in which the parts of the box are held together by a wire, which, at the proper time, is made to puncture the card, and is instantly locked down upon it. The machine is capable of turning out from 60 to 100 boxes per minute, according to the size of the box. The machines, though but recently brought to public notice, are already kept busily at work filling orders, and there can be little doubt that they will bring about a speedy revolution in the box trade.

SOLIDIFICATION OF NITROUS OXIDE.—According to Wille, nitrous oxide may be easily solidified by causing a rapid current of air to pass through the liquefied gas. Different in this respect from carbonic acid, nitrous oxide may be kept liquid for some time in open vessels. Carbonic acid solidifies, as soon as it escapes from its containing reservoir, because the tension of the vapor of the solidified acid, even at the moment of its formation, is considerably superior to atmospheric pressure; while liquid nitrous oxide attains—133° Fah. and solidifies at—146°, so that the tension of its vapor is weaker than one atmosphere. The density of the liquid protoxide at 32° Fah. is equal to 0.9004; its coefficient of dilatation is very considerable. It is insoluble in water.

NEW PHOTO-PROCESS.—A recent improvement, announced by Mr. Burgess, a photographic artist, of Peckham, England, consists in sensitizing gelatin by means of bromide of silver. The mixture is applied warm to the glass plate, and the picture may be taken with the plate either wet or dry. The time of exposure is the same as for the ordinary wet collodion plates. The alkaline-pyro developer is used, the picture making its appearance rapidly, with any required degree of intensity. The new process promises to compete ably with the ordinary collodion process.

WHEN BEETS ARE PRESERVED FOR THE MANUFACTURE OF SUGAR, they give off carbonic acid and take up oxygen. The carbonic acid is a product of the oxidation of the sugar contained in the beets. According to calculation, 1,000 cwt. beets would lose 10 cwt. sugar in thirty days. The air contained in the beets consists mainly of nitrogen and carbonic acid and very little oxygen.

SPONTANEOUS COMBUSTION OF HAY.—In a paper on the spontaneous combustion of hay, H. Ranke says that, in consequence of prolonged fermentation, hay can be transformed into a true coal, which, when exposed to the air at somewhat elevated temperatures, acts as a pyrophorus. *Quart. Jour. Sci.*

THE RATE OF WAVE-MOTION was shown by Aebe to be only 3 feet per second in the muscles of a frog, much slower than the rate at which waves pass along the motor nerves of the same animal, which Helmholtz determined at 88 feet per second.

JOSEPHINE MINING COMPANY.—The Balmont Courier says: This location is immediately south of the El Dorado South mine, and, in our opinion, will, eventually, when developed, become valuable property. The owners are said to be men of wealth and nerve, and through their Superintendent, Jas. Stewart, work is being energetically pushed forward. A shaft, 4½ x 9, is being sunk, which has attained a depth of 57 feet, having passed through slate and other easily-worked ground, with the exception of the last five feet, which is in rock, similar in character to the surface rock of the El Dorado. The rock blasts easily so far, with no signs of water, and in all probability, none will be encountered, to speak of, in the shaft, the El Dorado company pumping water from their lower levels constantly. The shaft will be bent down about 250 feet, from which a drift will be run for the ledge. At this juncture, it will equal in depth the 490-foot level in the El Dorado South, in consequence of the surface being so much lower. There is a reasonable probability that a valuable mine will be developed in the Josephine property, at a comparatively light cost, within the next three months.

FROM PANCAKE.—Colonel A. Lewis, of the Pancake coal company, arrived from the mine last evening, bringing with him some splendid specimens of coal. The incline has reached the depth of 120 feet, and the work will be rapidly pushed forward until the water line is reached, about 110 feet from the present depth of the shaft, which is being sunk at an angle of 28°. The ledge is at present four and one-half feet in width, and coal of a fine quality is being taken out and used by the blacksmiths and machinists of that locality, who say it is of as good a quality as that furnished them from San Francisco. The hoisting-works are about completed, and nearly all the machinery requisite to work the mine has arrived and is being put in place; the friction-wheels, and a pump capable of discharging 10,000 gallons per hour, are now on the way, having left San Francisco several days ago. Ten men are engaged in working the mine, and as soon as the machinery is placed in working order the force will be increased. *—Eureka Sentinel.*

BORAX.—A late issue of the Borax Miner says: During the last two weeks past, something near 100,000 pounds of borax has been shipped from Blanco Vale, (Teel's marsh), and from the Pacific Borax Works, (Columbine Marsh). The several marshes which are producing borax at present, bid fair to yield a fair amount this season; but may not fully meet the expectation of borax claimants and stockholders. One thing will conduce to the permanent success of a few. Many have found their claims worthless, and will, undoubtedly, abandon them altogether. As Messrs. Rhodes and Watson's marsh is on the Wadsworth road, and we have no report from it, we can not give the amount of borax they send off. Their works have been running for some time past, yielding well for the quantity worked, and a fine quality of concentrated borax.

AUSTRALIAN GOLD YIELD.—The gold obtained during the last quarter was 291,861 oz., 7 dwt., of which 127,036 oz., 9 dwt., was alluvial gold, and 164,774 oz., 18 dwt., gold obtained from quartz. The total amount of Victorian gold exported during the quarter, according to the Customs returns, was 204,787 oz. There was received at the Melbourne Royal Mint during the quarter, 63,384.78 oz. of gold, of which 45,926.21 oz. was Victorian gold. The number of miners at work in the colony during the quarter was estimated at 51,874, of whom 21,355 Europeans and 13,810 Chinese were engaged in alluvial mining, and 16,608 Europeans and 103 Chinese in quartz mining.

IRON IN MONTANA.—There is enough iron ore of the best quality out-cropping in Montana, and lying upon the surface, to make the rail of the Northern Pacific from end to end; and yet it is so worthless that no man will waste time to become its owner. So says United States Marshal Wheeler, and so say the records of the Land-office. These valuable veins and deposits are neither located nor taken up, which is not to be wondered at. Gold, silver, copper, lead loaded with silver, and float-iron and cinnabar are so plentiful as to keep the entire stock of labor in a chronic fever.

SOME long time ago, £18,000 was spent on a claim at Blackwood, known as the Clunes and Blackwood Company. The whole of this money was squandered on the surface. The mine was not prospected. Recently, six men without any capital, have worked the same ground, and discovered a valuable reef. The first crushing has yielded 109 oz. 6 dwt. from 108 tons.

It has been suggested that a cause of certain mysterious fires in factories may possibly be traced to the electric spark, the electricity being generated by the friction of the leather belting on the pulleys.

ONE of the salts most sensitive to heat is the double iodide of silver and mercury. Its natural color is yellow, but it turns red if warmed, and returns to yellow again on cooling.

THE combination of one pound of coal in one minute is productive of a force equal to the work of three hundred horses during the same time.

THERE is probably nothing better and cleaner than black lead and tallow as a lubricant for friction wheels or brakes.

The Stickeen Mines.

The West Coast Star, of March 14th, publishes the following extract from a letter written by a miner in the new gold diggings which will give some idea of their richness: After some prospecting, myself and partners located a good claim on Dease creek. The top gravel, which we worked with a rocker, prospected \$20 a day. There was a great deal of exposed rock and water holes, also cañons and narrow places. It is very rough, and difficulty will be experienced in working the bed, on account of high water. On Thibart creek twelve men worked eight weeks with sluices, and made from one to two ounces a day to the man. This creek is from three to twelve feet deep, and is not quite as rough as Dease creek. The pay dirt here is found on the bed-rock. Dease creek was struck on the 6th of September, and a party of twelve, with rockers, during a period of three weeks, averaged from \$15 to \$40 a day to the hand. Along this creek the pay dirt is found in the top gravel and on the bed-rock, and averages from one to four feet deep. Of the two, I think Dease creek is the richest, and will prove richer than it has so far indicated. Another letter published in the Owyhee Avalanche, written from Victoria, B.C., under date of Feb. 25th, by J. R. Lee, to Frank Belrose, of Fairview, gives the following details: I left San Francisco on the 5th inst. and had a very quick trip to this place, being a little over three days—distance, 800 miles; price of passages, cabin, \$30; and steerage, \$15. There is only one boat running from Frisco to Victoria, but there are three boats running from here to Fort Wrangle at the mouth of Stickeen river, which is 300 miles from Victoria—fare \$30; cabin, and \$20, steerage. From Fort Wrangle up the Stickeen river to Buck's Bar, it is called 160 miles; from Buck's Bar across the country to the mines it is 80, and some say, 100 miles. There are no provisions nor supplies at the mines yet, nor will there be till after the river opens. It will be the middle or last of May before boats can run up the river to Buck's Bar. As near as I can find out, there are 500 or 600 men already in there, and on the way. The only supplies they can get are what they take with them on hand-loads. What I have stated in relation to distances is upon information gleaned from three of the discoverers, whom I saw here. Two of them went up to Fort Wrangle on a boat that left here three days ago; the other says he will not go till the river opens. I questioned them about the mines, but could not get much satisfaction. They told me, however, that they found gold on two creeks and had made good wages during the time they worked. They don't know whether there is any extent to it or not, but they got a splendid quality of heavy gold. They told me the creeks are large, and plenty of timber throughout the country, but they do not encourage any one going there till the river is open. I shall remain here until the middle of April, as I am not good on a hand-sled, and the chances are I would have but little grub left when I got to the mines. I will write you again when I reach the mines and see what there is.

LONGEVITY OF MEDICAL MEN.—According to Dr. Casper, of Berlin, who has written an interesting work on the duration of human life, the average age of clergymen is 65; of merchants, 62; of clerks and farmers, 61; military men, 59; lawyers, 58; artists, 57; and medical men, 56. The medium duration of life in Russia, he states at about 21 years; in Prussia, 29; in Switzerland, 34; in France, 35; in Belgium, 36; and in England, 38 years. Another writer, of great experience, proves that, under ordinary circumstances, man can live six or seven times longer than the years required to attain puberty. This epoch is placed at our fourteenth year. This calculation would therefore yield from 84 to 98 years of age. It is our own fault, and not Nature's, if this period is abridged. The London Medical Times and Gazette give some statistics showing that medical men in England stand high on the scale of longevity. The united age of twenty-eight physicians who died last year amount to 2,354 years, giving an average of more than 84 years to each. The youngest of the number was 80, the oldest 93; two others were 92 and 89 respectively; three were 87, and four were 86 each; Sir Henry Holland being one of the latter. There were also more than 50 whose average age was between 74 and 75 years.

EFFECT OF RARIFIED AIR.—A recent book of travels in Asia, by Dr. Henderson, contains an interesting statement of his experience on high altitudes. A few days' out from L6 they had to cross a pass, the Chang-la, 18,000 feet high. In so doing, almost every one suffered from the rarity of the atmosphere; in one case the pulse went up to 100, the respirations to twenty-two per minute. Some complained of a feeling of suffocation, and could not sleep; but a few deep inspirations relieved this feeling. Intense headache was complained of, with great prostration of mind and body; the temper became irritable, and there was most distressing nausea. In some, the lips became blue, and in another case the temperature, as indicated by the thermometer, sank one or two degrees. Such is the exceedingly interesting account given of the effects of great rarification of the atmosphere by Dr. Henderson. We may mention that here the barometer stood at 15.73, and the thermometer at 61° Fahrenheit, and water boiled at 181° Fahrenheit.

Antimony.

The popular idea of antimony is somewhat vague and indefinite. Some, who know about antimonial wine, suppose it to be a rare drug, and somehow connect it with, or mistake it for, antimony. Others, of a notarial turn of mind, imagine antimony to be a legacy of an aunt, on the analogy of patrimony being the hereditary estate of a father, while that of a mother is matrimony, of course. Only the few whose business it is to know, are aware that antimony is a metal, looking like lead at first sight. In its qualities, it is very different from most common metals, especially in being brittle. It is brought into commerce in square cakes or truncated pyramids, some four inches thick. Strike one of these with a sledge, and it breaks easily into several pieces. Put one of these in a mortar, and it can be pulverized. The fracture shows large, laminated crystals, very bright, and of a tin-white color; and the metal has so great a tendency to crystalline structure that its smooth surface, on cooling, is covered with a beautiful figure, like a star of broad leaves, and resembling jappanned tinware. The appearance of this star is commonly considered a sign of the purity of the antimony, but erroneously; for, producing it on the surface is a mere trick of trade, as will be seen below, and it can be shown on antimony containing so much as five per cent. of impurities, while the chemically pure metal will have no star, unless cooled under certain precautions. Antimony is not so heavy as lead, its specific gravity being 6.7, or nearly the same as that of cast iron. On heating it in the air, it melts at 551° F., and becomes coated with a white oxide, which, on cooling, crystallizes in brilliant transparent needles. It is volatile, but can not be distilled so long as oxygen is present, because the metallic vapor is instantly oxidized, and the oxide is not volatile. But in an atmosphere, or current of hydrogen, or any hydrocarbon gas, antimony distills very easily at a temperature below red heat. A small globule of antimony, melted on a piece of charcoal before the blow-pipe and suddenly thrown down, dies to pieces with brilliant scintillation, and the fragments, as they roll off, leave a track of white oxide—a neat prior experiment, but not to be made on parlor furniture. Chemically, antimony plays the part of a metalloid rather than a metal, forming with oxygen an oxide and an acid, and giving corresponding combinations with sulphur, chlorine, etc.; but its oxide forms no salts with acids, as most metals do.

Antimony is one of the "base" metals. In value it stands between copper and lead, being commonly worth about half as much as the former, and twice as much as lead. But the price is very variable, ranging from ten cents per pound (gold) to sixteen cents; its average market value may be stated at twelve and one-half cents per pound. The metal, in its pure state, is too brittle to be used for the manufacture of any sort of utensil; but it is extremely useful as a constituent of several important alloys, to which it imparts hardness. If printers' types were made of pure lead, they would be so soft that a few impressions would mash the delicate characters out of shape; but the addition of about twenty per cent. of antimony to the lead, gives an alloy hard enough to stand many thousands of impressions before becoming quite worn out. No other substance would answer so well as this alloy of lead and antimony for type metal; and this alloy alone gives antimony an important position as an essential material in the useful arts. The valuable anti-friction quality is imparted to Babbitt metal by antimony, and this alloy is very extensively used for bearings, especially in steam engines and in the boxes supporting the axles of railroad cars. Several other well-known alloys contain antimony.

The quantity of antimony used medicinally is trifling; in the shape of tartarite of antimony and potassa, it forms tartar emetic, a solution of which in sherry and maderia, is the familiar antimonial wine. Oxide of antimony has been proposed as a white paint, being of good body, and not subject to discoloration, but the efforts to introduce it (in France) have not met with favor, because it is not in all respects superior to either white lead or zinc white, while it is more expensive than either, from the greater value of the metal. The native sulphuret of antimony purified by lixiviation, is used as a medicinal remedy, especially in the veterinary department; another artificial sulphuret containing an oxide, was formerly considered a great specific, known as *mineral kermes*; and still another combination with sulphuret, called *golden sulphuret*, occurs in the pharmacopoeias. Chloride of antimony is used to a small extent for browning gun-barrels. The total consumption of antimony in the United States is not much over 1,000 tons per annum, and by far the greater part of this is used for type metal and Babbitt metal. The various type foundries in the West, at St. Louis, Chicago, Cincinnati and Pittsburgh, consume in all about 120 tons; New York, Boston, Philadelphia, and Baltimore use about 180 tons in this way; so that about 300 tons are used annually for type metal, and nearly all the rest for Babbitt metal.

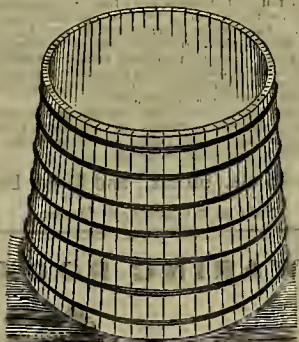
No antimony having as yet been made in quantity on this continent, the importations ought to show the consumption. But such is not the case, because the type foundries, in place of buying metallic antimony, use very largely an alloy, called hard lead, obtained in smelting lead from antimonial ores, and quite available for type metal, if free from zinc. It is

cheaper in this form, and therefore a great deal is used without appearing on commercial returns, because it is classed as lead. Yet, hard lead often contains 30 per cent. of antimony. —*Jour. Appl. Chem.*

San Bernardino County.

San Bernardino is cut off from the sea by a small intervening slip of Los Angeles county; population, 9,000. The San Bernardino range of mountains divides the county into two parts, differing from each other in topography, climate and nature of soil. The eastern part lies within the Great Basin, or valley of the Colorado, and may be said to be worthless, agriculturally. The western part extends from the San Bernardino range to the Los Angeles line, including within its boundaries the beautiful, fertile valley of San Bernardino. The western slope of the county contains an area of about 2,000 square miles, nearly all of which is highly fertile. The San Bernardino is divided from the San Gabriel range by the Cajon pass, and from the San Geronimo pass. Each of the passes opens on the desert. East of the San Bernardino range the vast area of country extending to the Colorado is a barren waste, a great part uninhabited, and almost uninhabitable. The landscape is diversified, indeed, presenting the most varied scenic contrasts. In the country are great mountains, vast forests, extensive table-lands, beautiful and fertile valleys, teeming with semi-tropical productions, dreary alkali flats, sparkling streams, or, rather, small rivers, spreading beauty and fertility in their flowing paths, and a vast and sterile desert. The bleak, bare and waterless desert is offset by the most fertile, blooming and beautiful valley in California; the frigid vegetable and the orange-tree grow side by side. The productions of both the semi-tropical and temperate regions of the earth are indigenous to this soil; the precious as well as the useful metals abound throughout the vast mountain-amphitheater, which almost encloses our famed valley; and, to carry the parallel still further, we have two distinct climates; for, during the winter season in this valley, summer and sunshine reign on and along the edge of the desert. It is a country abounding in most surprising natural contrasts. —*San Bernardino Guardian.*

AUBURN MILL COMPANY.—The Reno Journal says: The Auburn Mill company have made arrangements to secure a regular supply of high grade ores from the Dayton Gold Silver mining company, Silver City, and from a series of mines at Terrace, Utah, owned by Thos. H. M. Winn & Company. Being so far removed from its source of supply this mill has heretofore labored under many disadvantages, but from present indications their liberal terms offered to mine-owners have secured for them the prospects of a most successful business during the season.



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PATENT LAW A SPECIALTY. 11

Information Wanted of Ezra S. Gaver.

When heard from last, ten years ago, was at Pikes Peak, Colorado. Any information of him, or his fate, will be thankfully received by his brother, JOHN GAYER, at 1309 Vallejo street, San Francisco. 25v27-3m

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Mining Affairs at Eureka, Nevada.

[By Our Regular Correspondent.]

The Weather.

Since I wrote on the 1st instant, has been fearfully and terribly severe. March made its entrance like the roaring monarch of the forest, to whom it has been likened, and has, since then, given us a fair sample of its meteorological changes, which, however, have been from bad to worse.

That venerated and reliable personage, so well known in every quarter, "the oldest inhabitant," has no recollection, whatever, of having ever before witnessed so wild and stormy a winter in this section, as the one now so happily drawing to *finis*.

The first snow of the season fell here on the 16th day of last October. It has clung to us with loving fondness ever since, and seems bent upon remaining with us many weeks yet, too, as a lingering, crowning glory to our proud old hills. The genial, vivifying rays of the summer sun—if such should ever again gladden us—will, however, soon dissipate this last vestige of the cause of all our woes and inactivity, for so long a time. Soon, too, our hills will be once more teeming with life and vigor, with our hardy sons of toil working like leavers amid their fastnesses, to "make hay while the sun shines," or, in other words, to make up for their long, idle spell. There has been very little done in the way of mining since the first of last December. That month we thought bad; January, we noted infinitely worse, and February, with its 28 days, left its record behind it of being the most superlatively inclement month of the three; but March, thus far, has thrown the whole three in the shade, altogether. Our only consolation now, however, is that, when having spent its fury, as it soon must, it will illustrate the gentler side of the animal kingdom in its exit. It is, at present writing, cold and stormy, with the incessantly descending snow blinding us at every turn, and with the icy ground rendering pedestrianism anything but a profitable or agreeable exercise. The snow is piled up in huge banks and drifts in every quarter; and its depth can only be conjectured. We can, however, without any attempt at exaggeration, place its depth at any degree from 0 to 60 inches, and in many places it is even deeper. The approaches to our leading mines are also hopelessly blocked up, and will be so for many weeks yet, without the winter's accumulations are shoveled off. Should the sun, however, come out strong and warm for a few days, it would do much towards removing its obstructions. The thaw, when it does come, as come it must, and that soon, too, will bring with it a miniature deluge, the like of which has not visited this region very probably since old Father Noah's ark sailed in triumph above its submerged mountains. The aboriginals, in anticipation of the threatened avalanche of waters, have been unusually busy moving their worldly goods and household gods to safer and milder quarters, amidst their ancestral hills, somewhere to the south. Well, "if ignorance is bliss, 'tis folly to be wise." So thought the accomplished Mr. Wilkins Micawber, when in that happy condition hovering between the extremes of doubt and hope, "waiting for something to turn up," as many of our citizens here are, after the winter shall have disappeared. Now, let us turn from snow and ice to have a word to say about our mining interests, since they are the most important interests, for upon their prosperity depends everything and everybody here.

The Richmond

Has been working light-handed for some time, owing to the weather, which precluded the possibility of ore or coal hauling to its furnaces, which have been standing idle; but not, however, for the want of ore, but from a lack of carbon to reduce it with. Ore is abundant in the mine and at the furnaces, but there has not been a bushel of coal received for many weeks. It is impossible to haul it in over the bad roads, and till there is some change for the better there will be none hauled.

The Eureka Consolidated

Has also been working short handed owing to a like cause. This company has, however, been so fortunate as to have had coal enough on hand to keep one out of its five furnaces in full blast during the whole winter. This is the only furnace in the camp that is running or likely to be before May, but it is possible that coal enough may be received by the middle of April to set them all in motion. It is, however, doubtful. The accounts from this mine are good. The bottom developments lately made, are, said, by those who know, to be of a very encouraging character. The ore is rich and abundant, giving promise of a bright future to stockholders, and others interested in its welfare. Dividends will, it is thought, be disbursed monthly during the coming summer. They should be, because the mine appears to be in a condition to do so.

The K. K.

Being the next in importance, has been also partially idle. It is, however, like the others, working but a few men. The mine is reported to be in excellent condition, with an abundance of fine ore. This company paid, for many months,

last summer, a dividend of 25 cents per share, aggregating \$12,500 per month. I have no doubt but a resumption will be in order at an early day. There have been a complete outfit of new and powerful hoisting engines, boilers, etc., erected at a heavy outlay over the works of this company within the past few months. Their furnaces are of course also idle, no coal being a prevailing complaint.

The Ruby Consolidated

Is working only 20 men. The mine is looking well, and will turn out a large amount of ore during the coming season. Many new developments are reported to have been made during the past few months. This company was incorporated in London some two years ago, and is at present managed by Herman Hyemmann, merchant of San Francisco, and superintended by John H. Plater of this burg. Its future is most promising.

The Orange Company's

Works are also being now pushed vigorously ahead. The prospects of this company are most flattering, as the future will, I have no doubt, demonstrate. The next in importance is the

Hoosac Company,

Whose mine is distant about five miles south of town. They have worked a few men all winter, but with what results is not said. This reference is no doubt owing to the late trial, a decision of which has not been yet rendered; but will be at the April term of Court. I append the main features of this interesting suit, as developed at the trial, during the latter portion of last month. It was very ably conducted on both sides. The plaintiffs were represented by Messrs. Ellis & King, of Carson City, assisted by Messrs. Hupp & Hillhouse, of this place; while the defendants were represented by Messrs. Wren & Bayley, of Enreka, and Judge Garber, late of the Nevada Supreme Court; but now, I believe, of San Francisco. The case, necessarily abridged, will be found well worth the perusal; and is, in every essential, as developed at the hearing in Court.

Cole & Bridge vs. Strout et al.

Cole & Bridge and Strout & Wernmouth were co-owners in the Hoosac mine, in the early part of 1872, Messrs. C. & B. owning together one-third interest, and S. & W. owning and controlling a two-thirds. Up to that time very little work had been done on the mine. Cole & Bridge did not think much of the prospect, and refused to do any work or pay any assessment towards development. Strout & Wernmouth commenced prospecting and working the mine on the 13th of June, 1872, and formed an association for the purpose of enabling them to make the other parties pay their share of the expense. This was done on the 24th of July, 1872, under the statute of 1865.

Meanwhile, Cole & Bridge, on the 19th of June, 1872, bonded their interests in said mine to one Sayers, for \$1,500; said amount to be paid at the expiration of six months, and they (Cole & Bridge) to convey the legal title to their interest upon receipt thereof; and said Sayers to pay any assessments that might be levied upon their interest during that period. This bond amounted to an actual sale of C. & B.'s interest, with an agreement to carry the legal title upon the fulfillment of the conditions thereof. The fact of this bond having been executed, was kept secret by Sayers and Cole & Bridge, and nothing was said to or known by Messrs. Strout & Wernmouth about it, until about the first of September, 1872. A few days previous to this time, Messrs. S. & W. had struck some good ore in the mine, in the upper shaft, said shaft being about seven feet deep, and having also taken out therefrom about ten tons of ore assaying \$180 per ton. While this ore was at the Richmond furnace for reduction, Mr. Sayers sought Mr. Strout and informed him, for the first time, that he had a bond for Cole & Bridge's interest, and demanded one-third of the proceeds of the ore. The mine was at this time indebted to Messrs. Strout & Wernmouth some \$300 for moneys expended by them in its development. Subsequently, Mr. Sayers finally sold and assigned his interest in the bond to Strout for the sum of \$250. This was on the 4th of September in the aforesaid year. On the 8th of the same month, Messrs. S. & W. struck a body of ore in the lower level of the mine. Sayers, upon learning this, naturally felt very sorry at having sold his interest to the bond, and as it appears, commenced devising a scheme which he thought would enable him to annul his sale and receive the benefit of the new strike in the mine. He (Sayers) then went to Messrs. C. & B. and told them not to convey a legal title when the bond should become due and its conditions be complied with.

On the 10th of December, 1872, Strout made a tender of the amount stipulated in the bond (\$1,500) to Cole & Bridge, and demanded a deed, according to the terms of said bond, all of which they refused to do; whereupon Strout commenced suit to compel a conveyance, to which Cole & Bridge, by their attorney, J. J. May, set up for answer, that they had conveyed their interest to one George Ware, of California, receiving therefor a valuable consideration. This answer was served on Strout's attorney, but he (Strout) knew nothing of the conveyance to Ware until early in February, 1873. Then J. J. May offered, through a Mr. George Bibbins, to perfect Strout's title to the Cole & Bridge interest in the property, offering a deed from said George Ware to Strout, whom they told that it had been prepared with a view to a compromise with him, and to be delivered to him whenever it should be ef-

fected. This deed, Strout purchased for \$650, and caused a search of the records to be made, which revealed the legal title standing in Geo. Ware; and holding the equitable title by virtue of his bond—he caused his suit against Cole & Bridge, to compel a conveyance of the legal title to him; to be dismissed.

On this, Messrs. Cole & Bridge, through their attorneys, Ellis & King, commenced suit, as noticed above, to have the deed from Ware declared void, because, on the evidence of May, it was filled in blank; that is, as to grantee and consideration. Strout swore at the trial that the deed was perfect when first shown to him, and that he knew nothing, whatever, about its being in blank, until he heard the evidence of May. The deed was also perfect in every particular, when it was exhibited to Geo. Bibbins, at the time the purchase was made. The deed was introduced in evidence, and looked to all intents and purposes perfect, and appeared to be written with the same pen and ink, by the same hand, and at the same time, too. These are matters of very serious import, and will, I have no doubt, receive the consideration they merit, when the verdict comes to be placed upon record, at the next term of court.

Eureka, Nevada, March 16, 1874.

1840. 1874.

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Continued from Page 197.

but slow progress has been made during the past week.

UTAH.—The main west drift at the 1,400-ft. station is still pushed ahead, running through quartz clay and porphyry mixed. The face of the drift is still perfectly dry, leading to the conclusion that the main ledge has not yet been cut.

WOODVILLE.—The erection of new hoisting-works is making steady headway. The main north drift on the 300-ft. level of the old incline is being continued.

BUCKEYE.—The east drift from the 1,500 ft. station is still driven vigorously ahead, the face in quartz and porphyry.

LADY BAYAN.—The new shaft is now down 32 ft. Three shifts of men are employed, working night and day, and excellent progress is being made.

MINY.—The new hoisting-works building, and the erection of the new hoisting-machinery, is rapidly approaching completion.

MONTZUMA.—The streak of ore, recently developed in the bottom of the shaft, is gradually widening out as sinking progresses.

DANER.—Sinking the main shaft is making the usual good progress, the rock in the bottom working much softer.

JUSTICE.—The operations of the company are now confined to sinking the main incline. It is now down 70 ft. below the 400-ft. level and the work is progressing finely.

EUROPA.—A winze is commenced and being actively sunk in the north drift in the main tunnel, near the west wall of the ledge, at a very eligible point for finding a good ore body. The indications thus far encountered are very favorable.

SUTRO.—The main north drift is being driven forward rapidly. It is now in a distance of about 152 ft. Streaks of lively looking quartz are encountered all along, assays of which give \$12 to \$20 per ton.

BALTIMORE CONSOLIDATED.—Sinking the shaft is making rapid headway. The erection of new machinery is making steady progress.

KNICKERBOCKER.—Sinking the shaft is making rapid headway, the rock in the bottom blasting finely.

ALHAMBRA.—The erection of the new hoisting-works building is making as rapid progress as the state of the roads will permit.

TYLER.—An addition of 14300 feet has been made to the hoisting-works building, to make room for the two hoilers. Sinking the shaft for a new level has been commenced.

SEGREGATED ROCK ISLAND.—The drift west, to connect with the old shaft for the purpose of ventilation, is making fair headway, as is also the drift running parallel with the ledge toward the American Flat line.

FLORIDA.—The winze being sunk below the north drift or crosscut, is now down 21 ft., and the quartz encountered looks very favorable, giving some pretty good assays.

YELLOW JACKET.—Sinking the main incline is making good progress.

BULLION.—The main north drift on the 1,700-ft. level of the Imperial shaft, is still driven vigorously ahead toward the Exchequer line.

KOSUTH.—Prospecting the first station level is still being vigorously prosecuted.

ROCK ISLAND.—Everything at the new shaft is progressing favorably, the sinking making steady progress.

CROWN POINT EXTENSION.—Shaft sinking at the rate of about three feet a day. No particular change to note.

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Benjamin Mill and Mining Company.

Location of principal place of business, San Francisco, California. Location of works, Devil's Gate District, Lyon county, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the seventeenth day of March, 1874, an assessment (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, room 7, No. 401 California street, San Francisco, Cal. Any stock upon which this assessment shall remain unpaid on Saturday, the twenty-fifth day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the thirtieth day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

Office—Room 7, No. 401 California street, San Francisco, Cal. 31.

Black Mountain Coal Mining Company.

Principal place of business, City and County of San Francisco, Cal. Location of works, Santa Cruz County, California.

Notice is hereby given that at a meeting of the Board of Directors, held on the 25th day of February, 1874, an assessment of three (3) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at his office, No. 402 Montgomery street, Room No. 23, San Francisco, California. Any stock upon which this assessment shall remain unpaid on the 6th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office—No. 402 Montgomery street, Room No. 23, San Francisco, Cal. mrl-1w

Buena Vista Petroleum Company.

Location of principal place of business, San Francisco, Cal. Location of works, Kern County, Cal.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 28th day of January, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J. W. Adams.....	(not issued)	50	\$10 00
John Hamilton (not issued)		30	30 00
W. S. Kavanaugh.....	37	10	10 00
J. O. Lovejoy.....	239	5	5 00
D. Lovejoy.....	239	20	20 00
M. Baldwin.....	219	1	1 00
D. M. Baldwin.....	222	20	20 00
N. G. Woodward.....	236	90	90 00
Alex. Deering.....	238	5	5 00
Jas. Hamilton.....	(not issued)	30	30 00
C. E. Farnsworth.....	240	50	50 00
C. E. Farnsworth.....	240	30	30 00
J. B. Mills.....	253	10	10 00
J. B. Mills.....	257	10	10 00
J. B. Mills.....	258	10	10 00
J. B. Mills.....	259	10	10 00

And in accordance with law, and an order of the Board of Directors, made on the 28th day of January, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, No. 430 Jackson street, in the City and County of San Francisco, State of California, on Monday, the 30th day of March, 1874, at the hour of 1 o'clock P. M., of said day, to pay the delinquent assessment thereon, together with costs of advertising and expenses of sale.

Office—No. 430 Jackson street, San Francisco, California. mrl-1w

Commercial Coal Mining Company of San Francisco.

Principal place of business, City and County of San Francisco, California. Location of works, Santa Cruz County.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 25th day of February, 1874, an assessment of 33 1/3 cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary, at his office, No. 402 Montgomery street, Room No. 23, San Francisco, California. Any stock upon which this assessment shall remain unpaid on the sixth day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the fourth day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office, No. 402 Montgomery street, Room No. 23, San Francisco, California. mrl-1w

Germania Mining Company—Location of

principal place of business, San Francisco, Cal.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the

Third (3d) day of February, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Wm. Lapham, Trustee.....	10	25	\$12 50
Wm. Lapham, Trustee.....	185	100	50 00
Wm. Lapham, Trustee.....	190	100	50 00
Wm. Lapham, Trustee.....	194	100	50 00
Wm. Lapham, Trustee.....	206	100	50 00
Wm. Lapham, Trustee.....	206	30	15 00
Wm. Lapham, Trustee.....	223	50	25 00
H. H. Ravage.....	56	20	10 00
Mand. Tavidge.....	58	15	7 50
Joseph Chamberlain.....	30	1000	500 00
Joseph Chamberlain.....	40	500	250 00
Joseph Chamberlain.....	41	500	250 00
Joseph Chamberlain.....	42	100	50 00
Joseph Chamberlain.....	43	100	50 00
Joseph Chamberlain.....	44	100	50 00
Joseph Chamberlain.....	45	100	50 00
Joseph Chamberlain.....	46	100	50 00
Joseph Chamberlain.....	47	100	50 00
Joseph Chamberlain.....	48	100	50 00
Joseph Chamberlain.....	49	100	50 00
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Joseph Chamberlain.....	67	100	50 00
Joseph Chamberlain.....	68	100	50 00
Joseph Chamberlain.....	69	100	50 00
Joseph Chamberlain.....	70	100	50 00
Joseph Chamberlain.....	71	100	50 00
J. W. Chamberlain.....	72	100	50 00
J. W. Chamberlain.....	73	100	50 00
J. W. Chamberlain.....	74	100	50 00
J. W. Chamberlain.....	75	100	50 00
J. W. Chamberlain.....	76	100	50 00
J. W. Chamberlain.....	77	100	50 00
J. W. Chamberlain.....	78	100	50 00
J. W. Chamberlain.....	79	100	50 00
J. W. Chamberlain.....	80	100	50 00
J. W. Chamberlain.....	81	100	50 00
J. W. Chamberlain.....	82	100	50 00
J. W. Chamberlain.....	83	100	50 00
J. W. Chamberlain.....	84	100	50 00
J. W. Chamberlain.....	85	100	50 00
J. W. Chamberlain.....	86	100	50 00
J. W. Chamberlain.....	87	100	50 00
J. W. Chamberlain.....	88	100	50 00
Wm. H. Chamberlain.....	89	100	50 00
Wm. H. Chamberlain.....	90	100	50 00
Wm. H. Chamberlain.....	91	100	50 00
Wm. H. Chamberlain.....	92	100	50 00
Wm. H. Chamberlain.....	93	100	50 00
Wm. H. Chamberlain.....	94	100	50 00
Wm. H. Chamberlain.....	95	100	50 00
Wm. H. Chamberlain.....	96	100	50 00
Wm. H. Chamberlain.....	97	100	50 00
Wm. H. Chamberlain.....	98	100	50 00
Wm. H. Chamberlain.....	99	100	50 00
Wm. H. Chamberlain.....	100	100	50 00
Wm. H. Chamberlain.....	101	100	50 00
Wm. H. Chamberlain.....	102	100	50 00
Wm. H. Chamberlain.....	103	100	50 00
Wm. H. Chamberlain.....	104	100	50 00
Wm. H. Chamberlain.....	105	100	50 00
Fred'k. Winkelman.....	247	20	10 00
Samuel Purdy, Trustee.....	2	500	250 00
Edward Dieren.....	196	10	5 00
L. A. Terry.....	224	25	12 50
T. J. Brown.....	107	100	50 00
T. J. Brown.....	108	100	50 00
T. J. Brown.....	109	100	50 00
T. J. Brown.....	110	100	50 00
T. J. Brown.....	111	100	50 00
T. J. Brown.....	112	100	50 00
T. J. Brown.....	113	100	50 00
T. J. Brown.....	114	100	50 00
T. J. Brown.....	115	100	50 00
T. J. Brown.....	116	100	50 00
T. J. Brown.....	117	100	50 00
T. J. Brown.....	118	100	50 00
T. J. Brown.....	119	100	50 00
T. J. Brown.....	120	100	50 00
T. J. Brown.....	121	100	50 00
T. J. Brown.....	122	100	50 00
H. B. Congdon, Trustee.....	22	50	25 00
H. B. Congdon, Trustee.....	23	100	50 00
H. B. Congdon, Trustee.....	24	100	50 00
H. B. Congdon, Trustee.....	25	100	50 00
H. B. Congdon, Trustee.....	26	100	50 00
H. B. Congdon, Trustee.....	27	100	50 00
H. B. Congdon, Trustee.....	28	100	50 00
H. B. Congdon, Trustee.....	29	100	50 00
H. B. Congdon, Trustee.....	30	100	50 00
H. B. Congdon, Trustee.....	31	100	50 00
H. B. Congdon, Trustee.....	32	100	50 00
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H. B. Congdon, Trustee.....	34	100	50 00
H. B. Congdon, Trustee.....	35	100	50 00
H. B. Congdon, Trustee.....	36	100	50 00
H. B. Congdon, Trustee.....	37	100	50 00
H. B. Congdon, Trustee.....	38	100	50 00
H. B. Congdon, Trustee.....	39	100	50 00
H. B. Congdon, Trustee.....	40	100	50 00
Geo. Helm, Trustee.....	3	500	250 00
Geo. Helm, Trustee.....	263	100	50 00
Geo. Helm, Trustee.....	293	100	50 00
Geo. Helm, Trustee.....	260	100	50 00
Geo. Helm, Trustee.....	261	100	50 00
Geo. Helm, Trustee.....	262	250	125 00
Charles Riestner.....	225	100	50 00
Wm. Lapham.....	187	100	50 00

And in accordance with law, and an order of the Board of Directors, made on the third day of February, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, 408 California street, San Francisco, California, on the 6th day of April, 1874, at the hour of 1 o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

Office—Room 18, 408 California street, San Francisco, California. mrl-1w

Geneva Consolidated Silver Mining Com-

pany. Location of principal place of business, City and County of San Francisco, State of California.

Location of works, Cherry Creek Mining District, White Pine County, State of Nevada.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the tenth (10th) day of February, 1874, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
H. Barroilhet.....	(not issued)	1,250	\$312 50
G. W. Babbins.....	(not issued)	1,750	1,125 00
T. T. Milliken, Trustee.....	(not issued)	2,000	500 00
T. T. Milliken, Trustee.....	(not issued)	110	27 50
T. T. Milliken, Trustee.....	(not issued)	5,000	1,250 00
T. T. Milliken, Trustee.....	(not issued)	5,000	1,250 00
T. T. Milliken, Trustee.....	(not issued)	3,145	786 25
T. T. Milliken, Trustee.....	(not issued)	2,500	625 00

And in accordance with law, and an order of the Board of Directors, made on the 10th day of February,

1874, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the company

10v27tf J. HENDY, No. 32 Fremont Street.

GRAND INDUSTRIAL EXHIBITION,
To be held under the auspices of the
MECHANICS' INSTITUTE
OF SAN FRANCISCO, CALIFORNIA,
Opening on August 18th, 1874

The Board of Managers herewith announces that a grand Industrial Fair will be held in the city of San Francisco for 30 days, opening on August 18, 1874.

In view of the increasing commercial and manufacturing importance of San Francisco, its contiguity to and close connection with the various countries bordering on the Pacific, the managers have constructed a Pavilion having a floor area of 150,000 feet, and have invited to it all who are disposed to come and exhibit. All exhibitors will be placed on the same footing. Motive power will be furnished free.

The building will be open day and evening, and every facility will be extended to exhibitors and visitors. Application for space must be made without delay to the Secretary of the Board of Managers, 27 Post street, San Francisco, and all inquiries will be answered and information extended promptly.

No space can be secured unless applied for before the 20th of July next: A. S. HALLIDIE, Pres.
J. H. CULVER, Secy.

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SILEX AND FERMENTED LIQUORS.

10x23-1m

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Delivered on R. R. Car at Denver, Col., or St. Louis, Mo.

Separates in one and the same operation—1. galena and sulphide of silver; 2. pyrites or blende; 3. tailings, containing no valuable parts; or, 1. gold; 2. pyrites; 3. tailings (quartz, etc.) containing no valuable parts; or, 1. copper; 2. tailings, containing no valuable parts. The One-Plunger Jig can be combined with existing stamp-mills with highly important advantages, as after amalgamation it will recover completely all fine metal and all base ores and all mercury out of tailings. It concentrates all fine metal ores to such cleanliness that low grade ores can be shipped, after concentration, as first-class ores. Its feed and discharge are automatic. Its construction offers better guarantee against loss and repairs than any other apparatus in use. For particulars, apply to the inventor, F. CAZIN, Mining and Civil Engineer, Denver City, Col.

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Location of Mines, Mulge District, Lower California. OFFICE, ROOM 10, No. 605 OLAY STREET.

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Brittan, Holbrook & Co., Importers of
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WHEPLEY & STORER
CRUSHERS AND PULVERIZERS,
For Crushing and Pulverizing Dry Ores,
PLASTER, COAL, BONE, MINERAL PHOSPHATES, PAINT STUFFS, DRUGS,
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THEY ARE THE MOST
ECONOMICAL AND DURABLE MACHINES
In practical operation. They reduce much finer and at less expense per ton, giving better results than can be obtained with any other class of machinery. Miners should make a thorough examination of these machines before purchasing any others.
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Manufacturers of
Leffel's American Double Turbine Water Wheels,
Spherical and Horizontal Flumes,
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Especially adapted to our
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We will also do a commission business in Millers' and Miners' Supplies.
We cheerfully furnish, on application, to parties who contemplate building or repairing Mills, all necessary information gratuitously.
Our extensive and practical knowledge and experience with every variety of Mill work and Millwrighting, in connection with the various applications of our wheels to machinery of all kinds—there being more than two hundred and fifty in successful operation on the Pacific Coast, and more than Six Thousand in the world—afford the best guarantee of our ability to supply the most reliable information, and to prepare plans and specifications, and estimates for flour, saw, paper and quartz mills, and factories of every description.
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GIANT POWDER.
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THE ONLY SAFE BLASTING POWDER IN USE.
GIANT POWDER, NO. 1,
For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.
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For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.
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REMOVAL.
FARWELL & CO.,
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Parties working Quicksilver Ores can obtain the right to use highly successful patented improvements for condensing fumes and working soot, by addressing
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MANUFACTURERS OF
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FIRE ENGINES, FORCE AND LIFT PUMPS,
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PATENT SAFETY FUSE, ELECTRICAL
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MINING AND SCIENTIFIC PRESS.

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Patent Solicitors.

SAN FRANCISCO, SATURDAY, APRIL 4, 1874.

VOLUME XXVIII
Number 14.

Hydraulic Bearings for Shafts.

We present to our readers this week, engravings descriptive of improved bearings for shafts, both vertical and horizontal, the invention of Jerome Haas, of Battle Mountain, Nevada. The method of applying the lubricant, which is at the same time the bearing, is simple and practical, as are the mechanical means of accomplishing the object. The antifrictional bearing, or step for shafts, is applicable to both vertical shafts and those which have a horizontal thrust; it consists in the introduction of water or oil, beneath the end of the shaft, by a pressure sufficient to slightly elevate it. This is accomplished by means of a small force-pump, operated by the revolution of the shaft, while, by means of a discharge-cock on the opposite side, also operated by the shaft, the elevation to which it rises is always regulated or controlled.

Figure 1 shows the device applied to a vertical shaft. *A* is a portion of the shaft, and *B* is the step in which it turns. The lower part of the shaft is turned off, and a stuffing-box is formed by the gland, *C*, which prevents leakage from the pressure of the water, or other lubricant. *D* is a small force-pump, which is operated as follows: *A* groove, *E*, is made around the shaft in such a manner as to act as a cam. The lower short lever, *F*, is attached at one end to the piston rod, by the link, *G*, and carries at its opposite end, a friction roller, as shown, which operates within the groove, *E*, so that as the shaft revolves, it is moved up and down alternately, thus operating the pump and forcing water or oil underneath the shaft, at *S*. In order to prevent the shaft from being lifted by the pressure, to a greater height than is desirable, a discharge cock, *J*, is attached to one side of the step, and having a passage connecting with the interior. This cock is operated by means of the lever, *K*, which has at one end a sliding block, *L*, or a friction roller, which extends into a slot, *M*, which is turned around the shaft. The opposite end of the lever is connected with the handle, *O*, of the cock, by a rod, *N*, having a turnbuckle in the center, by which its length may be changed and regulated at will.

When the shaft begins to revolve, it operates the pump, and forces water beneath the shaft, thus raising it from the bottom of the step. As the shaft is raised to a sufficient height, it turns the cock by means of the lever, *K*, and allows the surplus water to escape, thus keeping the shaft at a constant height, while all the friction on the step and necessity for lubricating are avoided. The cock, *J*, and its operating mechanism, may in some instances be dispensed with, if desired, and the liquid allowed to escape freely beneath the shaft, after lifting the shaft to a certain height, in which case the pump, with its connections, need only be used. As it is now being operated, the oil or water is allowed to escape, and run back into a pan or other receptacle, from which a tube will carry it to the reservoir.

Figure 2 represents the same device applied to a horizontal shaft, such as propeller shafts, in which the bearing surface is outside of the line of the shaft. In this engraving *A* represents the base, and *B* *C* the supporting standards. The horizontal shaft, *D*, is supported in boxes on their standards. In this class of shafts the end thrust is received outside of the line of the shaft, and the box, *E*, is represented as being made large, so that its inner face will receive the thrust. A strong, metal disk, *F*, is firmly secured to the shaft inside of the box, *E*, so that one of its faces bears against the inner face of the box, and the two frictional surfaces thus formed, it is the object of this invention to lubricate.

To do this, in the first place a circular recess is sunk in the two meeting faces around the shaft, which countersink or depression extends to almost the outer rim of each face so that but a limited bearing surface will be provided around the periphery of each. The pump, *G*, is placed directly below the shaft, *D*, at a short distance from the bearing surfaces, its piston rod, *H*, being operated by an eccentric, *I*, upon the shaft in the usual way. An ejection pipe, *J*, leads from this pump upward and has its opposite

end secured in a hole in the box, *E*, which will communicate with the countersink space between the two bearing surfaces, while a suction pipe, *O*, connects it with the reservoir in which the lubricant is contained. as the lubricant can be allowed to escape freely from between the surfaces and run back into a pan or other receptacle placed beneath, from which a tube will convey it to the reservoir. The shaft, *D*, passes through a stuffing box, *E*,

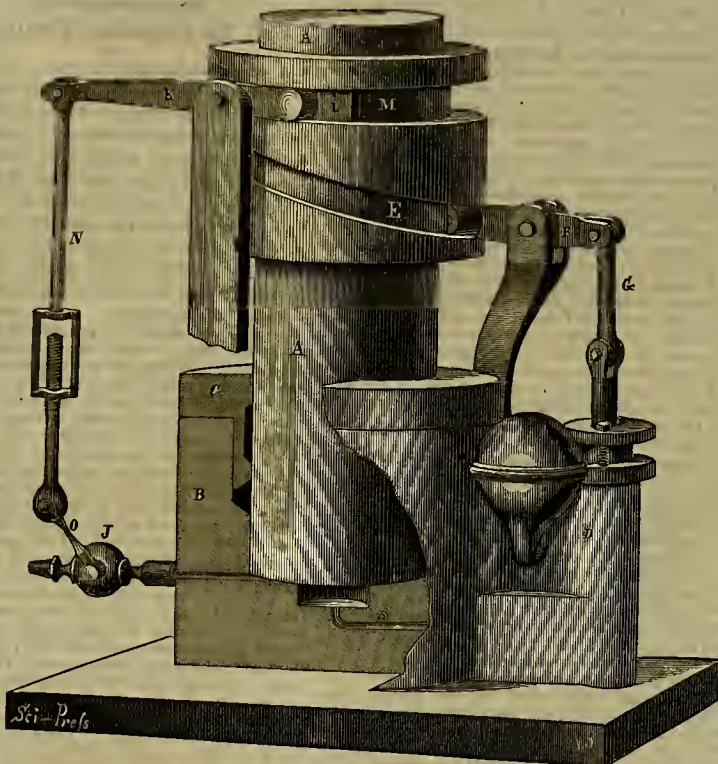


Fig. 1.—VERTICAL SHAFT WITH HYDRAULIC BEARING.

In cases where oil is used instead of water, a ring, *K*, with an inside groove is employed (thus forming a semi-tube), which will slip on so that no more of the lubricant will pass through than is necessary for lubricating the bearing. A vertical shaft like that shown in fig. 1,

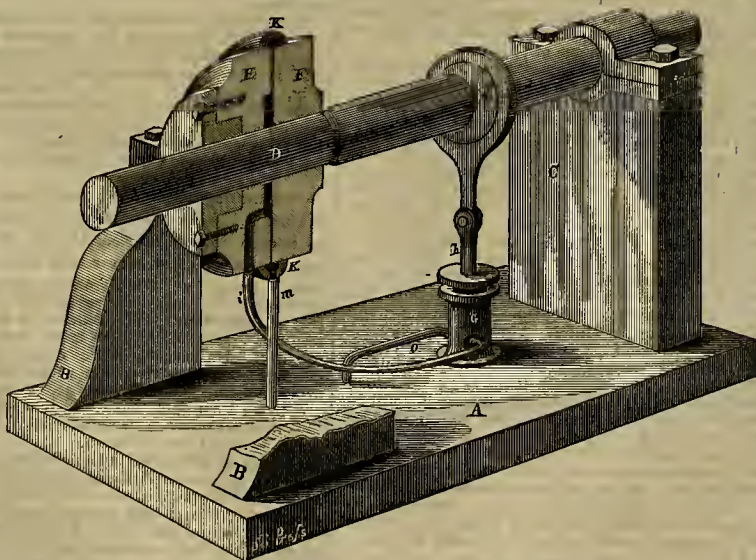


Fig. 2.—HYDRAULIC BEARING FOR PROPELLER SHAFTS.

over the disk, *F*, and box, *E*, so as to cover the joint formed by the two meeting faces. A hole is formed in the lowermost part of this ring, into one of which a tube, *m*, is inserted, the opposite end of which communicates with the supply tank. This grooved ring and tube convey the escaping lubricant back to the reservoir from which it can again be used over and over again. Usually this ring will not be required

lubricated in the manner described, has been running for some time at the Golden Gate Flouring Mills in this city and gives good satisfaction. These inventions were patented through the SCIENTIFIC PRESS Patent Agency by Jerome Haas who may be addressed as above for further information concerning them.

SAMUEL J. CURTIS has been appointed Superintendent of the Ophir mine.

Opening of the Season.

We hear reports from all sides of the cessation of the winter storm, and now the hydraulic claims which have lain idle during the winter months, are beginning work in good earnest. The abundant supply of well packed snow, in the mountains of this State, ensure a most welcome supply of water for mining operations of the season, and the miners are taking advantage of it. They will begin work early and continue late in the summer, so that we expect that the California hydraulic claims will this year yield a much larger amount of gold than they have heretofore. Many new claims are being opened and developed, and the abundance of water has given opportunities for ground sluicing in many localities, in gulches and ravines, that have never been worked before.

The locations of the respective mines, of course, determine the time when work can be started up. In some parts of Trinity county, they have been washing since January; this in the lower parts of the county, about Weaverville, etc.; above, they did not begin so early, but the claims are now in full blast. As high up as the vicinity of Moore's Flat, and as far down as Sweetland, Nevada county, the miners have been interrupted by the snow until now, but at present the mines are generally running. In Calaveras county, hydraulic mining is rapidly becoming the leading interest, and new locations are constantly being made. In most instances these enterprises are largely remunerative.

Our English friends are turning their attention more than ever to hydraulic mining, and it is probable that many sales of this class of property will be made during the season to English capitalists; and we ourselves are learning to conduct this class of mining with more economy and system, and increasing the profits as we understand them better. Undercurrents, which have been used in certain parts of the State for several years, are now being more generally introduced with the usual success, and they are now found in nearly all localities. Bank blasting, for facilitating hydraulic operations, is rapidly growing in favor, and the system is being inaugurated in many parts of California where it has not heretofore been used. After the banks have been shattered and loosened by the force of powder, the water has a much greater effect on them, saving not only time but water, which, to the hydraulic miner, is equivalent to gold. The quartz-boulders in many of these claims are now picked out and thrown into separate piles from the waste, as are masses of cement, which are afterwards crushed at the mills.

While the hydraulic claims are starting up, many quartz claims are also commencing work with renewed vigor. There are thousands of mines in the mountains of this coast which are unable to ship much ore to mills during the winter, which are now employing more men and doing more work. For the next six or eight months the mills and smelting works will be kept busy taking in work and turning out silver and gold in exchange. The mining regions at this season of the year present scenes of activity and vigor, and on all sides may be seen preparations for active operations. That the coming season will be a good one there is no doubt. From all quarters comes news that new mines are being opened, new mills started up or being built, new smelting works erected and new discoveries being made. The only drawback that we know of to the mining interests of the coast are the uncertainty of what laws may be passed by Congress affecting them, and the unusually high price of quicksilver.

BURGLAR-PROOF SAFES.—Hill's Safe and Lock Company have just delivered to the Bank of British Columbia, in this city, two magnificent safes—one for securities and the other for coin. This company claim important advantages in their safes over those of other manufacturers, and they are rapidly introducing them on this Coast. A serious fault in the construction of safes is the liability of wedging, which is entirely guarded against in these safes, by dove-tailing the door to the door-jambs.

CORRESPONDENCE.

Mines and Mining in Plumas and Sierra.

[By our Special Correspondent.]

EDITORS PRESS:—It was my attention to have given you a letter last week, but the snow storms prevented my complying with my desire. Since my second letter was written, the storms in the mountains have piled the snow up to such a depth, that were I to name it here, I might not be believed; but I will venture to say that it is sixteen feet in depth on the level in this town, which I make my headquarters. In my last letter I had completed my review of the mines of Plumas county, at La Porte. Sierra county mines will comprise the subject of this and several other letters yet to come.

After leaving La Porte on the road to Howland Flat, we cross Slate creek, a tributary of the North Yuba river, but a short distance below St. Louis. This creek is from twenty to thirty feet in width, and some twenty or thirty miles in length in its snake-like windings, and is considered by all practical miners to be one of the richest tailing claims in the State, having received within its rocky banks the rich deposits of all the great hydraulic and drift claims in the Slate creek basin for over twenty years, which, without the shadow of a doubt, have deposited millions of dollars in its channel. The flow is easterly, and the numberless claims emptying into it are furnishing a further supply for the future. I must dwell at length on the resources of Slate creek, and I hope your readers will not think I am interested in any of the claims embraced within its borders, as I am not.

Capital

Is all that is wanting to open up one of the best mining districts in the State. You who have capital, listen to what I say, for as an old practical miner, I tell you. Let not this portion of the Sierra's wealth pass into English hands. Already I am informed, English capitalists are making strenuous efforts to get possession of this creek. Foreign capital is fast centralizing and controlling our mines; and whose fault is it, pray? It is the fault of the sleepy-headed American capitalists, who are to be seen hovering around the Merchants' Exchange, on California street, daily, dabbling in Washoe silver mining stocks, instead of developing the resources of their own State.

Slate Creek

Is mostly owned by small companies, who own but a few hundred feet; and whenever they can work, they average from \$8 to \$100 to the man per day. The only extensive mining companies on the creek are the Eureka and Alturas. The Eureka Company own some two miles of the creek, from the St. Louis bridge, upward. They have run a tunnel through a sharp point in the vicinity of the bridge, several hundred feet in length, in which the company have placed a flume. But owing to the low grade for several miles downward, from the mouth of their tunnel, they are unable to work their ground to advantage, until the company below them open up a passage way.

This company—the Alturas—own three miles of the creek, extending from the bridge below St. Louis, a distance of 1,200 feet, below the mouth of Rabbit creek, where they have cut a tunnel through the solid rock, at the bridge crossing from La Porte to Port Wine, in order to turn the water, in case of a great freshet, from destroying the bridge. The great advantage derived from this tunnel by the company is this: They are enabled to draw down the tailings several feet lower, for about one-eighth of a mile, which part they have worked with good results. If the tunnel was lowered, and wide enough, (12 feet is the width now), so as to carry off the tailings to a better advantage, it would be of immense value to the company, as they are the owners of an efficient fall below to make their claim, as well as the Eureka, above them, one of the best paying tailing claims in the State. Below them are numerous claims owned by companies embracing as many nationalities. The Chinamen pay a high rent for their ground, and work it the year round without any expense to the owners. The original gold in the channel is very heavy, some pieces having been found worth several hundred dollars. With the investment of capital, the great lever power of the world, Slate creek, from the St. Louis bridge to its mouth, having, as it does, a fall of 2,000 feet, would become one of the best paying mines in the State.

At St. Louis we find the following companies, all of them being worked by hydraulic: Morgan & Donhe, Emory & Pfarr, McCrary & Stahl; all of whom own their water privileges, thus relieving them of a heavy water tax. There are several smaller companies who have to pay twenty five cents an inch per day for the water used on their claims. St. Louis has given to the financial world millions of gold, and her gilded flood-gates are still open, through which is still pouring her glittering ore.

In going still further upward on the eastern channel of the Slate creek basin, we come to Sacket's Gulch, formerly known as Solomon Hill. These claims are still paying the owners good dividends, as in days of yore. Wolf and Brother are the owners. We next reach

Chandlerville,

Now owned by but a few companies. Cox & Co., have worked ground with great success, that was considered of little, or no value, on account of its iron nature. Campbell and brother are working ground outside of what is known among miners as the rim-rock, and are making it pay well. For want of time I must close this letter, as the mail will close in a few minutes. MAXIMILIAN.

La Porte, March 18th, 1874.

Trinity County Notes—Continued.

Weaver Basin and the Hay Fork.

Below McGillivray's ranch there is but little arable land within the limits of Trinity county. There are, however, a good many spots suitable for the plow, in the broad, circular, but irregular valley, known as Weaver Basin. The largest, as well as the most highly improved farm in this locality, is that of Dr. Ware, situated one mile north of this place. Here, besides an immense orchard containing almost every kind of fruit, some of it semi-tropical, are several fields yearly sown to grain, not to mention long rows of bee hives, trellised grape vines, groves of ornamental trees, and a whole village of out-houses for the protection of chickens, cows, horses, and other domestic animals; everything here also being marked by a sort of magnificent expenditure and rude abundance. Nearly every house in Weaverville has a large garden attached to it, the most of them well filled with fruit trees, vegetables, vines, plants, and flowers, while all the principal streets are lined with cottonwood trees, some of them seemingly large enough to have stood where they are for half a century. Along Weaver creek, nearly all the way from this place to its junction with Trinity river, occur, at short intervals, patches of alluvial land, all the sites of pleasant homesteads being inclosed and under cultivation. Over on the Hay Fork, the main branch of the south fork of Trinity, are a number of fine farms, on which a large amount of hay is cut; some of it made from the growing grain, and some from the natural meadows. There are also a great many cattle kept here. The most of this stock is retained in the valley through the winter, being fed on the hay, for which there is no other demand.

Undeveloped Agricultural Resources, Grazing Lands, Etc.

The above mentioned places include about all the land naturally adapted to agricultural purposes in Trinity county. As the soil is generally rich—there is, however, much land besides this that could, by irrigation and careful culture, be made to produce good crops of vegetables, grasses and grain—the soil and climate being almost everywhere well suited to the growth of most kinds of fruit, and even the vine and some semi-tropical products thriving, except in more elevated localities. There is no end to the fruit, all of the best quality, that might be raised here were there only a market for it. Already there is more produced than can be sold or even given away, almost every household growing more than enough for his own use; the distance and freights to San Francisco, the only available market, being too great to admit of any being sent away. Yet I believe the winter apples raised here could be shipped to your city and sold at a profit, for surely no person who had ever tasted of this fruit would ever again consent to buy or even eat the filthy and corrugated trash that is sold there under the name of apples.

The agricultural capacities of Trinity county could be immeasurably increased with irrigation; and when the time shall come, as it soon will, that her innumerable mountain streams shall be applied to that purpose, being diverted for a few weeks every summer from use in the mines, then shall we see her thousand hills yellow with grain fields and green with clover; then will every eminence be planted with orchards and vineyards, and every valley with gardens. Farm houses and homesteads will be multiplied; sheep and cattle will swarm everywhere; great haystacks being put up and held for their use avoiding the necessity that now exists for driving stock elsewhere for subsistence every winter. This country abounds in the wild grasses which afford sufficient summer pasturage to sustain a large amount of stock. Comparatively little, however, is kept here, owing to the expense and trouble attending their annual removal, the herdsmen being compelled to drive the most of them over the mountains into the Sacramento valley or westward into the coast region on the approach of winter. As yet irrigation has not been extensively practiced here, farming operations having been mostly confined to the rich alluvial lands where it has not been greatly needed.

Her Wealth of Woods.

Trinity is a well-timbered county both as regards the quality and the variety of her woods. The hills are covered to their summits, and the mountains far up their lofty sides with magnificent forests consisting of pine, spruce, fir, cedar, oak, and a great variety of other trees. The coast and the Sierra Nevada ranges of mountains, having traversed a space of five hundred miles; and, though separated only by a single broad valley, through climates essentially unlike, come together here; and bringing the tree, plant and shrub common to each, have commingled them on these hills, producing a beauty and a wealth of woods not often

elsewhere met with. Here can be seen the sturdy oak, the scrubby menzinita, and the stately conifer; the ash, the maple, the madrona and the wild nutmeg clustering on the hills, with the eucalyptus, the cottonwood and the balm of Gilead growing in the valleys; the air being redolent with the perfume of fragrant shrubs, and the face of nature illuminated with countless millions of bright flowers during the spring and early summer. Such a gathering together of vegetable growths renders this an inviting region to the botanist; who, besides this great variety of recognized species, will find here at least one tree not met with elsewhere in the State; and, quite likely, wholly unknown to science. Of this tree, there is here, so far as I have seen or been able to learn, but a single specimen. It is an evergreen, apparently of the cedar family; of symmetrical, conical form, about 30 feet high and very beautiful. It stands on the summit of Buckeye ridge, close to the trail leading from this place to the Atkins and Lowden mines, situated a little further down the ridge. I have been thus particular in pointing out its exact location that the naturalist may be able to find it without trouble and classify it, if it shall be found to belong to any already known species, and immortalize himself by conferring his name upon it should it turn out to be *sui generis*.

H. D.

Weaverville, Trinity county, Mar. 20, 1874.

The Yellowstone Country.

A correspondent of the *Avant Courier*, W. C. Davis, writes to that journal as follows: I have been much interested in, and pleased at, the success of the Yellowstone Expedition that recently left your enterprising town, and I should certainly have made one of the party had not pressing matters prevented.

In 1866 I passed through the country the present expedition is destined for, in company with Messrs. Cowan and Lewis. We crossed Powder river at Fort Reno, thence via Ft. Phil Kearney to Tongue river. While encamped on Tongue river, at noon, I prospected three pans of gravel from a bank about twenty feet in depth that had been out away by the river, each pan yielding from 15 to 20 colors of round gold, that could be easily saved in sluicing. I was the only miner in the outfit, having mined the two previous years in Montana, and I thought the prospects very encouraging. From thence we crossed the country to the Big Horn river, crossing it where Fort C. F. Smith now stands. Here we encountered a large body of hostile Indians supposed at the time to be between three and five hundred. The day before we reached the river they stole and ran off the stock of Beere and Robinson.

We had to keep double guard here over the stock and trains while crossing, but notwithstanding, I found an opportunity to prospect a few pans of the river wash and I got as high as two to three cents to the pan. The gold was scale gold and light but quite bright, and to the inexperienced men that were with me there seemed to be much more, and it created quite an excitement in camp. I think there are men now living in Galatin county who were with me at the time I made these prospects, and can vouch for the truth of my statements.

If the Yellowstone expedition is not prevented by the Indians from prospecting the Big Horn and Tongue rivers and their tributaries, I have no doubt they will find good paying mines.

Thinking the above might be of interest to your readers, now that the attention of so many is directed toward the Yellowstone, I send it to you for publication. Very respectfully, W. C. DAVIS.

(Messrs. Editors:—I have been acquainted with Judge Davis four or five years, and think that he is a man of truth and veracity. Respectfully yours, CAPT. H. COOK.)

CHROMIUM IRON.—E. L. Barnes, formerly of Petaluma, has made a discovery which may prove of much importance. During the mining excitement which occurred in this county some years ago, a metalliferous cropping near the town of Cloverdale was prospected for copper, and abandoned. Mr. Barnes, by chemical analysis, discovered that the metal was chromium iron. He purchased the claim and has commenced work with a force of ten men. He expects to ship about 20 tons per day, of the ore, to fill a contract made to furnish 1,000 tons in San Francisco, from whence it is shipped to England for reduction.

Chromium or chromium is named from its tendency to impart beautiful colors to its combinations. It affords the base for colors which will stand the great heat necessary in the manufacture of porcelain; alone, it gives shades of green; with other combinations, it gives the color known as English red. One of its compounds, bi-chromate of potash, is used in immense quantities by calico printers. The variety of colors which may be produced from the numerous combinations of chromium, and the permanent quality of many of them, give great interest to the substance, and the full benefit to be derived from it are yet far from being appreciated.

Chromium is found in many localities of the United States. At the Bare Hills in Maryland, it has long been profitably worked and shipped to England. The Baltimore ore yields from 40 to 60 per cent. of the oxide.—*Sonoma Democrat*.

Cherry Creek.

There was considerable excitement about the above camp last fall, but the severe winter coming on, served to cool the ardor of our miners, who thought of trying their luck in the new El Dorado. From Mr. Flemming, an old-time Eureka foreman and superintendent, who has lately returned from Cherry Creek, after a sojourn of several months in that place, we learn some particulars of the general outlook of the new district. He informs us that matters have been rather quiet during the winter, but he appears quite sanguine that the coming season will witness a more cheerful condition of affairs. Indeed, he thinks the district possesses considerable merit—enough, in fact, to support a prosperous little community. One of the chief institutions of the district is the Teacup & Geneva property, controlled by John R. Murphy and George Bibbins, both formerly of Eureka. This property is very promising on high grade ore, a strike having been made a few days ago in the Teacup, from which assays were obtained ranging as high as \$2,000 per ton. The Egan mill, under lease, is also connected with this property. There are about 1,000 tons of good ore at the mill. The mill was put in motion lately, and run successfully for two days, but severe weather setting in, the pipes froze up, and a suspension of operations became necessary. County Assessor T. R. Cranley, of White Pine, is superintendent of the mines, and Mr. Kimball has charge of the mill. About 40 men are employed by the company.

The Chance & Baltic, Frank Hallowell, superintendent, is another good property. George Treat, owner of the celebrated racer, Thad. Stevens, is one of the principal shareholders in the enterprise. Recent developments in the Chance are reported as extremely flattering. The Tehama mill (20 stamps) is being worked by this company from Schellburn.

The Cherry Creek Consolidated is considered to be one of the main institutions of the district. E. B. Dickinson, formerly connected with the Lemon company, in this place, is the superintendent. The consolidation is composed of the Grey Eagle and Mark Twain mines. Everything is progressing satisfactorily under the able management of our friend Dickinson.

The Star mine, owned by Tip, Johnson and his brother, both old-timers in these parts, is likewise showing exceedingly well in good ore. They have reached a depth of about 100 feet, at which point drifting is to be commenced.

The Flagstaff & Grand Trunk were bonded a few days since to Joe Potte and Thos. N. Browne, of Hamilton, for \$30,000. They intend to organize a company for the development of the property immediately.

The Meridian is a mine owned by B. T. Brown, at one time Mining Recorder of Eureka district, and James Pierceon, who officiated here for a long time as clerk of the Phoenix Company. The Meridian is looked upon as a very valuable mine.

The Hunter creek district is situated something like 15 miles west of Egan. One company of prospectors have a monopoly of the best locations. John R. Murphy has recently bonded all of the leading mines of Hunter district, with a view of developing them the coming season.—*Eureka Sentinel*.

WASHOE ORES FOR THE CENTENNIAL.—Mr. Donaldson, a member of a large committee appointed to collect specimens of ores of the precious metals for the Centennial Exhibition, who has been in this city some days, has already secured specimens of the ore of most of our leading mines. He takes samples of ore from the various levels of all the mines he visits, making a note of the depth at which they are obtained, and other particulars, and, when completed, his collection will be a most perfect representation of the Comstock lode. In all, he has gathered about a ton of samples, and now has them all properly labeled and boxed, ready for shipment. He has visited Idaho and Montana, where he made similar collections, and has also visited the various mining towns of Eastern Nevada. His collection is independent of those that the States are expected to make on their own account. Each State is expected to send its collection of ores and minerals, made in its own way, just the same as though the present collection had not been made. At the conclusion of the Centennial Exhibition, the collection made by Mr. Donaldson and other members of the committee to which he belongs will remain the property of the United States, and will probably be given to the Smithsonian Institute, or some similar institution, where they will be preserved for all time.—*Enterprise*.

NEW MINE.—A mine rich in gold and silver, says the *Nevada Tribune*, has been discovered in the hills north of Carson and about two miles distant. Messrs. L. D. Brown, the auctioneer, C. E. Joy, his cousin, Lay and Al. Bryant, of Mill Station, are the discoverers and original locators of the mine. A quantity of rock has been taken from the ledge and samples sent to Virginia City for assay. The ledge is well defined and runs from one to three feet in width. The rocks show free gold and horn silver. Claims were yesterday taken up for miles, and a general prospecting may be expected. The ledge is traceable all along the ridge to American Flat. A practical miner and assayer tested a piece of ordinary rock yesterday, and gave as a result \$50 to the ton.

SCIENTIFIC PROGRESS.

Friction Matches.

The history of the introduction of phosphorus corresponds with that of many other most important agents. It remained for more than a century and a half without special attention, and it was not until the introduction of friction matches, that a demand for it sprang up in an industrial way. It is indeed strange, when inventors were for many years active in devising means to obtain fire or combustion, without the use of the flint and steel, that phosphorus was not thought of. For a period of fifty years, the most determined efforts were made to get rid of the old tinder box, and the number of contrivances adopted was very large. Mixtures of sugar and chlorate of potash, which, ignited by a drop of sulphuric acid, suggested the "oxymuriate matches." These were inflamed by thrusting a splint of wood dipped in sulphur, and covered with the mixture, into a bottle containing asbestos, saturated with the acid. When this form of match first came upon the market, they sold as high as two dollars the box, each containing fifty matches. The rapid combustion of chlorate of potash and sulphide of antimony when made into a paste and dried, and subjected to friction, suggested the lucifer match. These forms of matches, together with many others manufactured prior to 1834, were all disagreeable and dangerous, and they were also too expensive for common use. About 1834, the happy idea was suggested by an English chemist, that phosphorus might be safely substituted for the sulphide of antimony in the construction of matches, and soon afterwards it was ascertained that a phosphorus paste, in which the antimony was omitted altogether, afforded the cheapest and best match. It was found that a simple splint of soft wood, first dipped in melted sulphur, and then in a paste made of phosphorus and glue, with a little fine sand and red ochre, supplied the most convenient, cheap, and safe match that could possibly be devised. This is the match which has held its place up to the present time, and is in common domestic use in all parts of the civilized world. To prevent this match from igniting spontaneously, or by handling, a film of gelatine covers the phosphorus paste upon the end, and it is only when this is disrupted by friction, that the phosphorus is reached and ignited.

The Dutch chemist, Brandt, who laboriously drew forth phosphorus in minute quantity, and by a tedious process, from liquid excrement, little thought that his chemical novelty would in after time be manufactured by hundreds of tons, and be not only found in every household, but made the kindling-spark of all hearths in every civilized country. One of the largest manufacturers of phosphorus in Europe has stated that the whole stock of the article in the chemical establishment where he was trained, consisted of a little stick two inches long. He has lived to see it pulled by his own machinery, in a cord uncoiled miles long, and dispatched by the ton together, for use in both hemispheres. The chemist still lives in London who first produced phosphorus for use by the friction match manufacturers, at \$2,500 per pound. Now demand and competition have reduced the price so low that a single pound can be bought in this city for about one dollar. The article is not made in this country, but we can see no reason why it may not be, as we have the necessary materials, bones and coal in abundance. The production of phosphorus (which is now obtained from bones) requires a large consumption of fuel. At least 100 pounds of coal are required to secure one pound of the element, and the intensity of the heat is such as to rapidly destroy apparatus. The labor, also, is not only disagreeable, but dangerous; as, through inattention, fearful explosions of the retort sometimes occur.

It was at one time feared that the demand for bones, for agricultural purposes, would so enhance the cost and diminish supply, as to raise the price of phosphorus to a high point. But the discovery of the immense deposits of phosphatic rocks, in this country and elsewhere, has set at all rest apprehensions of this nature. We have phosphorus enough quietly resting in the South Carolina rock beds, to meet the demands of the world for thousands of centuries, and no one need be anxious concerning a full supply, at cheap rates, of the indispensable friction matches, during his own lifetime at least.—*Boston Journal of Chemistry.*

SIMILIFER.—We have recently seen some specimens of a new combination of metal, christened by the French inventors "Similifer," which is stated to be as malleable as zinc, and not liable to oxidize, while at the same time it is capable of receiving as high a polish as steel, and can be either gilt or bronzed as desired. The specimens exhibited at the Royal Institute of Architects were in the form of round cyphors about 10 inches in diameter, and suitable for the center of a wrought or cast iron balcony. The expansion is about the same as copper and two-thirds that of iron, while, owing to the facility of working, the cost is very moderate.—*Br. Trade Journal.*

WOOD AND STRAW PAPER MAKING IN FRANCE.

—The improved processes of making paper from wood, straw and various grasses, as practiced in France, now enable the manufacturers to recover 85 per cent. of the caustic alkali used in the reduction of the raw material into pulp. This is a very important economy.

In order to convert wood into pulp, a strong solution of the alkali is necessary. One pound of carbonate of soda is required to produce four pounds of pulp.

By steeping the wood or straw in the alkali solution, the resinous and other gummy matters are separated from the fibers of the material, and become mixed with the solution. To regain the soda for re-use is now the object of the manufacturer. This is done by evaporating the water by heat, then charring the resulting mass, which yields carbonate of soda then converting the latter into caustic soda.

The evaporation is effected by passing the products of combustion from the fire which heats the alkaline solution through the liquid which is to be evaporated. For this purpose the liquid is thrown up in the form of a thin spray, by paddle wheels. Twelve and a half pounds of the solution, it is stated, are evaporated for each pound of coal consumed. The carbonate of soda is then subjected to long continued washing in a peculiar apparatus until it is fit for burning, and at last 85 per cent. of the original quantity of the alkali is recovered. The former methods only permitted the recovery of from 50 to 60 per cent. of the alkali.—*Scientific American.*

THERMO-ELECTRICITY IN IRON SHIPS.—There is a curious point, says *Broad Arrow*, in connection with the deviation of the compass on board iron ships which is now beginning to attract the attention of scientific men, and may therefore perhaps be new to some of our readers. It is now believed some of the sudden and hitherto unaccountable changes in the deviation of the compasses of iron ships—which are often unsuspected until alleged as the only conceivable cause of the vessel running ashore—are the effects of an unequal and varying distribution of heat over the iron hull, for it is well known that electricity is generated in a metallic substance by heat applied in a certain way, and, in fact, there is a branch of electrical science called thermo-electricity, devoted to the investigation of phenomena of this kind. Sudden slight changes of compass deviation, not exceeding five degrees, have been noticed on board iron ships on the North American coast, between Sable Island and Nantucket, and these are now attributed to changes in the temperature of the hull, occasioned by the vessel passing from warm to cold water, or vice versa. The warm temperature of the Gulf Stream, taken in connection with the cold counter-current, is considered to be quite sufficient to account for many of the suspected compass errors on board iron ships in the North Atlantic, and the recent loss of the City of Washington may perhaps be explained in this way. At all events, the question is one which ought to be thoroughly investigated.

THE PATENT SAFETY BLASTING POWDER.

The following description is given by a contemporary of the manner in which a patent safety blasting powder is now manufactured in South Australia. Operations are carried on at Alberton in a weather-board building, roofed with galvanized iron. The length of the whole is but 28 feet with a width of 14, and a height of 10 feet, and it has one small window and a door on the western side. The first operation of a series of experiments tried to test the efficacy and safety of this powder was performed by the worthy manager pounding for a considerable time some of the powder on an axe-handle with an ordinary hammer, without producing the slightest effect. Next, its character as proof against friction, was demonstrated by the same appliances, and with an equally satisfactory result. Its superiority as a non-explosive article was next determined by a number of vessels being filled and ignited, when a considerable time elapsed before the powder was consumed, and the flames died out. A common mustard tin, 6 in. by 3½ in., and containing 2 lbs. of the compound, was first used, the ascertained time before its contents were entirely consumed being about half a minute. Next an iron pipe, 16 in. by 1½ in. with 2½ lbs. of powder, was found to occupy one minute and eight seconds in burning, the orifice being smaller. Another pipe, 6 in. by 1½, and containing half a pound of powder, took twenty-five seconds in exhaustion.

ENGRAVING IN RELIEF.—This is a substitute for wood engraving by deepening or hollowing out by means of acid the parts usually cut to the full depth required with a graver. The drawing is etched on the plate, and the raised parts obtained by a deposit of metal, then the parts in relief are covered with an acid resisting varnish, and the remaining parts are hollowed out to the required depth by means of acid, this process being repeated as often as necessary for producing the greatest depth required.

According to the *Swiss Times* there is a scheme on foot for a railway to the peak of Mount Pilatus, similar in construction to that of the Rigi. It will start from Alpnach; the medium gradient will be one in eight, and the maximum one in four and a half; two bridges will be required on the route.

MECHANICAL PROGRESS.

Iron Shipbuilding.

There has been a great deal of regret manifested at the decline of the shipbuilding interest in America, which before the war was so flourishing, and which formerly sent out vessels from American ports which, for hearty and sailing qualities, were often in advance of the mercantile marine of all the world. It had been fancied that builders could never compete with the iron shipbuilders of the Clyde, while wooden vessels would not answer for ocean steamers.

Nevertheless, there is a good deal being done in iron shipbuilding in America. For instance, Mr. John Roach, who is the largest iron shipbuilder in the United States, has at his establishment on the East river, New York, and at Chester, on the Delaware, 2,300 men employed, and could employ more. Within 18 months he has put into the water, or has now on the stocks, two immense steamers, each 425 feet long, 48 feet beam, 38 feet depth of hold, of 15 knots speed, and 5,000 tons burden. Also ten others of tonnage varying from 2,800 to 4,000, making in all 27,400 tons of iron shipping.

Mr. Roach declares that American-built ships are now the best in the world, and the United States will soon overtake the English nation in orders. In a comparison of prices for a ship to be built, he found that he could send out a better article for a less price than the Clyde men. Although he could get English iron a little cheaper than American, the difference was so little that he found the better quality of American iron more than compensated for the difference of price and the trouble. He will not import anything that goes into the construction of his ships, and says that the American Secretary of the Navy deserves great credit for determining to build, by private contract, part of the eight new sloops of war just ordered.

From some conversation between Mr. Roach and a representative of the New York *Journal of Commerce*, Congress had spent some 300,000 dollars to learn why American shipbuilding had declined, and had failed, Mr. Roach went to Europe, passed down the Clyde, and there studied the art of shipbuilding as the English had developed it of late. He learned all he could from the masters, and then consulted with the foremen about improvements, and rejected all machinery that had not improvements of value in it, noting all new and approved machines. When he came back and established his shipyard on the Delaware, he adopted all the labor-saving machinery, got rid of all his old machines, and so saves an immense number of hands by the operation; indeed, he saves relatively more hands than the English shipbuilders, because he has adopted, after thorough trial, not only the labor-saving machinery which they use, but newly-invented American machines. He bought 23 acres of land at Chester, at such a price that his land and machinery cost him less than the land alone would cost on the Clyde, so that he could work with less capital than the English. Besides which, his situation was advantageous, for he had deep water and railroad accommodation for iron and coal to the mouths of his docks. He selected his men for strength, many of them being farm hands and shad fishers on the Delaware, and then gave them 18 months' training under good foremen, at the labor-saving machinery.

Mr. Roach also declared that, as regards wooden shipping, there was more tonnage on the stocks in American yards last year than during any previous year. The lake tonnage of wood was immense, our coasting tonnage of wood and iron largely increasing, while at Philadelphia they had lately launched two steamers for Europe, and more were building.

Mr. Roach very nearly obtained the contract for the Antwerp line, owned by foreigners. His other steamers are for trade to South America, Mexico, and the Pacific Ocean. Other firms are building iron and wooden vessels for Europe, and the fond hopes of some, that before long there will be several American lines to Europe, and foreign nations will be supplied from America instead of England, Mr. Roach thinks likely to be realized. He disbelieves in subsidies, and says that "practical shipbuilders pray that Congress will cease to debate concerning them, and let them alone. Shipbuilders are happy—freights are high, and the prospect is encouraging to a degree which could not be conceived of a few years ago."—*Iron.*

WATER CLOCKS.—Bowls were used to measure time, from which water, drop by drop, was discharged through a small aperture. Such bowls were called water clocks. It was then observed how much water from such a bowl or cask, from sunrise till the shortest shadow, trickled down into another bowl placed beneath; and this time being the half of the solar day, was divided into six hours. Consequently, they took a sixth of the water which had trickled down, poured it into the upper bowl, and this discharged, one hour had expired. But, afterwards, a more convenient arrangement was made. They observed how high the water rose at each hour in the lower bowl, marked these points, and counted them, thus finding out how many hours there were till sunrise. With the Chinese, the water clocks, or clepsydras, are very old. They used a round vessel, filled with water, with a little

hole in the bottom, which was placed upon another vessel. When the water in the upper vessel passed down into the lower one, it subsided by degrees, announcing thereby the part of the time elapsed. When the clock with us strikes seven, the ancients counted six, and so forth. This method of counting the hour was also customary in Palestine, at the time of Christ. The water clocks had the advantage that they could be used in the night; and the Romans used them to divide their night watches, which were relieved four times, both summer and winter. Conformably to these four night watches, time was counted, not only in Rome, but wherever a Roman garrison was stationed; consequently, also in Palestine, after she had become a Roman province.—*Ec.*

THE ANGLO-FRENCH TUNNEL.—At a meeting of the British Society of Civil Engineers, Mr. Joseph Prestwich, a veteran geologist, whose name has been long connected with geognostical research in the London basin, read a paper on the geological conditions affecting this scheme, which has latterly met with much acceptance across the Channel. The contents of the paper may be very briefly epitomized. Mr. Prestwich gave sufficient reasons for supposing that the dense, impermeable stratum, known as the London clay, extends in a continuous trough, from 300 or 400 feet or more in thickness from the coast of Essex to that of Belgium; and from the experience gained in the construction of the Tower of Subway, he saw no difficulty, in a geological point of view, in the construction of a tunnel between these two points, save in the extreme distance between them—eighty miles. Where the coasts approach more closely the London clay was absent, and the tertiary and secondary formations there existing were too permeable for tunnel work. On the other hand, these rocks were underlain by paleozoic strata, through which, in Mr. Prestwich's opinion, it would be quite possible to drive a tunnel, so far as safety from the influx of sea water was concerned. But, like the distance in the former case, here the great depth, more than one thousand feet at Harwich and Calais, was the formidable difficulty. He was, however, satisfied that on geological grounds alone, the work was in one case perfectly practicable, and in one or two others, possibly so; but there remained considerations besides those of a geological nature, and whether or not they admitted of so favorable a solution was questionable.—*Iron.*

APPARATUS FOR MEASURING GAS.—An ingenious apparatus is now employed in London for testing officially the quality of the gas furnished by companies for the public consumption. The apparatus consists, first, of a gas meter which presents two conspicuous index hands, one of which revolves once in a minute, while the other makes a complete revolution during the passage through the meter of one-twelfth of a cubic foot of gas. The first of these movements, being maintained by clock-work, is constant. The second, being dependent on the velocity of flow, or what is the same thing, on the rate of burning, may be varied by varying the discharge. Since one-twelfth of a cubic foot of gas passes with each revolution, if the revolution occupies one minute, there will pass one foot in 12 minutes, or five cubic feet per hour. As the law requires that the gas shall possess an illuminating power, when burned at the rate of five cubic feet per hour, not inferior to that of 14 sperm candles, consuming each 120 grains of the combustible in the same time, this apparatus, when combined with a suitable photometer, is said to make the application of the test very easy. Before entering the meter, the gas passes through a governor, which maintains the burning pressure uniform, however variable may be the pressure in the mains.—*American Manufacturer.*

The earliest known mention of "wire drawers" and "wire millers," as those who produce wire by drawing were variously called, occurs in the 13th century, in the histories respectively of Augsburg and Nuremberg. Previous to that time we have only accounts of "wire smiths," or those who fabricated wire with the hammer. For the making of iron wire the best and toughest wrought iron is selected. Formerly this iron was prepared for drawing by hammering it out into convenient rods of nearly a half inch thickness. These rods were then extended and further reduced by a machine in which a pair of pincers were made to advance to the draw-plate, seize the protruding end of the rod, and being moved back and drawing the metal thus far, to relax their hold, advance again to the plate and repeat the process. At the present time iron, and usually steel, are prepared for the final drawing by passing between grooved rollers very accurately made and adjusted. The sizes of wire are conveniently distinguished in commerce and in their employment, by naming the actual diameters, and more commonly by a set of numbers corresponding.

MONSTER ENGINE BELTS.—We had the pleasure, a few days since, of examining a monster engine-belt. It was 44 inches wide, 297 feet long, and weighed 2,600 pounds. It is difficult to draw any comparison that will give a person who has never seen one of these belts an adequate idea of their magnitude. This belt was made for the Toledo Elevator company. It took one of our heaviest New York four-wheeled trucks and a stout team of bays to transport it to the place of shipment.—*Coal and Iron Rec.*

Weekly Variations in Stocks.

[Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.]
For 6 days ending Wednesday, Apr. 1, 1874.

NAME OF COMPANY.	IN MINES.	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.					
Alamo.	100	6000	16W	13 1/2F	
Alamo Con.	3000	30000	6 1/2F	6S	
American Flat.	1900	18000	5 1/2F	4 1/2F	
Bacon M. & M.	65	2400	7 1/2F	7 1/2F	
Baldern Con.	1040	10400	85W	32 1/2M	
Belcher.	224	22400	31W	32 1/2F	
Best & Belcher.	20	5000			
Bowers.	200	2000			
Buckeye.	2500	25000	9S	2W	
Bullion.	5000	50000	39W	30 1/2F	
California.	2600	26000	64W	63M	
Chollar-Potosi.	130	13000	11T	9F	
Confidence.	345	34500			
Con. Gold Hill Quartz.	110	11000	69 1/2W	63M	
Con. Virginia.	1600	16000	24W	21F	
Cook & Ceyser.	600	60000	96T	93M	
Crown Point.	2000	20000			
Danely.	2000	20000			
Dardanelles.	1200	12000	65W	64F	
Empire M. & M.	70	70000	5 1/2W	4 1/2M	
Excelsior.	400	5000	45W	91F	
Flourish.	3000	12000			
Franklin.	2000	20000	15W	14W	
Gold & Curry.	1200	12000	40W	31 1/2F	
Hale & Norcross.	400	16000	56W	45F	
Imperial.	184	100000	7W	6 1/2M	
Indus.	2000	20000			
Insurance.	2000	20000	2M	2M	
Jacob Little.	2000	20000	57H	49 1/2F	
Justice.	3000	30000	11 1/2W	9 1/2F	
Kentuck.	95	30000	24W	21F	
Knickerbocker.	1200	24000	64 1/2W	57H	
Kossuth.	2000	20000	6 1/2H	5 1/2M	
Lady Bryan.	3500	35000			
McMoans.	1600	50000	40T	36T	
Mint.	3000	30000	2W	1 1/2M	
Nevada.	3000	30000	15W	14W	
New York Con.	3500	35000	45 1/2W	39F	
Occidental.	800	10000	45 1/2F	41W	
Ophir.	1400	16000	25W	21F	
Overman.	1200	37400	65W	48 1/2F	
Phil. Sheridan.	1200	20000			
Pioton.	2000	20000			
Rock Island.	2000	20000			
Savage.	800	16000	1400	95T	
Seg. Belcher.	10000				
Seg. California.					
Seg. Rock Island.					
Senator.	24000				
Sierra Nevada.	2000	20000	25W	22M	
Silver Hill.	54000				
South Comstock.	5000	50000			
South Overman.	1600	22000			
Suocor M. & M.	2000	20000	3W	3W	
Sutro.	20	50	5 1/2F	5F	
Trench.	250	2000	1 1/2W	1 1/2F	
Tyler.	800	20000	16F	15S	
Union Con.	800	20000	6 1/2H	6W	
Utah.	1200	20000	79W	73H	
Woodville.	1200	24000			
Yellow Jacket.	1200	24000			
NEVADA.					
Adams Hill.	5000				
Alps.	800	30000			
Amador Tunnel.	3000	30000	5W	4 1/2F	
American Flag M. & M.	300	30000	7 1/2F	6 1/2W	
Arkansas.	300	30000			
Belmont.	3000	30000			
Belmont.	3000	30000			
Chapman M. & M.	3000	30000			
Chatter Oak.	1000	30000			
Chief East Extension.	3000	30000			
Columbus M. & M.	10000	50000			
Condor.	2000	20000			
El Dorado South.	2000	20000			
Eureka Con.	3000	30000	15 1/2M	14 1/2W	
Excelsior.	3000	30000			
Harper.	3000	30000			
Hays.	1000	30000	17H	17H	
Hermes.	1000	30000			
Home Tunnel.	3000	30000			
Huhn & Hunt.	3500	30000			
Ingonium.	1000	30000			
Ivanhoe.	1000	30000			
Jackson.	3000	30000	33CS	33CS	
Josephine.	5000	60000			
Junius Con.	5000	60000			
K. K. Con.	5000	60000			
Kentucky.	1000	30000			
Kinston.	1000	30000			
Lehigh.	1000	30000			
Lillian Hall.	1000	15000			
Louise.	2400	30000			
McMahon.	1000	30000			
Marion.	1000	30000			
Meadow Valley.	2400	60000	11 1/2H	11W	
Mocking-Bird.	1200	30000			
Monitor-Belmont.	2000	60000	4 1/2S	4 1/2W	
Murphy.	2000	60000			
Newark.	800	32000	3TH	2 1/4W	
Pacific Tunnel.	2400	30000	3 1/2T	2 1/2F	
Page & Parsons.	2000	30000			
Peavine.	3000	30000			
Phoenix.	1000	50000			
Pioche.	1000	20000	6 1/2F	5M	
Pioche West.	3000	30000			
Pioche-Phoenix.	4000				
Portland.	5000	30000	1 1/2T	1W	
Raymond & Ely.	1500	30000	28TH	20 1/2F	
Key Patch.	3000	30000	7AS	7AS	
Silver Peak.	3000	30000			
Silver West Con.	3000	30000			
Standard M. & M.	18000	50000			
Star Con.	6000	25000			
Starlight.	3000	30000			
Sterling.	3000	30000			
Spring Mount.	3000	30000			
Spring Mt. Tunnel.	3000	30000			
Ward Beecher.	200	30000	4 1/2W	3 1/2F	
Washington & Crooke.	200	30000	3 1/2W	2 1/2H	
Yellowstone.	2000	20000			
CALIFORNIA.					
Alpine.	1200	12000			
Belmont.	2000	20000	2 1/4TH	2TH	
Calaveras.	2000	20000			
Cedarberg.	2000	20000			
Chatter Oak.	2000	20000			
Jon. Amador.	2000	20000			
Cottonwood Creek.	2000	20000			
Dunderberg M. & M.	2000	20000			
El Dorado.	1650	20000	10 1/2TH	9 1/2F	
Eureka.	1650	20000	14W	14W	
Gillis.	1650	20000			
Independent.	1650	20000			
Keynote.	1650	20000			
Met. Jefferson.	1650	20000			
Oakville.	1650	20000			
St. Lawrence M. & M.	1650	20000	2 1/2TH	2 1/2W	
St. Patrick.	1650	20000			
Tyule.	400	10000			
Yule Gravel.	400	10000			
IDAHO.					
Empire.	2500	25000	8W	7T	
Golden Hill.	750	30000	15H	14 1/2M	
Ida. Elmore.	1200	10000	3M	2 1/2M	
Mahogany.	1200	10000	3M	1 1/2F	
Red Jacket.	1200	10000	3M	1 1/2F	
South Chariot.	1200	10000	4W	2 1/2F	
Var Eagle.	1200	10000	4W	2 1/2F	
WHITE PINE.					
Gen. Lee.	1000	20000	14 1/2M	14 1/2M	
Mammoth.	1000	20000	35T	20 1/2H	
Noondy.	1000	20000			
Orig. Hidden Treas.	1000	20000	9T	6 1/2F	
Silver Wave.	1000	20000			
Ward Beecher.	1000	20000			
UTAH.					
Deseret Con.	2400	30000			
Wellington.	2400	30000			
OREGON.					
Virtue.	2300	20000			

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Delinq't.	Sec'y.	Place of Business
Alpha Gold M. & M. Co.	Amador Co. Cal.	6 100	Mar 10	J. F. Lightner	438 California st.
Alpine Gold M. & M. Co.	Cal.	6 100	Mar 10	J. F. Lightner	438 California st.
Alps S. M. Co.	Ely District	6 25	Feb 2	C. W. Balcom	426 Montgomery st.
American Flat M. Co.	Gold Hill	1 50	Feb 11	G. W. R. King	434 California st.
Andes S. M. Co.	Washoe	1 50	Mar 3	J. Maguire	419 California st.
Arizona and Utah M. Co.	Gold Hill	8 75	Mar 11	J. Maguire	419 California st.
Chief of the Hill	Ely District	4 50	Mar 9	O. S. Neal	419 California st.
Danely G. & S. M. Co.	Washoe	4 50	Mar 31	G. R. Spinney	320 California st.
El Dorado South Cons M Co	Nevada	1 100	Feb 25	W. Willis	419 California st.
Excelsior M. Co.	Gold Hill	10 300	Feb 9	D. T. Bagley	401 California st.
Globe M. Co.	Gold Hill	6 75	Mar 11	J. Maguire	419 California st.
Gould & Curry S. M. Co.	Washoe	4 50	Mar 26	A. K. Burrough	Merchants' Ex.
Hahn & Hart S. M. Co.	Ely District	9 25	Mar 3	E. B. Bonhall	419 California st.
Ida. Elmore M. Co.	Idaho	12 100	Feb 12	W. Willis	419 California st.
Independent M. Co.	Cal.	5 50	Feb 1	G. T. Grimes	240 Montgomery st.
Indus G. & S. M. Co.	Nevada	4 10	Mar 19	D. Wilder	Merchants' Ex.
Julia M. Co.	Washoe	17 100	Feb 10	T. J. Owens	434 California st.
Kentucky G. S. & M. Co.	Ely District	7 125	Jan 3	R. Goldsmith	513 California st.
Knickerbocker M. Co.	Gold Hill	8 100	Feb 14	Henry Boyle	Stevens Building
Mahogany G. & S. M. Co.	Idaho	1 50	Feb 27	J. L. Kinton	215 Sansome st.
Mammoth S. M. Co.	White Pine	10 10	Mar 3	J. L. Kinton	215 Sansome st.
Mint G. & S. M. Co.	Washoe	1 10	Feb 5	D. A. Jennings	401 California st.
Newark S. M. Co.	Ely District	6 100	Feb 13	D. T. Bagley	401 California st.
New York Cons M. Co.	Gold Hill	1 50	Feb 13	D. T. Bagley	401 California st.
North Belmont M. Co.	Nevada	1 10	Mar 18	D. L. Thomas	419 California st.
Ophir S. M. Co.	Washoe	23 100	Feb 19	Joseph Marks	419 California st.
Original Gold Hill G. & S. M. Co.	Washoe	1 50	Mar 24	W. M. Helman	401 California st.
Pioche West & S. M. Co.	Ely District	1 50	Feb 27	S. B. Hinson	419 California st.
Quintero M. Co.	Nevada	1 10	Mar 17	H. C. Kibbe	419 California st.
Rock Island G. & S. M. Co.	Nevada	1 100	Feb 28	J. W. Clark	419 California st.
Rye Patch Cons M. & M. Co.	Nevada	2 500	Feb 25	R. Verdenal	409 California st.
Savage M. Co.	Idaho	1 10	Mar 19	E. B. Bonhall	419 California st.
Silver Cloud G. & S. M. Co.	Gold Hill	1 25	Mar 19	A. Noel	419 California st.
South Chariot M. Co.	Idaho	9 200	Feb 24	Frank Swift	419 California st.
St. Lawrence M. & M. Co.	Placer Co. Cal.	8 100	Mar 20	E. B. Noyes	419 California st.
St. Patrick G. & S. M. Co.	Cal.	8 100	Mar 20	D. T. Verdenal	409 California st.
Tyler M. Co.	Washoe	4 31	Mar 30	A. K. Burrough	Merchants' Ex.
Union Cons S. M. Co.	Washoe	5 50	Mar 2	J. F. Lightner	438 California st.
Utah M. Co.	Nevada	1 10	Mar 20	G. R. Spinney	320 California st.
Washington & Crooke M. Co.	Ely District	10 100	Feb 9	D. T. Bagley	401 California st.
Wellington M. & S. Co.	Utah	4 25	Feb 17	F. D. Cleary	414 California st.
Woodville M. Co.	Gold Hill	6 100	Mar 9	A. Noel	419 California st.
Yellow Jacket M. Co.	Washoe	17 500	Feb 10	G. W. Hopkins	Gold Hill

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Benjamin M. & M. Co.	Nevada	1 5	Mar 17	April 25	May 15	Leander Leavitt	1401 California st.
Black Mountain Coal M. Co.	Cal.	3 10	Feb 25	April 6	May 4	L. N. Wells	402 Montgomery st.
Cedarberg Ist. N. Extension M. Co.	Cal.	4 10	Mar 10	April 19	May 20	J. N. Webster	420 Montgomery st.
Champion Cons M. & S. Co.	Nevada	1 50	Mar 26	May 1	May 20	J. N. Webster	Merchants' Ex.
Commercial Coal M. Co. of S. F.	Cal.	1 50	Mar 26	May 1	May 20	S. B. Hinson	402 Montgomery st.
Dry Creek T. & Flaming Co.	Utah	50	Jan 29	Mar 10	April 14	Water Turnbull	445 California st.
Emerald Hill M. Co.	Utah	6 25	Mar 13	April 14	May 11	F. Madge	Merchants' Ex.
Esmeralda Hill M. Co.	Utah	6 25	Mar 13	April 14	May 11	F. Madge	Merchants' Ex.
Germania M. & S. Co.	Nevada	4 10	Feb 17	Mar 14	April 15	T. P. Brown	411 1/2 California st.
Geneva Cons M. Co.	Nevada	1 25	Feb 10	Mar 18	April 7	J. T. Milligan	302 Montgomery st.
Globe Consolidated M. Co.	Gold Hill	1 50	Feb 12	Mar 19	April 10	J. W. Watson	302 Montgomery st.
Green Elm Gravel Range Co.	Cal.	5 10	Feb 9	Mar 18	April 9	J. F. Lightner	438 California st.
Green Horn M. Co.	Cal.	3 100	Feb 9	Mar 18	April 9	F. Swift	419 California st.
Hall & Van Dyke Coal Co. of Wyo.	Wyo.	2 100	Mar 9	April 20	May 16	G. R. Spinney	320 California st.
Hays G. & S. M. Co.	Nevada	1 50	Feb 9	Mar 13	April 11	R. H. Brown	402 Montgomery st.
Highland Cons M. Co.	Nevada	1 25	Feb 2	Mar 13	April 11	O. V. D. Hubbard	214 & 216 Pine st.
Jefferson G. & S. M. Co.	Cal.	5 100	Mar 26	May 1	June 1	G. Snacks	205 Sansome st.
Josephine Quicksilver M. Co.	Cal.	9 200	Feb 25	April 6	April 28	J. S. Lutz	507 Montgomery st.

tatively with reference to the price paid, but it is rumored that \$2,500 expresses the sum. Mr. Emerson took possession Thursday last. We understand it to be his intention to work the mine on a very extensive scale as soon as the necessary alterations and preparations can be made. A change has also been made in the proprietorship of the hydraulic mine in Tunnel ridge, owned by Veith & Co., during the week. Mr. J. Simpson disposing of his interest—one-third—to John Veith, Esq.

BLUE MOUNTAIN.—The Heckendorn mine is now under the management of the new Board of Directors. The President, F. Smith, Esq., was here lately, returning from his mine to San Francisco, for the purpose of making arrangements with the Board for a still more extensive plan of operations on the mine, to increase the number of hands and add more stamps to the mill. The quartz pays handsomely. The vein, at the bottom of the shaft—150 feet deep—has attained 14 feet in width. More miners are already wanted there, the new superintendent intending to keep the mill running day and night. Work on other mines in that district is also being actively pushed in every direction.

IN FULL BLAST.—Stranger & Co., who for some time past have been engaged in opening a hydraulic on the west side of Stockton ridge, near the French Hospital, have got everything in order and commenced piping. The water used, having a pressure of about 150 feet, is conveyed to the mine in a 9-inch iron pipe, and everything connected with the claim is arranged for working with facility. The indications are that the mine will pay well.

EL DORADO COUNTY.

THE CEDERBERG.—*Cor. Republican*, Mar. 26: This mine needs no description. The pens of hundreds have spoken of its untold richness. E. N. Hulford, a practical miner, is the superintendent of the mine. Under his management, this mine yields amazingly, and pays a regular monthly dividend.

THE INTERNATIONAL is being worked under the management of Gen. W. A. Cromwell. The main shaft is down to a great depth, and they are now drifting north, and south, and taking out rich and paying ore in large quantities.

THE ATLANTIC & PACIFIC.—On this mine the work has been pushed vigorously, a large and paying ledge developed, and the owners consider it a second Cederberg.

INYO COUNTY.

SYLVANIA ORE ASSAYS.—*Independent*, March 21: We present below some assays of Sylvania ore made at the Swansea works for Mr. Darrah. These assays are from a lot of ore brought over by Mr. Darrah, a number of weeks ago, and were selected with a view of obtaining the actual average value of the whole of the vein matter. The bullion assay is from a piece of bullion smelted on the ground in a blacksmith's forge. Assay No. 5 is from a peculiar material found in considerable quantities in the vein and heretofore deemed worthless. Taken altogether the Sylvania ores are pronounced by foreign men to be of the very best possible combinations for smelting purposes. The actual extent of the deposit is yet to be demonstrated, as a matter of course, since the deepest sinkings do not exceed twenty-five feet, but no better surface indications, taking all facts together, could be asked for. Leaving off the descriptive remark for each parcel, the assay by number stands thus:

NO.	PER TON.	PER TON.	PER TON.
1.	77.9 oz. lead.	89.91 oz. silver.	\$116.23
2.	32.33 " "	35.23 " "	46.55
3.	45.0 " "	29.16 " "	37.70
4.	59 " "	35.23 " "	45.55
5.	60.0 " "	24.30 " "	31.42
Bullion assay		167.67 " "	216.77
888 fine, \$171.			

KERN COUNTY.

HAVILAH TUNNEL.—*Miner*, March 21: Rock continued so soft that work was suspended three days for the purpose of timbering, but is now all right. The tunnel is in 125 feet from its commencement. A large vein of decomposed quartz was struck Wednesday. The tunnel is still running against it, and has penetrated twenty feet. How large it is, is a mystery. It is a lucky "blind," and prospects well in places. All evidences point to a chimney being near.

GOON MINES.—Many good mines are in this county that would pay big, and give employment to thousands, if properly managed by capitalists.

PROSPECTING for placer diggings along Kern river is being carried on more extensively this year than any previous.

SEVERAL placer discoveries have been made this spring, but none of them are of more than average richness; if they are, the discoverers are keeping it secret.

NAPA COUNTY.

FROM THE BEDDINGTON.—*Register*, March 28: The steamer "Express" took down last Sunday 142 flasks of quicksilver from the Beddington mine.

NEVADA COUNTY.

AT WORK.—*Union*, March 28: Yesterday morning the Gold Hill mill started to work, being the first it has done for the month. We saw five or six piles of rock on the platform and teams are busily engaged in hauling more. The bad weather stopped prospecting, but the few days of sunshine that we have been favored with have been taken advantage of by our prospectors, and the result of it can be seen on the Gold Hill mill platform. During this spring this branch of mining will be brisk, because water will be plentiful.

QUICKSILVER.—Mr. James Nickerson, of Placer county, who has been for a long time prospecting for quicksilver on Wolf creek, has sold one-fourth of his claims to responsible parties for a good sum. Work will be continued on the claims sold as well as these retained by Mr. Nickerson. Experts who have examined the ore from the Nickerson mine pronounce it as very fine; as good as is to be found in the State, not excepting the mines on the coast range.

EXTENSIVE GRAVEL MINING.—The American mine, situated near San Juan, is one of the most extensive we ever visited. The Superintendent, George C. Spooner, has now in his employ about 50 men, who are engaged in drifting and washing. They use 1,400 inches of water, which comes through a pipe 32 inches in diameter. A large blast of 150 kegs or more of powder will be put off in a few days. The new tunnel, a very large one, is now in some 3,000 ft., and the three shifts are driving it ahead at the rate of about 60 ft. per month. This tunnel is 250 ft. below the one now in use, which is not low enough to wash the ground, as is known in mining phraseology, it is "out of grade." The new one, when driven some 2,000 ft. farther, will be low enough to work all of the extensive ground yet before them, and still have grade left. Water is plenty now, and both the Milton and Eureka Lake ditches are full. Water is selling at eight and ten cents an inch. The expenses incident to gravel mining may be better understood when we say that the recent deduction of from 16 1/2 to 8 cents in the price of water causes a saving of about \$150,000 a year to the American mine alone. The tunnel they are now running will cost in the neighborhood of \$200,000, but that will soon be all returned to them in \$20 pieces when the flume is ready for washing. The ground generally is hard, and the cement is almost invulnerable—water not effecting it. But the ample falls that the hill near the Yuba affords breaks most of it up. The American has been constantly worked for ten years, though prospecting was begun on Manzanita Hill twenty years ago. With a large amount of unworked ground yet ahead of them, they will require ten years more at their present immense scale to work it out.

GRAVEL MINES is this immediate vicinity are not numerous, but we have some, and they are at this time well supplied with water, without which such diggings are not very valuable. If we had three or four times as many of these hydraulic claims about here, inducement would be given to bring in ditches from higher up than any now come, and water for all purposes be more plentiful.

Just at the upper end of Church and Auburn streets, but a few steps from the business part of our town, is the old Slide mine, now owned by Mr. Reuben Thomas. We were out there on Wednesday and witnessed the process of tearing down embankments and washing away the earth through one of those patent nozzles, which are so easy to handle and perform such wondrous work. The cream was taken from these diggings many years ago through tunnels and drifts, but at that time mining was not very closely done and Mr. Thomas is obtaining far results, though only able to work half the year by reason of want of water. He hopes to be able to run till July or later this year.

Adjoining the Slide is the Dartmouth mine, which is now taking out gravel to pay expenses merely, and doing much "dead work" in the shape of a drain tunnel to carry off the water which comes in upon them from the Alta Hill mine, now idle.

SONOMA COUNTY.

QUICKSILVER MINING ITEMS.—*Democrat*, March 28: The Lost Ledge mine has been leased to John A. Robertson & Co., of San Jose, for one or two years, with the privilege of buying the mine during the lease at \$40,000. The Kentucky has been leased to W. A. Stewart, for \$300 per month, during one year, with privilege of purchase during the time, for \$30,000. On both these mines work has been commenced. The incline on the ledge in the Missouri has been extended to a depth of 30 ft. The face of the tunnel shows a solid mass of cinnabar, which will average 10 per cent. ore. There are 30 men at work. The site for two extra shafts is now being graded; they will be put up as soon as they can be gotten over the road to the mines. The Rattlesnake having been sold and incorporated, a considerable force has been set to work. We learn from the best authority that the sale was without reservation for \$52,000 cash. McKay, Snow & Sleeper, former owners, are still at Pine Flat.

THE NEW COAL DISCOVERIES.—We visited recently the new coal discoveries, made near the headwaters of Copeland creek, on the west face, and Graham Cañon, on the east face of Sonoma Mountain. The coal is of precisely the same character as that prospected on Mark West creek last summer—a kind of lignite which burns freely and slackens on exposure to the atmosphere. Whether this coal will lose the extraneous matter which it now holds, and become more solid in texture, is a question which cannot now be solved in the present state of the development of the mine in this section.

The Davis discovery is much the best ledge we have seen; its location is also favorable for a thorough test of the merits of the mine at comparably small cost. We believe that its further development will lead to the discovery of a good quality of coal for steam and domestic use.

TUOLUMNE COUNTY.

NONPAREIL MINE.—*Independent*, Mar. 28: Work on this mine, located at Deer Flat, near Garrote, is being pushed to reach the vein by

the first of June. The owner, J. J. DuPrat, Esq., was in town this week, to procure additional miners to prosecute the work. He has been engaged nearly two years, driving a tunnel in this hill, to reach the vein that was formerly worked through a deep shaft. The tunnel is now within about fifty feet of the vein. When worked, the ore yielded handsomely, but water troubled the operations so much the shaft had to be abandoned. When the tunnel taps the vein, it will be drained, and no doubt open up a large body of paying ore.

GOON YIELD.—The partial clean-up last week of the Tuolumne Hydraulic Mining claim, in Tahls Mountain, formerly known as the Rough & Ready, yielded upwards of \$1,300, for four weeks' run. The force at work was two white men and six Chinamen. Only one side sluice was cleaned up; the other side may pay as well.

Nevada.

WASHOE DISTRICT.

CONSOLIDATED VIRGINIA.—*Geld Hill News*, March 26: Sinking the main shaft below the 1,400-foot level is making rapid progress. The west drift from the 1,400-foot station is in 45 feet, and is soon expected to reach the ore vein. The ore breasts on the 1,300-foot level are being extended north and south; the ore vein continuing to widen to the southward and containing the same rich quality of ore. To the northward the ore retains its width, and appears to grow richer in quality as the work advances. At a point one hundred feet north of the ore breast a cross-cut west has been commenced, which shows the ore to be richer even than that in breasts. The north winze has been enlarged from the 1,300 to the 1,200-foot level, so as to make it 12x12 in the clear, greatly improving the ventilation of the two levels. The west drift from the 1,300-foot station is in 76 feet, and is expected to reach the ore vein in a day or two more. On the 1,000-foot level the ore vein is being prospected both north and south, and has already been developed 150 feet in length.

OPHIE.—The main south drift on the 1,700-ft. level is being steadily driven ahead to connect with the south winze from the 1,465-foot level. The up-raise from the 1,465-foot level is being pushed rapidly ahead to connect with the winze being sunk from the 1,300-foot level. Both the winze from the 1,300-foot level and the raise are being prosecuted for ventilation purposes alone, without regard to prospecting or ore developments. The north drift on the 1,300-foot level is still pushed ahead toward the north line, the face in clay with occasional streaks of quartz.

GOULN & CURRY.—The erection of the new air compressor is completed, and the entire machinery is in full operation, everything working with the utmost perfection. In another day the Burleigh drills will be attached and in full operation in both drifts on the 1,700-ft. level. The main north drift on the 1,500-ft. level has made but little progress during the week on account of the steady and heavy flow of hot water from the face, which is all that the pump can handle.

GLONE CONSOLIDATED.—The up-raise from the tunnel is still making steady progress. A drill hole is kept running several feet ahead, as it is the expectation that a considerable body of water will be encountered when the connection is completed with the old winze above. There is already a considerable seepage of water from the face of the raise, indicating a near approach to the bottom of the winze.

HALE & NEBOREE.—The main south drift on the 1,900-ft. level is still driven steadily ahead, cutting occasional streaks and stopes of ore, of which that level seems to be full, but without finding any concentrated bodies.

DATTON.—Daily yield of ore 130 tons, all of which is being crushed at Woodworth's, the Devil's Gate and Briggs' mills, with the exception of about ten tons per day, of rich ore, which is being sent to the Auburn mill for reduction. The ore breasts are both looking well and yielding finely.

CALEDONIA.—The shaft is repaired between the 600 and 700-ft. levels, sufficiently to admit of the use of the cage for hoisting in one compartment. Repairing the other compartments is making rapid progress.

LADY BRYAN.—Excellent progress is being made in sinking the new shaft, and the machinery for the new hoisting works having about all arrived, will be put in position as fast as required. The sinking of the new shaft is the most important and efficient move yet inaugurated in developing the Lady Bryan mine. The old shaft was too far west, cutting the ledge too soon and passing through it, necessitating an incline in order to follow the sharp easterly dip of the ledge.

SILVER HILL.—A breakage of some of the hoisting machinery two days since created a short delay in the operations of the mine. This, however, will soon be repaired and the full work again resumed.

OVERMAN.—The new air-compressor for driving air into the mine and running the hoisting engine, recently erected at the mouth of the winze, on the 1000-ft. level, is being rapidly placed in position and put in order for future work.

EUROPA.—Sinking the winze in the north drift from the main west tunnel, is making good progress, passing through very favorable ledge matter with occasional spots of fine ore, showing evident indications of a better concentration of the ore as greater depth is attained.

SOUTH STAR.—The roads having improved sufficiently to allow the requisite lumber being

hauled, work was resumed on this mine yesterday morning with a view to its practical development.

SIERRA NEVADA.—Daily yield 65 tons of ore, keeping the company's mill steadily running. The drain tunnel has yet about 65 feet to run to make connection with the main shaft. This sluice tunnel, to connect with the new hydraulic works, is being driven vigorously ahead.

KOSSUTH.—A south drift has been run from the main west tunnel, which has made connection with the shaft from the old upper works, giving a much needed circulation of pure air, and greatly facilitating the work throughout the mine.

BELCHER.—Daily yield, 550 tons of ore, from the 1,000, 1,200 and 1,300-ft. levels. The winze from the 1,400-ft. level has been sunk west of the ore body to the depth of 42 ft. All of the stopes and ore breasts throughout the mine are looking finely.

CROWN POINT.—Daily yield 525 tons of ore. All the ore breasts on the 1,200, 1,300 and 1,400-ft. levels are looking finely and yielding well. The bottom of the north winze from the 1,400-ft. level is still in rich ore. The bottom of the middle winze on the same level is in barren quartz. The face of the east cross-cut on the 1,400-ft. level is still in quartz, porphyry and ore mixed, with no indications whatever of soon reaching the east wall of the ledge.

JULIA.—The main south drift on the 900-ft. level is still driven vigorously ahead, following the vein of ore recently developed, which proves to be 12 ft. in width and gives promise of a good development.

MCMEANS.—The main tunnel, which is in a distance of 643 ft., has again been started up, after lying idle for a number of months. It is the belief that this tunnel has no great distance yet to run in order to reach the ledge.

KNICKERBOCKER.—Sinking the shaft is making rapid progress. As soon as the new air compressor arrives, work will be resumed in the west drift at the 400-ft. level.

SOUTH COMSTOCK.—A drift south has been started from the main east drift at the 150 ft. level, which is in 16 feet, following the fine looking streak of brown sulphuret ore. Assays during the week have averaged from \$20 to \$80 to the ton, principally gold, and continued improvement is perceptible.

UTAH.—The main west drift at the 400-foot station is still pushed vigorously ahead through the ledge to reach the west wall. A crosscut south has been started to premeet the body of quartz penetrated, which shows some very favorable spots and indications of ore.

SAVAGE.—The main southwest drift on the 1,900 ft. level, last Sunday evening made connection with the north drift from the south winze, giving a greatly needed circulation of pure air, cooling the drift and greatly facilitating the prospecting operations on that level.

IMPERIAL-EMPIRE.—Sinking the main incline below the 1,850-ft. level is making steady headway. The main east drift on the 1,850-ft. level is still pushed vigorously ahead, the face in very soft and favorable looking matter, and with the hourly expectation of reaching the ore vein.

LEO.—The face of the main tunnel still carries that vein of rich gold ore, two ft. in width, giving assays as high as \$5,000 to the ton. It continues to increase in size, with strong indications of developing into a good sized and very valuable ore body or chimney.

CHOLLAR-PORTER.—Daily yield 80 tons of ore, the assay value of which is \$30 per ton.

NEVADA.—The main south drift from the west tunnel is still driven vigorously ahead, following the streak of ore recently developed, which is about three feet thick. A cross-cut west has been run through the ore chimney, already developed, which has proved it to be 18 ft. in width, and all good milling ore.

CALIFORNIA.—The north drift from the 1,300-ft. station of the Virginia Consolidated shaft is now in 319 ft. in good running ground. The sound of the workmen in the south drift on the same level from the Ophir, can be distinctly heard, showing that the two drifts cannot be very far apart.

NEW YORK CONSOLIDATED.—Re-timbering the shaft is making rapid progress. The new boiler-house is about completed, and everything will soon be in readiness for the reception of the new machinery.

SUTRO.—The north drift is being continued and is now in 160 feet. Streaks of lively looking quartz have been encountered all along, assays averaging \$15 to the ton.

CHAPIN AND EAST COMSTOCK.—Fifteen feet have been added to the depth of the shaft during the past week. A slight increase of water has been encountered, but not enough to interfere with the work, as it is hoisted out with the dirt. The new hoisting machinery works well.

ALHAMBRA.—The new hoisting machinery from Shaft No. 3, of the Sutro Tunnel, arrived at the mine yesterday, and will be placed in position for future operations just as fast as the nature of the work will admit. The shaft is now repaired to the depth of 200 feet.

JURTECO.—Main incline down 115 feet below the 400-ft. level, passing through vein matter at present consisting of porphyry, clay and quartz in streaks. This material works very favorably.

BALTIMORE CONSOLIDATED.—The erection of the new machinery is rapidly approaching completion, and everything will soon be in readiness to resume the opening of the fourth and fifth stations.

SUCOON.—Sinking the new shaft is making the usual good progress.

Eureka Mines.

The present condition of the different mines, says the *Sentinel*, throughout Eureka and other districts, is most favorable. Important developments are being made almost daily, and appearances generally indicate an increasing permanency of the mines as the work on them progresses.

At the Richmond

The workmen are engaged in running a tunnel from the McGee shaft to connect with the mine, which is being worked through the Lisette tunnel; a donkey engine is being set inside the mine to hoist the ore to the level of the tunnel, which is then run out on cars to the northeast side of the hill. The body of ore in the mine is over 200 feet in width, which is also increasing in width and richness, though continually worked for a distance of over 800 feet.

The McGee Shaft

Is sunk down nearly 300 feet, the first level being 212 feet below the surface. As soon as the condition of the roads will allow, active operations will be resumed. The shaft is being sunk through the great ore body, with the intent on of striking the second level at a distance of 400 feet from the top. A new ore dump is being constructed at the mine for the convenience of shippers in the loading of wagons.

At the Furnaces

Of the company, during the present stoppage of work, many improvements are being made in and about the premises. The construction of the new patent flume is about completed; and when they start up again, the smoke and dust of the furnaces will be conveyed to a large chimney, fifty feet high, built on the mountain east of the works. The machinery has been put in perfect order, and operations will be resumed sometime during the coming month. During the past month 1,120,000 pounds of bullion have been shipped from these furnaces to the railroad by Pritchard's freight line.

The K K Mine.

Forty men are engaged at work in this mine. The ledge discovered a few days since a little northeast of the old Marcelina shaft, is proving larger and richer as the work progresses. As soon as the width of the vein is definitely ascertained, a winze will be sunk to connect with the third gallery. A vein six feet in width has been struck in the second level, east, which promises to be one of great richness. Three hundred and thirty-six thousand pounds of bullion have been shipped by the company since our last report, in February. The furnaces have been shut down for about a month, but will be re-opened as soon as coal commences to arrive.

The Eureka Consolidated.

A fine body of ore is at present being taken from this mine. About 100 men are at work, though the force will be greatly increased in the spring. The company has one furnace in operation, it being the only one running at present, giving employment to forty men. There are about 30,000 bushels of charcoal on the grounds, and enough arriving to keep the furnace working until the supply increases. Six hundred thousand pounds of bullion were shipped by the company during the past month.

The Ruby Consolidated.

The workmen in the Ruby Consolidated are engaged in prospecting the different levels of the mine, getting out ore, thirty tons being the average daily amount brought to the surface. About forty men are employed in the mine. The furnaces are at present shut down, but they will commence work again in a short time. It is the intention of the company to introduce coke, to be used in the furnaces, to take the place of charcoal. One hundred tons are expected to arrive in a short time.

The Bald Mountain Mines.

Owing to the great amount of snow on the mountain, work is attended with great difficulty. With the exception of the Hooeac, the mines are not proving as good as was expected. The ore is found in bunches, some of it being of extra quality, though not in large enough deposits to pay for the working of the mines.

Newark District.

The mines in this district are all looking remarkably well. Prospectors are actively at work, and the present appearances of the mines indicate great richness.

Beatty Mine,

Owned by Mr. Frank Beachman, is one of the most prominent mines in the district. Work is being rapidly advanced, and the ledge still exhibits the same favorable indications as when first discovered.

The Captain Jack,

Owned by John Manpin, Max. Oberfelder and F. J. Holland, has been worked for about three weeks, with a fine prospect of success. The ledge is at present three feet wide and rapidly increasing in size; it is running north and south, and assays of the ore made, go as high as \$250 to \$1,500 per ton.

The Newark Mining Company,

Comprising the north and south Chinnabua, Lincoln, Washington, Indian Jim, Buckeye and other mines are preparing to resume active operations as soon as the furnace starts up. The company has about seventy men at work at present, but this force will be largely augmented in a short time. The company has

expended over \$400,000 on its different mines, and during the present summer will conduct business on a grand scale. Ten new amalgamating pans will arrive in a few days for the furnaces, which will be started up about the tenth of April. The company owns the furnace, an Aiken roaster, and will be able to roast thirty tons of rock per day. The district has recently been formed, and two meetings of the miners have been held to establish a set of laws for the government of the district. The camp will be one of the liveliest in the State during the coming season, and work will be afforded to scores of men now unable to obtain employment.

The Consolidated Virginia.

The Consolidated Virginia is at present undoubtedly the big mine of the Comstock lode. An immense amount of ore is now visible in the mine, and there is every indication that the 1,400-foot level will be better than anything that has been opened above, and it is the belief of the experts that the 1,500-foot level will prove far richer than the 1,400. In the lowest working of the mine the lead has now assumed its regular pitch to the east; the walls are beautifully defined and the stratification is most regular and perfect. The character of the ore has become uniform throughout, and both ore and quartz are assuming a more lively appearance as depth is attained. The ore first found, though very rich, had a peculiar dead look, which was new and somewhat puzzling to even the oldest miners on the Comstock. Now, at the lowest levels, the familiar crystallization appears in the ore and quartz; some bright sulphurets are to be seen, and all is beginning to present that appearance characteristic of the great ore deposits of the Comstock lode—the ore has what the miners call a "lively look." In the upper levels, where the ore was first encountered, the vein was almost devoid of crystallization, and the ore had a close and "egggy" appearance, as though it had once been dissolved in water, and afterwards had hardened. It will be long before the mine will be even in its prime, though it is opened already to such an extent that immense quantities of ore can at any time be raised; and, indeed, the quantity extracted daily will shortly be greatly increased and new mills put to work upon it.

The works of the company are the most powerful, most perfect and best arranged to be seen on the lead, and their facilities for hoisting, storing and handling ore, are unsurpassed. Their dump is the most substantial on the Pacific coast, being erected upon a long and high wall of cut stone, so thick and so well constructed that it would withstand a heavier cannonade than any fort in the Union. Along the foot of this wall, immediately under the dumps, runs a side-track of the Virginia and Truckee railroad, so that any number of ore cars can be cheaply and expeditiously loaded. All that is to be done in order to load a car is to hoist a gate, placed in the mouth of a chute leading down from the dump, and the ore runs out until the car is properly filled. The blacksmith shop, carpenter shop and the several offices are all well constructed, neatly painted, and are most conveniently situated in the immediate vicinity of the main hoisting works—that is, those shops and offices which are not directly connected with the main building of the works. Thus it will be seen that not only all below, but also all above, is in the best possible shape for a vast amount of uninterrupted and most profitable mining. Unless when it shall be necessary to replace some piece of worn-out machinery, or when there shall occur a break of some kind, there is nothing to prevent the company from hoisting ore constantly and regularly (as regards quantity) for years to come. They are peculiarly well provided with railroad facilities, for while they have a side-track under their dumps at the east end of their works, the main railroad track—over which all machinery and supplies are brought—runs directly along at the west end; the main work extending, as it were, wedged between the two tracks. All that is brought to the works, as well as all that goes away, is moved down hill. As we said above, the Consolidated Virginia is now undoubtedly the big mine of the lead; some years from now, however, the big mine may again be at Gold Hill. In turn we have seen the Ophir, the Gould & Curry, the Savage, Yellow Jacket, Crown Point and Belcher, hold the position of first on the lead. When the Ophir and Gould & Curry were the big mines, some of the others named were accounted wildcat of the most untamed description. Ten years hence we know not which of our present "wildcats" may be promoted to the proud position of first mine on the Comstock range.—*Virginia Enterprise*.

PEAVINE ITEMS.—From R. P. M. Greeley, who arrived from Reno, the *Truckee Republican* learns that mining developments in Peavine are of a favorable character. The main shaft in the Paymaster mine is down over 60 feet below the first level, has cut through the ledge and is in good sinking ground. The ore continued to improve in sinking, and some of it is very rich. Mr. G. was informed that arrangements were being made to put up the roasting furnaces, required in working the ore, at once. Owing to the snow many claims in the district are not being worked but will be in a short time.

The property of the Little York Gold Washing and Mining Company, of Nevada county, has been sold to an English company for \$220,000.

White Pine Mining Outlook.

The *White Pine News* gives the following concerning mining matters in that vicinity: Emerging from the most severe winter within the knowledge of the oldest inhabitant, and with a fair prospect of clear skies and good weather in the near future, it is natural we should look around at the probable amount of mining to be done the coming summer. Among the mining interests now bearing the most encouraging aspect, we may name the Eberhardt & Aurora, the Ward Beecher Consolidated, Mammoth, Silver Wave, of free ores, and the Trench, Imperial, Mobile, and many others of base character, all of which are employing more or less men every day. The milling facilities are sufficient to work all the ore which can be extracted, but the smelting capacity is decidedly inferior. Certainty of work being pushed ahead on the majority of mines mentioned above, seems now to be established; but the result, of course, is problematical. We are confident that explorations will be energetically carried forward on all the leading mines; and, especially, on those of a base nature. The nearness of the time when re-locations can be made on mines now abandoned, viz.: June 10th, 1874, will cause many owners and locators to commence operations early in the spring in order to save themselves from loss. Undoubtedly, hundreds of prospectors will engage actively in searching out locations almost forgotten, and the result of their working will materially aid the good name of the district. We can see no reason why a prosperous season may not be anticipated, under the circumstances, and all who have so persistently waited through the months of discouragement, just passing away, be liberally rewarded. Success being the criterion of merit, we have only to hope that comprehensive work will be done to illustrate the practicability of reducing the immense quantities of base ores with profit. It is a matter of much surprise that success can not be obtained from smelting here in White Pine, with the superior advantages possessed by no other prosperous localities, and we trust that the coming year will aid us to elucidate the feasibility of competing with our neighbors at Eureka in this regard. Not only is the prospect encouraging here, but also at Mineral City, at Cherry Creek, Newark, and many other less known, but valuable districts, are being opened up, and developments being pushed ahead vigorously. Our county contains more locations than any other in Eastern Nevada, handled by men who have made mining the business of a lifetime—who, one and all—concur in the meritorious character of the same; and we can see no good cause to despair of the future.

Hydraulic Mining and Our Bottom Lands.

The people living on the river bottoms of Placer, Sutter and Yuba counties are threatened with a danger which, not many years hence, will be of serious consequence. It is the rapid filling up of deposits brought down from hydraulic mining, which is growing more extensive every year. In fact, the era of hydraulic is yet in its infancy, however true it may be that it is now extensively carried on. The immense gravel deposits along the Yuba are, practically speaking, inexhaustible. The ancient river channel, in which these rich gravel beds are found and now being washed down in the vicinity of Sucker flat, is conceded to extend through the hills as far up as San Juan. These great gold deposits, in connection with other rich mines, which are continually discovered, are drawing thither millions of capital with which to work them. The late improvements made in this mode of mining now enables the working of mines which could not be worked before. More dirt can be washed away with less capital. The amount of dirt brought down by the mining streams and deposited in the valley is surprising, and we might add, alarming. The bed of the Yuba at Marysville is already some sixteen feet higher than it was 20 years ago! Not only the channels, but the valuable bottom lands along the Yuba and on the Feather below its confluence, have been covered over with sand and sediment to a depth of many feet, and ruined. The same work of destruction is going on on Bear river and other mining streams. The worst has not yet come. In less than two years the amount of washings will be double what it is now. It is a saying among some of the miners that they are going to cover Marysville up, and we believe there is more truth than fiction in the saying. It was a sad mistake that the beautiful town was not located on the higher ground back, or on this side of the river, when it was first started, or rather the houses which were afterwards moved over on the Yuba. Yuba City was once ahead of Marysville, and at the rate it is now growing, in ten years more it will go ahead of our sister town.—*Sutter Banner*.

ANOTHER GREAT GRAVEL MINE OPENED.—We learn that the Pactolas Gold Mining Company, near Smartsville, have just made their opening wash-up, through their lower tunnel, which enables them to wash the ancient river channel which passes through that region, paying over \$800 per day. When we remember that in opening a mine washing is done at such a great disadvantage, this result is truly wonderful. This tunnel has been some six years building, and adds another proof of the hidden wealth of our country.—*Marysville Appeal*.

Pine Flat Quicksilver Mines.

A correspondent of the *Napa Register* writes as follows concerning mining matters at Pine Flat:

The Georgia, situated on the Bloodhound lode, about three miles northeast from Pine Flat, has every indication of a good mine. The outcroppings are very rich. A tunnel has been started to tap the ledge, and if the weather proves favorable, you may expect to hear something big from this claim. It is owned by the Thompson Brothers, Charles Fitch, John Nixon and W. B. Reynolds. After partaking of the hospitality of the boys of this mine, early the next morning I started for Pine Flat through a drenching rain. Dodgeville is the name of the town at Pine Flat. I am sorry that the well known name of Pine Flat has been changed to Dodgeville, but as there was another post office in the State with the same name, it was thought advisable to call it as above.

The central is located on the Sonoma lode, and bids fair to become a rich mine. Just above this is the Fall's claim on the same lode. But little has been said of this mine, yet any one can see its richness. The creek runs over the ledge and forms a fall of about fifteen feet, showing the ledge, which is well defined, and cinnabar croppings on all sides are plainly visible. Above this about a half mile is the Annie Belcher, a new discovery made a short time since by Mr. John Goldthorp, and owned by him, Samuel Walker and John Nixon. The croppings of this mine are far ahead of any that I have yet seen, and if it holds good as it goes down, it will rank A 1. The ledge shows itself plainly, and the cinnabar is very rich, and it is a wonder that this discovery was not made sooner; but it is surrounded by an almost impenetrable growth of Chinese brush, and Jack said he had to do considerable prospecting on his hands and knees. Work has been commenced here, and quite a pile of almost pure cinnabar is on the dumps.

Next we visit the Sonoma. They had their furnace running, and are taking out quite a lot of quicksilver. We pass on from here to Flag-staff No. 2, owned by Bell, Norris & Marble. This mine has lately been sold or bonded for a large sum. Next in order is the Socrates, formerly known as the Pioneer, and is under the management of Mr. W. S. Bell. Work will be resumed on this mine in a short time. This was one of the first discoveries made here, but work has been suspended for a number of years on account of the title to the mine, but now the matter is all settled.

Here we strike the Geyser road, and we take a back track toward Dodgeville, and when within one mile of that place we find the Mammoth mine, which has just been sold to an Eastern company, who have also bought other mines, and intend erecting furnaces and going to work in earnest. Just above town is the Fleetwood, another good prospect, owned by Messrs. Williams & Vick. Feeling anxious to get home, we did not visit any more of the mines, and after remaining all night, we left early next morning for home, where we arrived safe and sound.

Rev. J. Daubenspeck contemplates burning a large brick kiln in Pine Flat. The people up in that section feel a little dubious about voting a \$10,000 subsidy for a road to Healdsburg. The Kattlelake mine has been sold for \$52,000, to (rumor says) John Farrot, of San Francisco. The superintendent went below on Sunday for men and materials. The Missouri has stopped her retorts for a few days on account of the wet weather.

Finding The Latitude at Sea.

Commonly the seaman trusts to observation of the sun to give him his latitude. The observation is made at noon, when the sun is highest above the horizon. The actual height is determined by means of the instrument called the sextant. This instrument is so devised that the observer can see two objects at once, one directly and the other after reflection of its light; and the amount by which he has to move a certain bar carrying the reflecting arrangement, in order to bring the two objects into view in the same direction, shows him the real divergence of lines drawn from his eye to the two objects. To take the sun's altitude, then, the observer takes the sun as one object and the horizon directly below the sun as the other; he brings them into view together, and then looking at the sextant to see how much he has had to move the swinging arm which carries the reflecting glass, he learns how high the sun is. This being done at noon, with proper arrangements to insure that the greatest height then reached by the sun is observed, at once indicates the latitude of the observer. Suppose, for example, he finds the sun to be 40° above the horizon, and the *Nautical Almanac* tells him that, at the time the sun is 10° north of the celestial equator, then he knows that the celestial equator is 30° above the southern horizon. The pole of the heavens is, therefore, 60° above the northern horizon, and the voyager is in 60° north latitude. Of course, in all ordinary cases the number of degrees is not exact, as here for simplicity is supposed, and there are some niceties of observation which would have to be taken into account. But the principle of the method is sufficiently indicated by what has been said.—*Popular Science Monthly*.

USEFUL INFORMATION.

A New Method of Staining Wood.

The following process of making coarse wood look like polished mahogany, is recommended in *Wiederhold's Trade Circular*: The coarse wood is first coated with a colored size, which is prepared by thoroughly mixing up, in a warm solution, of one part of commercial glue in six parts of water, a sufficient quantity of the commercial mahogany brown, which is, in reality, an iron oxide, and in color, stands between so-called English red and oxide of iron. This is best effected by adding in excess, a sufficient quantity of the dry color with the warm solution of glue, and thoroughly mixing the mass, by means of a brush, until a uniform paste is obtained, in which no more dry red particles are seen.

A trial coat is then laid upon a piece of wood. If it is desired to give a light mahogany color to the object, it is only necessary to add less, and for a darker color more, of the brown body color. When the coat is dry, it may be tested by rubbing with the fingers, whether the color easily separates or not. In the former case, more glue must be added until the dry trial coat no longer perceptibly rubs off with the hands. Having ascertained in this way the right condition of the size color, with respect to tint and strength, it is then warmed slightly, and worked through a hair sieve by means of a brush. After this, it is rubbed upon the wood surface with the brush, which has been carefully washed. It is not necessary to keep the color warm during the painting. Should it become thick by gelatinizing, it may be laid on the wood with the brush, and dries more rapidly than when the color is too thin. If the wood is porous and absorbs much color, a second coat may be laid on the first when dry, which will be sufficient in all cases. On drying, the size color appears dull and unattractive, but the following coat changes immediately the appearance of the surface. This coat is spirit varnish. For its production, three parts of spirits of wine of 90° are added in excess to one part of red acaroid resin in one vessel, and in another 10 parts of shellac, with 40 parts of spirits of wine of 80°. By repeated agitation for three or four days, the spirit dissolves the resin completely. The shellac solution is then poured carefully from the sediment, or, better still, filtered through a fine cloth, when it may be observed that a slight, milky turbidity, is no detriment to its use. The resin solution is best filtered into the shellac solution by pouring through a funnel loosely packed with wadding.

When filtered, the solutions of both resins are mixed by agitating the vessel, and letting the varnish stand a few days. The acaroid resin colors the shellac, and imparts to it at the same time the degree of opaqueness usually obtained by the addition of Venetian turpentine, or linseed oil. If the varnish is to be employed as a coat, the upper layers are poured off at once from the vessel. One or two coats suffice, as a rule, to give the object an exceedingly pleasing effect. The coats dry very quickly, and care must be taken not to apply the second coat till the first is completely dry.

SEPARATION OF THE MERCURY IN THERMOMETER TUBES.—When thermometers are overturned or shaken by accident, it frequently happens that a portion of the mercury in the instrument is separated from the main column and hangs in the upper part of the tube. It is generally easy to unite this portion of the mercury with that in the bulb by holding the thermometer vertically two or three inches above a piece of card, and letting it fall vertically upon the card, or, while firmly holding it in the right hand, strike with the arm smartly against the palm of the left hand; or, further, the thermometer may be fastened to a piece of string and swung around, as with a sling, but with caution, and not too rapidly. In many cases the detached particle of mercury is so small that its weight is not sufficient to overcome the adhesion to the side of the glass tube; the following plan of procedure is then recommended: The instrument is inclined at an angle of twenty to forty degrees, so that the bulb stands higher than the tube, and a blow with a flat piece of wood is given in the direction of the thermometer stem. The mercury in the stem is thus jerked forward, and, united with the detached portion, fills the entire tube. If the thermometer be now slowly and cautiously brought into such a position that the mercury begins to flow back toward the bulb, the united column may generally be returned to its proper place. In the place where the separation has occurred a small air bubble is generally found, but by following the above directions this difficulty may be almost always overcome.—*Journal of Applied Chemistry*.

VARIEGATED COTTON THREAD.—Cotton thread may be dyed in two or three colors by covering some parts with parchment paper, tightly wound, and thin tin or lead foil, holding the latter in place by binding threads. If tied sufficiently tight when the skeins are introduced into the dye bath, the protected parts remain white; and by protecting the dyed portion, and unwrapping the white portion, another color may be applied.—*Scientific American*.

The Corrosion of Boilers.

Dr. J. S. Kidder, U. S. N., communicates to *Van Nostrand's Engineering Magazine* a paper pointing out the probable cause of the destruction of boiler tubes, and describing experiments which show the deterioration or pitted condition of those portions of the generator which are immersed in the water to be due to the action of oleate of copper. The presence of this substance is accounted for by the decomposition of the oleate oil used in lubricating the piston into oleic acid and glycerine, a sufficient frictional heat being raised to thus act upon the thin film of oil between the surfaces. In the condenser the brass tubes are exposed to the powerful comminuting impact of steam at a high temperature and pressure, and this substance is thus finely divided and placed under the most favorable circumstances for union with the free oleic acid which the steam brings with it. Oleate of copper is then formed in the condenser, and appears in bright green, greasy masses, which are carried from condenser to boiler. A quantity of this substance, settling upon one of the iron boiler tubes and adhering thereto, causes both a deposition of copper and absorption of iron. Being insoluble, its action is confined to the surface of contact, hence the small holes characteristic of this kind of injury. Copper, however, it is found, will adhere only to perfectly smooth iron, and since boiler tubes are never in this condition, each deposit is quickly removed and a fresh iron surface continually exposed. Selden's apparatus, mentioned in the report of the engineer of the navy, as a preventative of this difficulty, consists in a long iron box fitted with a steam-tight cover and placed between condenser and boiler. The box is divided into compartments by diaphragms of felt, pervious to water, and the compartments themselves are filled with coke. In referring to the placing of alkalis in this filter, Dr. Kidder remarks that soda is of questionable advantage, and that lime is theoretically the best, and then when only need in connection with a fresh water boiler. At Heckler's mill, the condensed water, after leaving the filter, is treated with atmospheric air forced through it from below. The resulting water is perfectly free from taste or odor, and quite palatable. It seems possible that the hitherto insuperable difficulties in the way of freeing condensed water on shipboard from a certain unpleasant empyreumatic odor may be overcome by similar treatment.

THE DETECTION OF BLOOD SPOTS.—Sonnenchein states that tungstate of soda, strongly acidulated with acetic or phosphoric acid, throws down albuminoid matters from very dilute solutions. These precipitates, insoluble in a large excess of water, dissolve in alkalies, especially if hot. If defibrinated blood is treated with this salt, a red-brown precipitate is formed, which becomes clotty on boiling. All the coloring matter is precipitated. To detect blood spots by this means on clothing, the suspected portion is cut off; and after having been treated by distilled water, the filtered solution is precipitated with the above re-agent. The precipitate, washed and treated with ammonia, takes a reddish-grey color. If phosphoric acid be present, it must be carefully washed away before treating the precipitate with ammonia.

AN APPARATUS FOR DETERMINING THE INFLAMMABILITY OF PETROLEUM OILS INTENDED FOR ILLUMINATION. has been contrived by M. Gramer. It consists of a metallic cylindrical vessel closed with a movable cover, in the center of which is a hole. Through this hole projects a wick, which is inserted in a tube soldered to the bottom. Another hole in the cover allows of a thermometer being fitted into the apparatus, which when used is about two-thirds filled with the oil to be tested; the wick is then lighted, and as soon as any inflammable vapor is evolved, a slight puff takes place, which extinguishes the light, when the temperature marked by the thermometer is noted. The results are said to be very accurate, and the tests can be made in a shorter time than in the ordinary way with a water bath.

CLEANING GLASSWARE IN THE LABORATORY.—Dr. Walz thus describes his method of cleaning glassware used for chemical purposes: The vessel to be cleaned is filled, or, if large, rinsed with a moderately dilute solution of potassium permanganate, the contact of the liquid being prolonged till a film of hydrated manganic oxide has been deposited; the solution is then poured away, and the glass vessel rinsed with strong hydrochloric acid. Chlorine is then formed, but not enough to cause inconvenience; and acting in the nascent state on the organic matters, it speedily converts them into substitution products, which are soluble in the slight excess of acid or water.

ADULTERATION OF TEA.—This formed the subject of an extended discussion before the recent meeting of the British Association for the advancement of science. It was commenced by a paper read by Mr. A. H. Allen. He regards the estimation of tannin in the leaves as of the first importance. The amount of tannin in genuine black tea should be about 12.5 per cent.; if it falls much below this, either it has been exhausted and then dried, or it is mixed with foreign leaves. The next point of importance is the amount of woody fiber or rather of insoluble matter; this should not exceed 60 per cent. Green tea contains about 50 per cent. more tannin than black tea. The ash should be about 5 per cent.

DOMESTIC ECONOMY.

Oatmeal.

We propose to devote a short article to oatmeal and its uses. Perhaps this may be the more suitable, as the present price of breadstuffs is so very high that many who cannot easily afford to purchase wheaten bread in the quantity and of the quality which they have been accustomed to use, may be glad to hear of a substance at once good and comparatively cheap, by which it may be partially replaced. To a very great number of people the value of oatmeal is little known; although the prejudice against it, long entertained, as an article of food rather fit for the lower animals than for human beings, has of late, in some measure, given place to a more just opinion, especially amongst the educated classes, who are capable of appreciating the value of the favorable verdict of chemists and physiologists. It is now well known that no other kind of grain is so nutritious as oats; and the facility with which it is grown on soils not rich enough, and in situations not warm enough for wheat, recommends it very strongly, as fitted to yield a very considerable part of our food supply. Oatmeal is a principal article of food of the peasantry of Scotland, and until nearly the end of last century amongst those of the north of England.

In more ancient times oats formed the principal corn crop of most parts of England; but as agriculture improved and the cultivation extended, wheaten bread was naturally preferred by those who could afford it; the use of oatmeal became more and more limited to the poorer classes; and on this very account was as much as possible avoided by those who, in respect of wealth, birth, or profession, made pretensions of superiority. Another circumstance which greatly tended to restrict the use of oatmeal where it was formerly general, was the convenience with which wheaten bread could be procured from the baker's shop, a matter of especial importance when almost all the members of a family were employed in manufactories. The revived popularity of oatmeal has recently led to the exposure of different kinds of it for sale in bakers' and other shops, particularly in Scotland.

The grain of oats intended for human food is generally prepared by being ground into meal; although it is also used in the form of groats; that is, of grain denuded of its husk, and merely broken into fragments. Oatmeal is of two kinds—both common in all shops in which it is sold—fine meal, and coarse or round meal. For various purposes some prefer the one and some the other. There is no difference in quality, but merely in the degree in which the grain has been triturated in the mill.

Oatmeal is principally used in two ways, for the making of porridge and of oat-cakes. Porridge is a principal article of food of the Scottish peasantry, generally accompanied with milk, when milk can be obtained; although when milk is scarce butter is sometimes used, sometimes sugar, and sometimes treacle beer. For most people, in a sound condition of health, there is no more wholesome article of food than porridge and milk, none that contains a larger proportion both of flesh-forming and heat-producing substances; whilst to almost all who have ever been accustomed to its use, it is extremely palatable. Generally speaking, there is no better article of food for the nursery, none more likely to maintain a healthy condition of the stomach, or to give vigor to the frame; although there are exceptional cases, both among the young and among adults, in which the use of porridge is unsuitable, producing painful distension of the stomach and indigestion. Whilst the caprices of children ought not to be heeded in such a matter, the actual conditions of their constitution ought to be carefully observed and regarded. Porridge is in general made by simply boiling oatmeal in water, stirring all the while to prevent eingeing, and to secure the thorough mixture of the meal and water into a homogeneous mass, without knots. The quality of porridge very much depends on the amount of boiling which it receives. It cannot be too thoroughly heated. Imperfectly boiled oatmeal porridge is a very coarse article of food; and, unfortunately, much of the porridge used is of this character; and the porridge prepared for the nursery is often no better, through the carelessness of the servants who wish to get through their work with as little trouble as possible. It is not nearly so digestible, and therefore not so nutritious as porridge really well made. A common mistake in the making of porridge must also here be noticed, as tending much to the deterioration of its quality, the adding of meal by degrees whilst the boiling goes on, until the proper thickness is acquired; the result being that part of the meal is imperfectly boiled. The cook ought to know the proper proportions of meal and water—knowledge not very difficult to acquire—and mix them at once, so that all the meal may be equally well boiled. But it is to be observed that the water must be boiling before the meal is put in, which is not to be introduced in a mass, but, as it were, strained through the fingers, handful by handful, as quickly as possible.

Why is sometimes need, instead of water, for the making of oatmeal porridge, and affords a very agreeable variety to those in the habit of

using porridge every day. Milk porridge is another variety esteemed as an especial luxury by the Scottish peasantry, and is certainly both a very agreeable and a very nutritious article of food.

Whether fine oatmeal or coarse oatmeal should be used, for the making of porridge is merely a matter of taste.

The most hastily prepared and imperfectly boiled porridge is very superior to brose, yet brose is a form in which oatmeal has long been very generally used, at least in Scotland, and is still used by many of the agricultural laborers. It is made by merely pouring boiling water upon oatmeal and stirring it about. The result is a coarse, pasty mass, with numerous knots imbedded in it, of oatmeal almost raw; a very coarse kind of food, on which, however, with the addition of milk, many farm laborers mainly subsist, often using it as their only article of diet three times a day.

Oatmeal is made into bread by being merely mixed with water, kneaded, and rolled out, by a wooden roller, into thin cakes, which are baked on an iron plate (*Scottie, a girle*), suspended over a fire. Sometimes oat-cakes are made with hot water and sometimes with cold water; but those made with hot water are tougher than those made with cold water; which, if otherwise well made, are preferable. Much, however, depends on the kneading, and the question: "Is she a good baker?"—meaning a good baker of oatmeal—used to be a common one before the engagement of a domestic servant in some parts of Scotland.

Oat-cake can hardly be made too thin; the thinnest oat-cake is almost certainly the best. Oat-cake soon loses its agreeable character by imbibing water from the atmosphere; but if placed before the fire till dried, and cooled, it becomes almost as good as when newly made. With butter, or with cheese, it is a most agreeable article of food.—*Food Journal*.

WASH-HAND BASINS AND CABINET STANDS.—In fitting on the marble top, the portion at front should not be kept any broader than is necessary for strength, as it is disagreeable for the parties using the wash-stand to have to lean forward too far. In arranging the basin on the stool, the plumber ought, therefore, to see that at most the stool only projects about one-half inch beyond the outer top edge of the basin or cabinet stand. In setting cabinet stands and basins, the plumber generally uses putty, or a mixture of putty and white lead; and to make the putty adhere, the bottom of the basin is well rubbed with a softened piece of tallow, or a tallow candle, or the bottom of the basin may be heated and then rubbed over with the tallow.—*Manufacturer and Builder*.

HOW TO KEEP BUTTER COOL.—Get a large flour pot, plug up the hole with a sound cork and seal it. Now put a quarter-brick or other square, heavy body in the bottom, to serve as a support for a second, but smaller pot, which must be plugged up in the same manner. Place a dish under the outer pot, and cover with any cover you please, provided it be not metallic. Now fill the space between the inner and outer pot with water. The butter will keep as firm as a rock, as cool as a cucumber.

CLEANING LACE.—Point, or any kind of fine lace, may be cleaned easily by soaking it in a preparation of sapoline and warm water. If this is not procurable, ammonia may be used with almost equal effect. Let it soak till fit to rinse in pure warm water; then lay it on the ironing-board over clean linen, and iron lightly on the wrong side with a cool iron. Afterward pin the lace on the linen-covered board, inserting a pin in every open loop to keep the pattern clear.

A GOOD TABLE SAUCE.—Take one gallon of tomatoes, wash and simmer in three quarts of water until nearly done; strain through a sieve; add two tablespoonfuls of each of these spices, ginger, mace, black pepper, allspice and salt, and one of cayenne pepper; boil down to one quart; pour in one-half pint beet vinegar, and then pass through a hair sieve. Bottle in half-pint bottles; cork and seal securely, and keep in a cool place.

TO POLISH TINS.—First rub your tins with a dry cloth; then take dry flour and rub it on with your hands; afterwards, take an old newspaper and rub the flour off, and the tins will shine as well as if half an hour had been spent rubbing them with brick dust or powder, which spoils the handle.

FOR BLEACHING MUSLIN.—One pound of chloride of lime to forty yards of muslin; soak the muslin in soft water over night, melt the lime in a pot of water; then put the muslin in for half an hour; then rinse three times; soak in soft water over night; then hang out to dry.

FURNITURE OIL.—Mix half a pint of olive oil with one pound of soft soap. Boil them well, and apply the mixture to your oiled furniture with a piece of dry cotton wool. Polish with a soft, dry flannel.

TO CLEAN MARBLE.—To cleanse marble stained with iron rust, apply lemon-juice to it with a clean rag and wash with warm water. If soiled with dirt, wash it with soap and Paris white.

FLOOR OIL-CLOTHS.—Have the dust wiped from them often; but use soap and scrubbing-brush seldom, as they wear off the paint. Use no hot water.

MINING SCIENTIFIC PRESS

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San Francisco:

Saturday Morning, April 4, 1874

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Preservation of Fish.

The excellent game law drawn up by the California Acclimatizing Society was not passed by the Legislature, but on the last day of the session they passed the following law in reference to fish: It is entitled, "An Act to Amend Section 634 of the Penal Code," which, as amended, reads as follows:

Section 634. Every person who, between the first day of August and the first day of November, in each year, takes or catches any salmon, is guilty of misdemeanor. The possession of any salmon during said period shall be evidence of a violation of this section. Any person engaging, or having in possession, or offering for sale within three years from the passage of this act, shall be guilty of a misdemeanor.

Section 2. This act shall go into effect immediately.

Under this law the hatch already placed in our rivers ought to have a chance to increase in such a manner that there will be no danger of our fishermen exterminating them. Parties who have salmon in their possession must now look out as that in itself is evidence of a violation of the law.

The Kimball Manufacturing Company of this city have just finished a very handsome steam fire engine, the whole of which was made in this city.

The specimens of the State Geological Survey are being taken to the University, in accordance with a resolution of the Legislature.

The OROIMA mine, Amador county, is said to make \$6 per ton profit on \$7 rock, it only costing \$1 per ton to mine and smelt it.

New hoisting works are to be placed on the South Star mine, Washoe, for sinking a new working shaft.

BURLEIGH drills are in operation in the Gould & Curry mine, Washoe.

JOHN LAMBERT has been appointed Superintendent of the Europa mine, Washoe.

Discouraging Mining Operations.

How strange it seems that a large proportion of the population of this State should see fit to ridicule mining operations. Not only to ridicule and decry them, but to pursue the same course toward those individuals who carry on mining as a business. Because the shallow placers of California have been despoiled of their millions, and are no longer worked, this class of people argue that mining is a thing of the past. They totally ignore the vast hydraulic operations now being conducted in California; for the reason, perhaps, that they do not know anything about them. Yet, these same hydraulic mines will be worked by future generations; and will, fifty years from now, continue to pour forth a flood of gold. Not only is this class of mining held in low estimation by the ignorant, but the quartz interests of the Pacific Coast as well.

We find that the moment a mining enterprise is mentioned in the presence of many, they ridicule it at once, setting down the originator as visionary in his undertaking, or as a dishonest speculator in "wild-cat" stocks. Local itemizers and half-fed Bohemians seize with avidity upon any trifling occurrence upon which they can base a sensation article "ventilating the stupendous swindling transactions of mining corporations." In most of these articles, directors, secretaries and superintendents are handled without gloves, and represented as growing fat on assessments stolen from the pockets of gullible shareholders. All varieties of gross ridicule and caricature are indulged in, and, generally, the reader is left to infer that all mining incorporations are South Sea Bubbles—grand swindling schemes—and that most mines exist only in the imagination of the shareholders; and, furthermore, that all assessments are divided pro rata or otherwise among the sharp "insiders." These fallacious doctrines so generally incited, all have their effect on readers whose minds are not well balanced, and often prove a powerful lever in overthrowing the most beneficial of industrial enterprises.

We certainly have a right to expect that newspaper publishers, at least, should recognize the fact, that we owe our very existence, as Californians, mainly to our mines, and to discourage mining undertakings indiscriminately, is seriously ebbing our vitality. If it is their aim to encourage our people in their legitimate vocations, they should rigidly adhere to a course tending to the rapid development, rather than the retarding of our mining interests. Some of these would-be Sols talk learnedly of "fleecing the stockholders," "dishonest trustees, etc.," and publish articles advising people not to pay these assessments, (which by the way there is no law to compel them to do). It takes money to develop mines, as it does to start almost any other business; but some of these people think a mine should pay as soon as a pick is struck in it, which would be like a building paying rent when the foundation is laid. A building must be furnished before it yields an income, just as a mine must be opened before it will pay; but the difference is in favor of the mine, for something may be derived from it, however little, from the start.

Our great misfortune is, that we have in our zeal undertaken to develop more mines than we have capital to go on with. We want more capital to develop the new mines, as the old ones will take care of themselves. If assessments had not been paid where would have been the Crown Point, Belcher and many other mines, to-day? They would have been abandoned, and some of the richest ore bodies in the world would never have been brought to light. But to read some of our daily papers, Eastern and European capitalists, whose aid we require, might infer that by far the greater majority of our mines are "wild cat" speculations, and the trustees, superintendents, and presidents of the companies, a set of unscrupulous, grasping thieves, whose only business is to swindle stockholders. These charges are only made indiscriminately, and in general terms, the penny-a-liners being afraid or being unable to mention names; but the effect these foolish articles have on people who gain their information on these subjects from the newspapers is highly injurious to the State, and the whole Pacific Coast. Justice should be used at least to deserving enterprises; and, when dishonest transactions are brought to light, no class of the community will be more eager in bringing the guilty parties before the law than the people interested in mining operations.

STICKEEN.—The Collector of Customs at Victoria, informs those who contemplate a trip to the Stickeen mines, British Columbia, that no port on the Stickeen river, or on the north coast of British Columbia in connection with the Stickeen river, has yet been declared a port of entry by the Government at Ottawa, and that until orders to the contrary are issued by the Government all foreign goods intended for the mines at Dease Lake and its neighborhood, must be entered, and duty on them collected at one of the existing ports of entry in British Columbia.

COINAGE.—The coinage for March in the United States mint was: Double eagles, \$3,680,000; trade dollars, \$250,000; half dollars, \$28,000. Total, \$3,958,000. Total for nine months, including March 31, 1874, \$20,341,000.

The New Mining Bills.

The mining bills now before Congress, with all their provisions, amendments, etc., are at present in such a confused state that it is difficult to understand exactly what they are all about. But what is understood is bad enough. The debates on these bills have been lengthy and animated, and have been continued, off and on, for several weeks. The amendments offered by Holman of Indiana, and Negley of Pennsylvania, to the Mineral Patent Bill, are the most objectionable features, except Ward's bill, of which we have frequently spoken. On the 17th of last month Page reported back from the Committee of Mines and Mining, the bill which recently passed the Senate, providing that when applications have been made for patents to mineral lands, the final proof must be made within one year, or the proceedings shall be declared void, unless there is an adverse claim. The object of the bill is said to be to prevent mining companies from filing bogus applications, and keeping the land withdrawn from entry by failing to prosecute their claims.

The amendment to this bill offered by Holman is as follows, in Section 1st: "Providing that nothing herein contained shall affect or make void the proceedings for patents held by applicants for claims on mines on the Comstock lode in the State of Nevada. Nor shall it be construed so as to repeal or impair, or in any way affect the provisions of the act granting Adolph Sutro the right of way or other privileges to aid the construction of the draining or exploring tunnel to the Comstock lode in Nevada, approved July 25, 1866."

Negley's amendment, or substitute resolution, is as follows: "And provided further, that persons, companies, or corporations, owning claims or mines on said lode shall make application for patents within six months from the date of the passage of this Act; and in the absence of a bona fide advertised claim during the notice, make final proof and payment, and file a receipt for such patents, in the same manner as hereinafter provided, within six months from the date of the filing of such application; or if already filed from the date of the passage of the Act and in default thereof, or in default of filing with the Register of the Land Office at Carson City, in all cases where patents have already been issued or the acknowledgement of receipt of such patent is subject to the conditions within twenty-one days from the passage of this Act, such claims for mines shall be open to relocation by other parties in the same manner as if no location of the same had ever been made; always subject, however, to the conditions of the Sutro Tunnel Act, approved July 25, 1866."

On the first instant the House, by a vote of 96 to 116 refused to lay on the table the Mineral Patent bill with Negley's amendment. The bill, as amended, was then passed.

The Ward bill is still being discussed; not having been reported back by the Committee on Mines and Mining. Mr. Sutro has made a very strong fight in getting this amended bill passed. A large and enthusiastic meeting of citizens of Virginia City and Gold Hill, was held on the twenty-eighth, when resolutions were adopted denouncing the Negley amendment. The third resolution reads as follows:

That the passage of the amendment will destroy confidence in the mining interests of Storey county; will retard the work of development and prospecting on the Comstock lode; will discourage those by whose energies deep mining is being carried on; will drive away capital; will depress labor; will depreciate the value of real estate; will tend to annihilate business, and will, in all things, be to each of us a great and lasting calamity.

CONSOLIDATED VIRGINIA.—During last week this rapidly improving and important mine turned out 1,525 tons of ore and shipped 1,432 tons to the mills. A letter from the Superintendent, dated the 29th, says: "Sinking the shaft below the 1,400-foot level is making rapid progress. The south drift on this level is now 72 feet south from the station, and is being run direct towards the drift, now being run from the north winze on the same level. The west drift on this level is now 41 feet west from the station and has not yet reached the west vein. The drift from the winze, run to connect with the south drift from the shaft on this level, is making good progress and continues in excellent ore. The east crosscut from the winze on this level is now advanced 12 feet in fine ore. On the 1,300-foot level the work of extending the ore breaste north and south is continued. The ore in all parts continues of the same good quality. The east crosscut 100 feet north of the ore breasts, has now penetrated the ore to a distance of 32 feet. The quality of the ore disclosed in cross drift is very choice. The drift running south from the ore breaste to connect with the south winze has been extended 25 feet within the past week. The raise from the 1,300 to 1,200-foot level is completed and thoroughly ventilates the former level. The roads have improved, and two additional miles have been secured to reduce our ore."

MINING ACCIDENTS.—Last week John Stevens was caved in and instantly killed in a cut leading to a mining claim, near Angels, Calaveras county.

Martin Barry was killed in the White Rock claim, Brown's Flat, Tolueme county, by the fall of a derriok.

Close of the Legislature.

The 20th California Legislature closed its session on Monday last. Something like 2,000 bills were introduced during the session, by far the larger portion of which were either killed during their progress, or will be suffered to die in the conveniently spacious pocket of the Governor. The first half of the time was frittered away, as usual, in short sessions, long debates and frequent adjournments. As a consequence, the chief part of the business was forced into the last few weeks, and then hastily put through, and much of it too late to allow the Governor opportunity for consideration within the constitutional limits for affixing his signature. As a further consequence, the work of their preparation, whether good or bad, is lost. The Governor, however, seems determined not to allow hasty legislation to be forced upon him, and will sign such bills only as reach him in time for full and careful examination.

Our system of legislation is very faulty, in assuming much that might properly be left to the action of the several counties, in which they alone are concerned. Probably one-half of the business which comes before the Legislature could better be attended to by the various Boards of county and city Supervisors, and at a mere moiety of the cost now entailed.

If all that was desired has not been accomplished, we have, at least, the satisfaction of knowing that the session has closed without the passage of any especially injurious bills. The few tending in that direction were fortunately passed so near the close of the session that the Governor will be able to quietly kill them by simply withholding his signature. The House, generally, and the newly elected members of the Senate—those which are freest from the people—have generally stood up manfully for the right, and interposed a successful barrier against all efforts to place unjust burdens upon the State. These same, although they have introduced several important measures of reform, have yet been unable to carry them through by reason of the perverseness of a Senate which has ignored the expressed will of the people, and manifested a determination that as little should be done in the way of reform as possible.

One of the marked features of the session has been the small encouragement given to lobbyists. We trust that the severe measures adopted in one instance will be sufficient to discourage all future efforts in that direction.

The new Apportionment Bill, and the determined efforts everywhere manifested on the part of the people to free themselves from the little knots of the politicians, in the several counties, who have heretofore managed to control nominations, will undoubtedly make a pretty clean sweep of all obnoxious individuals from the next Legislature. Give us Senators and Assemblymen taken from the farm, the workshop, the counting room, with a small end carefully elected few from legal circles, and we shall have a Legislature two years hence through whose action taxes will be largely reduced, and reform measures, wherever needed, assured.

The Apportionment Act; the Fence Law; the submission to the people of the question of a Constitutional Convention; the Local Option Law, and the abolition of the extravagant City Hall Commission of San Francisco, are among the most healthy and important general measures secured during the session. The efforts to remove from the people the onerous and onerous burdens imposed upon them by an exacting railroad monopoly; the attempt to secure some general system of irrigation, and the lack of success in securing a reduction in the salaries of officers—State and local—are the marked failures. These matters, together with the passage of a few good, and some indifferent laws of general interest, and more of a local or private nature, added to the defeat of several great and small "jobs," constitute the record of the Legislature just closed—not a bad one under the circumstances.

Perhaps one of the largest "jobs" put up during this session was the scheme for the purchase of the Spring Valley Waterworks of this city. As introduced it would have robbed the city of several millions of dollars for the benefit of some half a dozen men. We read that the bill has been passed and approved by the Governor—"as amended." We have not seen the "amendment"—and therefore cannot speak with knowledge of its character; but we are fully persuaded the Governor would not have signed any bill for a water franchise purpose which failed to secure the city the fullest power to protect itself against any scheme for plundering the people.

WORKING OLD GROUND.—The superintendent of the Birdseye creek claim writes to the charet holders in London that he cleared up \$8,000 in 20 days' run from ground in the Neece & West claim that had been wholly drifted and milled by the former owners. This result is a good one, and is an earnest of what may be expected when the good ground is passed through.

At the Raymond & Ely mine they are reopening the second and third levels east of the shaft, believing that ore has been left in many places along the sides of the vein, and that much of the filling will pay to take out.

The Golden Chariot mine shipped \$14,100 on the 30th ult.

A New Method of Measuring the Velocities of Tidal and River Currents.

The facilities demanded by an increased traffic and travel on the rivers, bays and oceans within the last quarter of a century, have directed the energies of nations to the study and improvement of harbors and rivers, and the bars at their entrances. In studying shoals and bars, the mind, going from effect to cause, has been naturally led to the all-important subject of tidal and river currents. This subject has not only engaged the talents and energies of master minds, but has furnished data which are fast growing into a most instructive and useful science—that of "Physical Hydrography."

Seeing the inadequacy of the current meters now in use for furnishing data of the desired accuracy and minuteness, Mr. T. J. Lowry, of the U. S. Coast Survey, has sought to remedy it; and conceived the idea of weighing the velocities of currents by an elastic force, as that of springs. The spring used may be either a spiral spring, as we have in the spring balance, a coiled spring, a straight flat spring, or two curved flat springs, as we have in the spring dynamometer. In the form shown in the accompanying cut, a spiral spring is used; *b*, is a weighted hollow copper sphere; *a*, is a floating sphere; *d*, is a spring balance with an extra pointer, one end of which presses against a moving row of teeth, which are connected with the rod passing through the hollow of the spiral spring; and the opposite end of the pointer points out on the graduated arc the tenths, hundredths and thousandths of each division of the scale. The whole divisions of the scale moved over are shown by the small pointer, *c*. The upper one of the small copper wires connecting the spring meter, and the weighted sphere, *b*, passes over a revolving wheel, at *a*, where there is fixed a spring nipper, for the purpose of adjusting the sphere, *b*, to any required depth, as one, two, three, fathoms, etc.—the spring nipper being so connected with the boat as to be manipulated therefrom. The spring current meter is in the anchored boat with the observer.

It is obvious that with the connecting wires, as shown in the figure, that we do not get the full measure of the horizontal pressure of the current directly from observation, but in obtaining it from the observed data, we have simply a question of the resolution of a force into its horizontal and vertical components; and by very simple mechanical considerations we readily convert this weighed pressure into velocity. But if we have the wire which connects directly the meter with the sphere, *b*, passed down the anchor line, (by a traveller), to the same depth as the sphere, *b*, is sunk beneath the surface of the water, we then get directly from observation, the horizontal pressure of the current, impinging against the sphere, *b*.

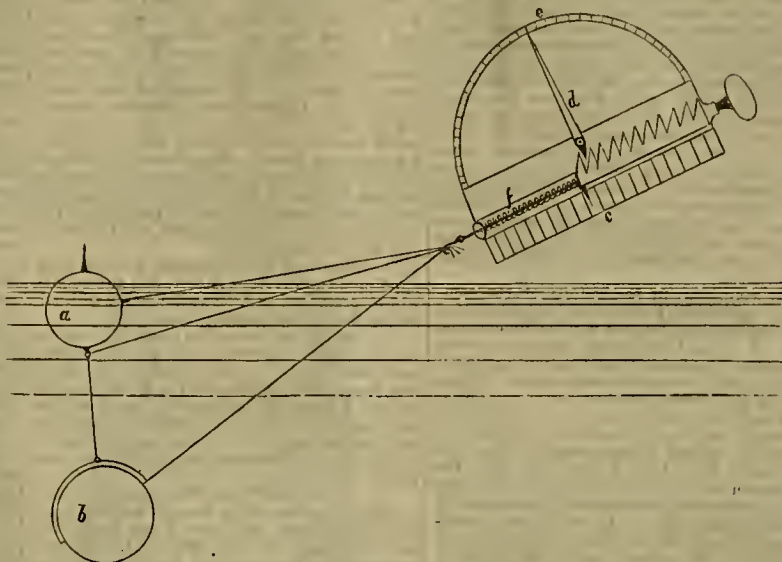
Mr. Lowry made this apparatus self-registering by attaching a pencil or pen to the small pointer, *c*, so that its point will press against a revolving cylinder, or a revolving flat circular disc, covered with paper, ruled with concentric circles, the pencil moving, by the action of the spring, either parallel to the axis of the cylinder, or directly towards and from the center of the disc. The revolving cylinder or disc, is driven by a strong coiled spring and regulated by Hipp's chronograph regulator.

In making current observation the objects are three-fold; first, *velocity*; second, *epochs of slack water*; third, *direction of flow*. With the apparatus now proposed, we may weigh the velocity of a current with a delicate spring balance (the feeblest the current the more delicate the spring). This balance will also indicate most accurately the *epochs of slack water*. The *direction of the flow* is found by measuring the angle between the surface float and some determined object; the position of the anchored boat, of course, having been previously determined by angles, ranges, bearings, or distances. With this apparatus we can obviously regulate the sphere, *b*, to different depths, and get the velocity at each, without shifting the position of the boat or floating sphere, *a*; and hence, can get current observations with much more ease, expedition and accuracy, than with the apparatus ordinarily used. It will thus measure the velocity of currents at any reasonable depth, only reaching its limits where the water is so deep as to give the connecting wires an extent of surface, which, exposed to the current, may require consideration in the problem.

With the current meter which is in general use it is necessary, in order to get accurate results, that straight portions of the water-way be selected as stations; but with the meter now proposed, currents can be measured with equal accuracy in the most tortuous channels as in the straight ones. And, moreover, we get our observations of the velocities of currents at any desired point or points, and not the mean of the currents along a quarter or half-mile reach, as we do with two connected balls (one floating at the surface and the other beneath it) set adrift and followed up by a boat. And this spring meter will also be found well adapted for detecting and studying those surface and sub-surface currents and counter-currents which build in one direction—shoals, beaches and bars, whilst opening elsewhere new channels or wearing away the shores. And in studying the problem whether a bar is the result of natural forces now in operation or the effect of past conditions; whether if removed it would form again—that is, detecting its equilibrium point, if it has

any—this apparatus offers marked facilities for expedition and accuracy.

In making a composition of the currents observed simultaneously around and on a shoal or bar, if we find the results taking directions towards the shoal or bar as a focal point, the conclusion is irresistible that the sand which forms this shoal is gradually swept together from the neighboring channels. And if the shoal or bar was dredged away it would form again, for sand banks will accumulate where the resultant of the current forces is zero. And inasmuch as these conflicting currents are ever varying in their directions and velocities, it becomes all important, in order to get the exact duration and extent of each of their phases, to



LOWRY'S IMPROVED CURRENT METER.

have a continuous record of it through its varied velocities, their extent, duration and direction. For at stations where the conflicting currents are violent, the slightest error of observation, or the want of observations sufficiently frequent may, by giving false results, lead us entirely astray. But with the self-registering spring meter for currents now proposed, we avoid this liability to error, since it traces out on paper a curve which is the faithful delineation of the velocities of a current and

makes the whole length of sluices 2,694 feet. The aggregate cost of tunnel, two shafts, sluices, etc., has been \$32,799. During the year the creek returned gross \$16,262 at a total cost of \$3,200; net profits \$8,062. That portion of the creek above the slip tunnel, of about 1,600 feet in length has been a receptacle for tailings for 10 or 15 years. The basin is formed by a rock barrier or shoal of 800 feet lengths in the bed of the creek. This bar at its upper end coincides with the slip. This ob-

Fig. 1

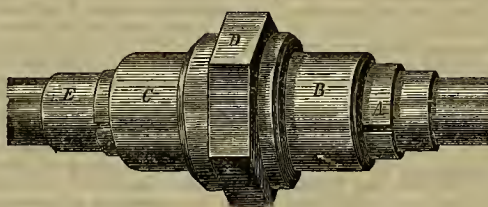
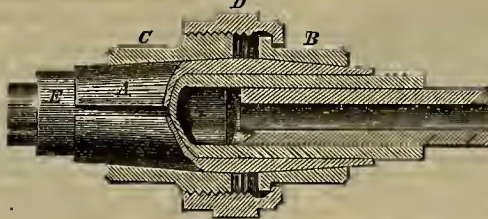


Fig. 2



DUNNING'S PIPE COUPLING.

their duration through its varied and ever varying phases. Thus we have the whole curve and not a series of points in it (with the intermediate ones to be interpolated by guess) as we have in the apparatus now in general use. With this spring meter we can get accurate measures of sub-surface currents even on very windy days; and since it gives continuous readings of the currents, it better enables us to study the effects of winds and freshets on them. What appeared before a tangled skein of disconnected and discordant facts, will, by using an instrument of this character, arrange themselves into harmonious wholes, the laws of the currents be unveiled, and the engineer enabled to project his improvements with a firm confidence of their success. Mr. Lowry, who is now stationed in this city, has devised several other forms of this instrument; but mechanical details are of minor importance, the main idea being to weigh the velocity of currents by an elastic force, as that of springs. The velocity of a current may be also weighed by balancing it against the force of gravity.

SMELTERS AT WORK.—Nearly all the smelters about Salt Lake, who closed down their establishments during the winter, are about starting up again.

Sweetland Creek.

The annual report of the Superintendent of the company, published in our late London Exchange indicates that from recent surveys the rich channel of ground will last at least, double the time anticipated. After a run of 5t days a clean up of \$25,000 was made of which \$14,000 was net profit, a satisfactory result for the first run of the season. During the year the new tunnel was run 355 feet, and a shaft 75 feet deep raised to the surface. The tunnel sluices have been extended 664 feet making the whole length of tunnel sluices at 2,724 feet, and 280 feet of outside extension added to this

of the Milton Water company not having been completed, the water supply of the company fell short, even when it lasted and the seam was cut short for months by the entire absence of water for that length of time. The superintendent expects a continuous supply of water this year. The full complement of water is 1,500 inches; whereas, last year when running they only used 800 inches, the profits were reduced. Considering that the dead work of the creek is at an end, and that the tunnel is to be driven only from one face, will lessen materially the profitless labor of the mine. Should the water supply hold out and the quality of gravel remain unchanged, they expect larger returns and profits this year. We most earnestly hope that all the expectations of our English friends will be realized.

Dunning's Improved Pipe Coupling.

This invention, perspective and sectional views of which are represented in the annexed engraving, is claimed to provide a simple and cheap union or coupling for gas, steam, and water tubes, which may be applied even in long lengths of continuous straight pipe. It will also serve as a sliding or compensating joint to allow for contraction and expansion, and will, besides, prove useful when it is desirable to connect the ends of pipe in situations where threads cannot be conveniently cut thereon.

A, is a conical sleeve, cut from end to end, as represented in Fig. 1, or if desired, divided longitudinally into two separate portions. It is bored out somewhat larger toward the center, so as to insure a bearing at the ends around the pipe when closed by the collars, *B* *C*, which are also bored to correspond with the conical shape of the sleeve. The collar, *B*, is flanged to receive the threaded coupling ring, *D*, to which it is swiveled as indicated in the sectional view. Collar, *C*, is provided with a thread upon which the ring screws. The joint between the ends of the pipe is thoroughly packed by a section of rubber, *E*, or other suitable tubular packing.

To adjust the device, the extremities of the tube are thrown out of line, and the sleeve, *A*, containing the packing, *E*, and upon which the collars and ring have been placed, is applied to one end. The pipe is brought in line, and the rubber tube, with the other portions, is brought over the joint so as to overlap the two extremities equally. The ring, *D*, is then screwed up, drawing the two collars together upon the inclined surfaces of the conical sleeve, thereby compressing it firmly against the packing.

This coupling can be manufactured very cheaply of malleable iron, as all the parts can be cast of the necessary form and size for different pipes, and require no finishing or fitting except cutting the screw. It is claimed to cost no more than the ordinary union coupling, except the expense of the pliable hose for the packing. It makes a perfect slip joint as well as a good coupling, and will be found very useful for plumbers in repairing split pipe in places where a die cannot be used to cut threads on the pipes, or where the latter are close to the walls or among joists in buildings.

For further particulars address the inventor, Wm. B. Dunning, New York Central Iron Works, Geneva, New York.

MINING PATENTS.—Commissioner Drummond recently received a letter from Gray & Haven, of San Francisco, asking whether the Department would permit parties who own several mining claims adjoining each other, to make one application for a patent to all the lands in one tract, instead of separate applications. He has responded officially, that in all such cases, each claim must be separately surveyed, notices posted on each tract, and record proved separately. Also, it must be shown that five hundred dollars have been expended on each claim. Then, if the claims are adjoining, one application for a patent may be made to cover the whole tract. But this will not be granted when the claims are remote from each other, the only object being to allow patents to issue with as little cost as possible.

"MINERAL KING" DISTRICT.—The new mining district in Tulare county, called the "Mineral King," has been exciting considerable attention of late. A company has been organized and is now building a road from Visalia to the new mines, which lie (as near as can be ascertained) at the base of Mt. Whitney. The mines are about 45 miles from Visalia, as the pack road lies, which has been completed to within 5 miles of the claims. It is utterly impossible to reach the mines at present, on account of the snow, which lies on the mountains from 15 to 20 feet deep, and will continue to do so, for two months to come. From all accounts the mines are very rich and will yield well, as some of the ore which has been assayed in San Francisco, went as high as \$500 to the ton.

While excavating for the foundation of his new mill at Benton, Nevada, A. B. Williams unearthed three bars of bullion, weighing in the aggregate nearly three hundred pounds. It is supposed that it had been stolen.

The recent reduction in price of water used in the American gravel mine, near San Juan, Nevada county, from 16½ to 8 cents an inch, is said to save that company not less than \$150,000 a year.

Separation of Gold and Silver From Lead.

But little is known, to those not engaged in the business, of the methods employed in this country for separating gold and silver from impure lead; and we believe the following facts, gathered by our reporters, will be found of interest.

Two grades of impure lead are exported from Utah to the Eastern States for refining. The impurities are gold and silver, which communicate a superior hardness to the lead, and also increase its fusibility. These ingredients, however, do not exist in sufficient proportion to warrant the application of the cupel process, or rather the loss of lead would be so great as to make the operation too expensive. The lowest grade contains 80 ounces of silver and 1 of gold to the ton; the other grade known as the R. C. M. bullion contains 120 ounces of silver and four of gold per ton of bullion. Besides these components, certain proportions of antimony and occasionally a trace of arsenic enter into the composition of the bullion.

The bullion is first placed in kettles and melted to refine it. In this process the dross, which rises to the surface of the metal during the melting, contains the greater part of the impurities, such as antimony, bismuth, etc. This dross is afterwards refined separately in an appropriate furnace. This having been removed the melted metal is drawn off into a larger kettle. It is thence removed to other kettles, and a certain proportion of zinc added, the quantity bearing a fixed ratio to the quantity of silver already in the metal. In the working of each sample of bullion a preliminary assay is necessary to determine the proportion of silver.

When the metal is melted with the zinc, a slow fire is employed; and as the process goes on, an alloy of silver and zinc rises to the surface. The latter is skimmed off and placed in a plumbago crucible, provided with a neck similar to a retort. The crucible is then placed in one of Du Faur's furnaces, which is so arranged that it can be tilted by the aid of a wheel attached to the furnace. The zinc is here distilled off, and condenses in the tube or neck which is attached to the crucible. A part of the zinc is driven off as oxide, and this is lost, but about two-thirds of it sublimes in the neck of the crucible. When the tube is removed, the zinc is withdrawn therefrom, and used in a similar operation. It will be remembered that silver melts at about the same temperature at which zinc is volatilized. The metal remaining in the crucible consists of gold, silver and lead, the latter in small quantity. This having been withdrawn the precious metals are separated from the lead by cupellation. The resulting gold and silver are then run into ingots, and the silver removed by nitric acid, or by whatever method may be most convenient. In this mixture of gold and silver, gold forms from one-half to one and a half per cent. Some idea of the magnitude of the operation may be formed from the following facts regarding a large establishment. They claim a weekly production of silver of about 12,000 ounces, and a proportionate quantity of lead. Generally the process returns about 89 per cent. of the lead which was in the bullion at the commencement of the operation. They use cast iron kettles in the process of separating the silver from the lead by the aid of zinc, each capable of holding two tons of bullion. Twelve of Du Faur's tilting furnaces are used, each capable holding about 250 pounds of metal. Four refining furnaces are used, two capable of a charge of six tons each, one of twelve tons and one of sixteen tons. *Salt Lake Tribune.*

A RICH STRIKE IN THE K. K.—We are pleased to be able to chronicle a really remarkable strike in the second level of the K. K. mine. At a depth of 154 feet, beneath the revine, and a little northeast of the old Mercedina shaft, there is found an exceedingly large mass of low grade ore, the sure precursor and indicator of pay ore. Through this vein matter the drift was pushed, and on Saturday last pay ore was struck. Up to date the level has been driven steadily forward, through the ore, a distance of 40 feet, and the hanging wall has not yet been reached. Of this 40 feet of ore, more than half, is first-class, yellow, gray, and black carbonates, and the remainder good second-class ore. It is the intention of the manager to continue the present drift until the true width of the new body is shown, and then to sink a winze to connect with the third regular gallery, which has already been started. The body recently struck is, doubtless, the continuation of the main Mercedina ore shoot, which can be followed back to the first level, a distance of more than 100 feet on the incline. The great widening of the ore is first made apparent at the second level; and, should the present body hold out, which all indications warrant us in believing, the K. K. company will have need of all the furnaces it can construct during the coming summer. This strike is a matter of congratulation, not only for the stockholders of the company, but also for the whole district, as furnishing still another proof, if such be necessary, not only of the large amount of ore in our mines, but of their permanence and growing wealth as the depth of the mines advances. —*Eureka Sentinel.*

Plumas County Indians are making money by packing provisions to the miners living in the creeks and camps where there is no road open.

The Sibirian Coal Mines.

A company was recently formed in this city, for the purpose of working some coal mining property in Ignacio valley, Walnut creek, Contra Costa county, about four miles from Pacheco. The company, known as the Sibirian Coal Mining Company, has a reported stock of \$3,000,000, divided into 60,000 shares. This company proposes that, to parties purchasing ten shares of stock, it will furnish coal from their mine at a reduction of 20 per cent. from the current wholesale prices in this city. Mr. Henry Degroot, who made an examination of the company's property, speaks in his report as follows concerning the geological formation: The rock in the vicinity of the company's ground consists chiefly of heavy masses of gray sandstone, in which occur numerous seams of carboniferous matter. Some of these seams are very thin, while others are of considerable size, the whole of them being accompanied with fire-clay, pipe-clay, bituminous shale and slate. Belts of limestone and a gritty conglomerate rock also make their appearance in the neighborhood, these latter being very often constituent parts of the true coal measures. The sandstone here makes its appearance above ground in many places, an enormous reef of this material crowning the ridge that overlooks Ignacio valley, and along which it can be traced by the eye for several miles.

The sandstone in the vicinity of the company's exploratory works seems to be permeated with carboniferous veins of various dimensions. Some of them being mere streaks, scarcely more than discoloring the formation in which they are embedded, while others show a thickness at the lowest points to which they have been exposed for nearly two feet. Along the course of the tunnel, run in for a distance of more than 100 feet, a great many of these minute veins have been intersected, while the stratum on which the principal shaft has been put down is fully 18 inches wide at a point 30 feet below the surface. It stands nearly vertical, and though not over eight inches wide on top, is found to gradually expand till it reaches the above dimensions at the lowest point to which it has yet been laid open. In a second shaft, sunk a few hundred yards to the southeast, and further up the ridge, a still thicker but less concentrated body of coal has been developed on about the same level as that below. The first seam spoken of is very compact, displaying a continuous sheet of solid coal to a depth of 26 feet, the top of it having been covered over with about four feet of alluvium. Slight excavations at several other localities in the neighborhood, reveal small veins; stringers and like indications of carboniferous deposits, the sandstone, shale and similar evidences of true coal measures being everywhere present.

This coal is a species of lignite, which presents the same general characteristics as that of Mount Diablo. It contains few impurities, and ignites easily. According to analysis by Dr. O. A. Henry, it carries about 45 per cent. of fixed carbon, 35 per cent. of volatile matter, and 25 per cent. of water and ash.

Butte Mountain--Great Mining Enterprise.

Of the numerous enterprises to be prosecuted in this section of the State the present season for the development of our vast mineral resources, says the *Calaveras Chronicle*, the prospecting of Butte Mountain by tunneling, stands prominent in importance. A short time since Mr. George Kelton, in conjunction with a company of capitalists of San Francisco, located an extensive claim on the east side of the mountain at its base, about midway between its north and south extremities. A cut for the purpose of starting the tunnel is nearly completed, and when finished, a force of hands sufficient to keep the work in constant progress, both day and night, till the results of the prospecting are attained, will be employed. All the ravines and flats immediately surrounding the mountain, were among the most remunerative of our early worked placer mines, paying well close up to the farthest point that could be mined by sluicing from the ditch which encircles the base of the mountain. On all sides of this great "lead-mark" tunnels have been run and shafts sunk for the purpose of prospecting, and in nearly every instance gold in sufficient quantities obtained to justify more extensive developments. By the limited means already employed in prospecting the base, it has been ascertained that a basin of considerable dimensions lies underneath the mountain; that its rim, on either side, is quite extensive in height, and from every inclining point prospecting, a bed of gravel, with more or less gold, set in, which in many places has proved to be immensely rich, and which has been followed into the basin as far as the miners could possibly operate, in consequence of the great quantity of water met to contend with. The system of prospecting this important locality, as designed by Mr. Kelton—who is the superintendent of the enterprise—is to penetrate the rim at a low point, and then if the tunnel is not sufficiently low to drain the basin, erect the necessary machinery to fathom its bottom, and consummate the work of prospecting. Mr. Kelton's plan seems to be the only real practical method of successfully testing the mineral wealth of the mountain.

The Pactols gold mine near Smartsville is yielding \$800 per day.

San Juan.

The *White Pine News* has had the opportunity of perusing two letters from San Juan; one addressed to J. McManus and the other to Wiederhold and Hoag. The tone of these two letters regarding the merits of the San Juan country differs in this, that one condemns it entirely, the other says nothing in its favor. One says that there are more broke men than he ever saw at one place. The other says he shall get away if he can make a raise. The upshot of the matter is that Pöchers would do well to stay at home and make the best of dull times, rather than go to a country where they are worse off. We append some extracts from both of the letters:

TERRA AMARILLA, N. M., March 1, 1874.

We have now two feet of snow here; but the weather has cleared up, and it is quite warm and I think the snow will soon disappear. Forty miles south of this there is no snow, and has not been during the winter to lay on any length of time. A new county has been established by the Legislature of Colorado, embracing the whole of the San Juan mining county, called Laplata, and the county seat is fixed at a town called Howardsville, situated in Baker's Park near the mines. So this, in my opinion, lets out Animas or Albert City in the Animas valley, and Howardsville will be the place. The location is up in the mountains, and the site is said to be a beautiful one.

The officers of the new county have all been appointed by Governor Elbert, and the county will be organized as soon as the snow will admit of the officials getting there.

It is hard to tell where the travel will concentrate. Pueblo is striving hard for the spring trade and travel. Denver is making an effort, and Santa Fe is working for the Terre Amarilla route. I think the early spring travel will be over the latter route, as it is the most southern, and prospectors will be able to get into the mines at least a month earlier than by any other route.

DEL NORTE, February 26, 1874.

DEAR FRIEND:—This is the most poverty stricken country that ever I got into. The stock is dying with starvation. It has been snowing here the last four days without any stopping to it. This country is no good for a poor miner, where there is up at the mines at least 11 feet of snow now. I have never seen any country where a man can see as many broken men as there are in this Territory. You had better stay where you are. I expect to get back as soon as I can make the rifle. I'd sooner be in Minnesota at once than be in any such country as this. It is actually not worth ten cents to ten square miles.

Dry Wash Machine.

Mr. Le Niece, of this town, has invented and constructed an important mechanical contrivance, which he dubs by the suggestive name of a "Dry Wash Machine." The machine is composed of a hopper, a cylinder about three feet in length, two feet in diameter in the end next to the hopper, and three feet in diameter on the outside end; a screen about one foot below the cylinder; a table about a foot beneath the screen; a trough suspended to and beneath the table, and a fan behind and attached to the table. The placer dirt is put into the hopper, from which it is passed to the cylinder. The cylinder being smaller at the inside end than the outside, "throws its own refuse," or in other words, the coarse dirt all passes from it to the ground, the fine dirt, containing the precious "sand," falls on the screen, which is kept constantly in motion, thus helping the gold to free itself; from the screen the fine dirt falls on the table, also continually in motion, and from the table it is passed into the trough containing the quicksilver. During this sifting process, the fan is kept continually turning in such a manner that it blows a current of air constantly across the table towards the trough, thus blowing even the slightest particles of dust into the trough and quicksilver.

The machine is about six feet high, four feet long, and weighs about one hundred and fifty pounds. It can be taken apart and packed in a small compass, inside of five minutes. Of course, as its name indicates, it is intended to use in dry placer mines, where water cannot be procured. If the invention works according to the expectations formed of it, it will certainly enrich its ingenious originator. We hope it will. —*San Bernardino Guardian.*

THE PANAMINT MINES.—The *Inyo Independent* says: We have in our possession a specimen of Panamint chloride ore which is certainly as rich as anything of the kind we have yet seen. This specimen is out of a three-foot ledge, all of the same general quality; the name of the mine we did not learn. This ledge is opened to a depth of about twenty feet. "The Wonder of the World" is down sixty feet or thereabouts, and the developments in these and numerous others in the camp are said to be as flattering as any men could wish for. The ores evidently contain a heavy percentage of copper and other base metals, and will require scientific manipulation to insure satisfactory results, notwithstanding the fact that the actual assay value of very large quantities of them is away up in the thousands. Panamint is undoubtedly one of the most promising camps of the day. Its population at present is only about seventy, but we would not be in the least surprised if this number was increased to several thousand within one or two years at the most. No district apparently had a greater future before it.

Dome of the Vienna Exhibition.

A few weeks ago, Mr. J. Scott Russell, C. E., read a paper at the Royal Institute of British Architects, "On the Central Dome of the Vienna Exhibition Building." After a few opening remarks, in which the lecturer explored the general principles of public works executed by engineers, and expressed his hopes that the rising generation of architects and engineers would derive mutual advantage by an interchange of special studies, and by a closer alliance of their individual professions, Mr. Russell proceeded to describe in detail, the curious and interesting structure which formed the subject of his paper. The iron dome, or rather cone, at Vienna, may fairly claim to be the largest vaulted roof in the world. It occupies nine times the superficial area covered by the dome of St. Paul's, eight times that of St. Peter's, at Rome, and seven times that of the dome of St. Sophia, at Constantinople; in other words, it is no less than 360 feet in diameter, and 1,080 feet in circumference. It is carried on 30 columns, erected at intervals of 36 feet all round. The cone is raised at an angle of 30 degs., the length of the slope on all sides being 200 feet. The roof is formed of 360 iron plates, tapering uniformly upwards from the circumference to the apex of the cone. These are riveted like the plates of a ship, each row of plates covering one degree of the circle, and each bottom-plate being one yard wide between the lines of rivets. The conical roof thus constructed has no visible external wall, but is surrounded by a circular building, which may be described as the central nave of the Exhibition, carried round under the outer circumference of the dome. The roof, therefore, as seen from outside, crowns the large low buildings by which it is surrounded, and seems to grow out of them. Passing on to the mechanical principles of conic dome structures in iron, Mr. Russell proceeded to describe the nature of the material and the various modes of its application, giving statistics as to the strength of iron, under tensile and compressive forces, respectively. From these he argued that the conic form in certain proportions makes the cheapest and strongest roof on the largest possible scale, consisting as it does of the minimum of material disposed in the most advantageous way. In dealing with this portion of his subject, the lecturer caused some amusement by boldly questioning the advantage of employing girders and roof trusses of the most usual and accepted forms, alleging that they were "mere modifications of ingenious waste," whereas every atom of iron in the Vienna roof did its own work without counteraction, disagreement, or redundant strength. Mr. Russell then gave a mathematical analysis of the method on which the dome was constructed, describing how and why he had eliminated from its design every particle of superabundant material. He recounted the various accidents which might have effected its stability, and showed how he had provided against them, declaring that the cone would stand after it had been pierced through all over, even supposing its outer and inner rings cut through and the outer chain of the cone itself severed. He expressed his belief that only complete disintegration could bring it down, and that it would cost more time and labor to destroy than to construct it.

LINCOLN COAL MINE.—The *Grease Valley Union* gets from Mr. Thomas Paterson, of that place, some facts about the Lincoln coal mine. Mr. Paterson is an old coal miner, having worked for years in the coal mines of England, and is a good judge of such things. He pronounces the Lincoln article to be "lignite." It is similar to the Rocky Mountain coal, but is not quite so hard. The greater age of the Rocky Mountain article gives the greater hardness. The surface of the Lincoln coal is about 58 feet deep, and the thickness of the layer is about 9 feet, perpendicular. The horizontal thickness of the deposit is not yet known. Both above and below the deposit are beds of sand—the coal being sandwiched between layers of sand. This Lincoln coal, when dry, makes a splendid fuel. One ton of it is equal in heating capacity to about one cord and a half of good pine wood. It is coating now about \$2.50 a ton to mine and hoist the coal to the surface. This expense will soon be lessened. The company have now about 500 tons of the coal on the surface of the ground. The Lincoln coal mine promises not only to be a paying institution to its owners, but also a great advantage to the industries of those portions of the State which can be reached by railroads or navigable water. Messrs. James & English, blacksmiths, after a practical trial of the coal, are of the opinion that it may do well in a forge, for the working of iron. They will soon give it a more thorough test, and enough of the article has been ordered for the trial.

MINING SUIT.—David W. Gillet has instituted suit against the Keystone Consolidated Mining Company of Amador, in the Twelfth District Court, and for cause of action alleges that he was the owner, under a State grant, of the land on which the company is mining, and that the company in March, 1872, entered upon the land and ejected the plaintiff therefrom and began mining thereon. He alleges that from March 27th, 1872, until March 26th, 1874, the company extracted gold-bearing quartz from which \$288,000 in gold have been extracted, and are still taking out large quantities of auriferous rock. He asks for a decree declaring him the owner of the property and for \$500,000.

The Sutro Tunnel.

Yesterday, in company with Mr. R. S. Raw, says the Gold Hill News, we made a trip over the line of the Satro tunnel. Considerable snow was encountered on the west end of the line, but on the eastern slope of the mountain the road was dry and dusty. From the summit of the mountain the out-look to the eastward is magnificently grand. At our feet lay the town of Satro, its streets laid out with mathematical exactness, the whole wearing a look of dreamy repose. In the distance the Carson river was discernible, its grass covered banks being lined with stately cottonwoods. No work is being done at present at shafts Nos. 3 and 4.

At Shaft No. 2

The work of sinking is progressing at the rate of from 20 to 25 feet per week. The shaft has already attained a depth of 985 feet, and only 60 feet more will have to be sunk in order to reach the tunnel level. Considerable water has been encountered in the shaft during the present week, but the pumps have been able to handle it. It is expected that the work of sinking this shaft to the level of the tunnel will be completed in about three weeks. A gigantic air compressor for this shaft was recently shipped by steamer from Kalk, Belgium, and will shortly arrive in San Francisco. It will be used in driving Burleigh drills. The work of tunneling from this shaft will be carried forward in an easterly and westerly direction.

Shaft No. 1.

At shaft No. 1 we met our old-time friend, Mr. J. B. Pitchford, a very companionable gentleman and a splendid mechanic. He had just completed the task of placing in position one of the largest and most powerful donkey-air compressing engines on the coast. It was manufactured by J. C. Cockerell & Co., Belgium. The entire weight of the machine is 98,000 pounds. The bed-plate is 36 feet in length; diameter of cylinders, 18 inches, with four-foot stroke. While we were at the shaft Mr. Pitchford got up steam, and set the huge cyclopaean affair in motion. It was evident even to our unmechanical eye that the "compressor" possesses a vast amount of energy. It will be used in widening out the tunnel and in driving Burleigh drills, twenty of which will shortly be placed in operation. The "compressor," which is stationed at the surface of shaft No. 1, 500 feet above the tunnel level, is possessed of sufficient power to drive the Burleigh drills when working a mile away. At present the header is advancing at the rate of about 120 ft. a month. The header is in a distance of 5,760 feet, or 900 feet past shaft No. 1, and is in hard rock.

Miscellaneous.

The number of men in the employ of the company is over 100. The work of running the tunnel is being carried on under the management of the following named officers: Superintendent, F. A. Benjamin; Foreman in charge of header, A. B. Jackson; Master Mechanic, J. B. Pitchford; Chief Accountant, J. R. Johnson; Paymaster, D. J. Bonfield; Surveyor, A. D. Foote; Foreman at shaft No. 2, J. C. Blunt; Post Surgeon, Doctor M. McPherson. After a short stay at shaft No. 1, we proceeded to the mouth of the tunnel, where we had the pleasure of meeting Mr. Benjamin, Superintendent of the company, and a half-dozen other gentlemen employed in some official capacity. Mr. Benjamin is a genial, whole-souled gentleman, possessing a large amount of vim and an abiding faith in the success of the tunnel enterprise. While at the mouth of the tunnel we took a stroll through the machine shop, which is fitted up with a fine lot of machinery. On the floor of the shop we noticed a couple of the celebrated Burleigh drilling machines. They are somewhat complicated, being composed of at least 150 pieces each, but are more effective than any of the battering rams of the ancients, and prove to be powerful auxiliaries in promoting mining enterprises.

Town of Sutro,

As already stated, presents a very quiet appearance. In company with Messrs. Ross E. Browne, Johnson, Foote and McPherson, we partook of an enjoyable meal at a restaurant kept by a lady whose name we do not remember. A school will be shortly organized in Sutro, with 30 pupils in attendance. An effort was made some time since, by Rev. J. Rawson Johnson, to found a church in the town, though he met with indifferent success. On a certain evening in which services were to be held, an eccentric individual called "Saul" went around the town and tried to drum up an audience by ringing a cow bell. After the audience had assembled, "Saul" changed his mind and refused to allow the services to go on.

Geological.

Carson Valley, in the vicinity of the town of Sutro, was originally an inland sea or lake. The soil is composed of the products resulting from the decomposition of the characteristic rock east of the Comstock, such as trachyte and greenstone. Three different river beds are distinguishable. Several varieties of water-shells are to be found in the valley, and in the foothills well defined water marks are apparent to the most careless observer.

Sutterley's Mine.

About 1½ miles north of Sutro, in August, 1873, J. K. Satterley discovered and located a mine on the edge of the valley, the ore taken from which was said to assay as high as \$9,000.

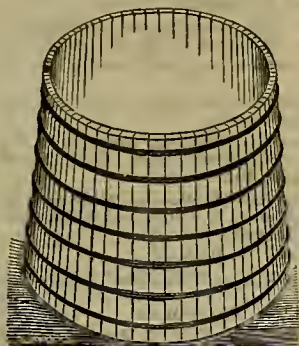
Sutterley located his mine on a large boulder, which, from its rounded appearance, must have rolled at least a mile. The owner of the mine piled up a row of rock on the south side of his claim as a boundary line, and another party, mistaking the same for croppings, located thereon an extension of 3,000 feet with all the dips, angles, spurs and sinuosities.

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Information Wanted of Ezra S. Gaver.

When heard from last, ten years ago, was at Pike's Peak, Colorado. Any information of him, or his fate, will be thankfully received by his brother, JOHN GAVAR, at 1309 Vallejo street, San Francisco. 25v27-3m

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(Continued from Page 213.)

YELLOW JACKET.—Sinking the main incline below the 1,540-ft. level is making the usual good progress.

FLORIDA.—Some excellent and very promising quartz has been passed through by the winze below the north drift, which gives very encouraging assays.

TYLER.—Sinking the main shaft is progressing at the rate of two feet per day, the rock in the bottom blasting bad.

WOODVILLE.—Still driving the north drift on the 300-ft. level, following the hanging wall with favorable indications of the development of a more permanent body of ore.

UNION CONSOLIDATED.—The north drift on the 1,300-ft. level of the Ophir is being pushed rapidly ahead toward the south line of the Consolidated in very favorable-looking ground.

SEGREGATED ROCK ISLAND.—A crosscut east has been started from the main north drift, which shows some very favorable prospects.

MINT.—The hoisting works building is about completed, the engine in place and everything in readiness to soon resume sinking the shaft.

MONTZUMA.—Sinking the shaft is making the usual progress.

ALPHA.—Still driving the north drift on the 1,500-ft. level, cutting occasional spots and streaks of ore.

ROCK ISLAND.—Sinking the shaft is making steady progress.

ELY DISTRICT.
RAYMOND AND ELY.—Picche Record, March 21: Sinking has been suspended on the main shaft. A station has been opened at the 1,200-ft. level. On the 1,000-ft. level they find some good ore on the foot-wall. On the 7th and 8th levels stoping is going on, and from 30 to 40 tons of ore is taken out per day. The mine is in excellent condition.

MEADOW VALLEY.—At No. 3 works the shaft has attained a vertical depth of 1,201 feet from the surface. From the 11th station drifts were being run east and west. From the 6th station a level has been run, showing a strong vein of quartz, but little ore. As this is intended for the main working shaft of the company's ground, more attention is being paid to sinking it as rapidly as possible than anything else. The mills of the company keep at work, realizing a fair amount of bullion.

PORTLAND.—The prospects of this mine are, if anything, improving. The anticipations caused by the discovery of a ledge of high grade ore, heretofore reported, are being realized. The winze being sunk from the 180-ft. level continues to show abundance of very rich ore. Some considerable amount of ore has already been taken out. The superintendent expects to commence sending ore to the mills on the 1st prox.

PROCHE.—The work is principally confined to sinking the new main shaft and opening a drift therefrom for connection with the old workings.

PAGE AND PANACA.—The prospects of this mine have improved very much in the past few days. The latest development was made in the 600-ft. level, 286 ft. west of winze No. 1, and assays up in the hundreds. The ore is a beautiful chloride, with streaks of galena. The company are building a new ore-house, and the railroad company are extending their track to the same.

PEAVINE.—The winze between the third and fourth levels is being sunk. Some little ore is being extracted.

ALPS.—The shaft has reached a depth of 380 ft. and still progressing.

WASHINGTON AND CREOLE.—The shaft on the Mazappa ground is now 620 ft. deep, and connection will be made with the drift of Washington and Creole about the middle of the following week. Ore is being found and extracted daily to the amount of five or six tons.

CHIEF OF THE HILL.—Three drifts are being driven on the ledge, the deepest of which starts at a point 600 feet from the surface. Some ore is being taken out daily, and the usual force is employed.

INCOMAR.—The shaft is 583 feet deep, and the drift running southwesterly is now 480 ft. in length.

BOVERY.—The shaft is now down 520 ft., and the principal drift 135 ft. in length. The mine shows very good indications of soon reaching an ore body; but progress is very slow, as the rock is extremely hard.

AMERICAN FLAO.—The mine looks well, and there is every prospect of still greater improvement.

PACIFIC TUNNEL.—From Mr. Nichols we learn that work on this important undertaking is likely to be very soon resumed.

The gravel deposit in Nugget Ravine, near Silver City, Nevada, which is worked by means of sluices, is paying, according to the Gold Hill News, from \$6 to \$10 per day, to the hand. The gold is worth about \$12 per ounce, containing considerable silver.

The expenditures made in running a mining tunnel, before a lode is struck in the tunnel, is not considered by the Land Office as equivalent to expenditures on the lode. Tunnel owners will hear this fact in mind, and act accordingly.

BOOTH & CO. of the Union Iron works, in this city, have lately turned out two passenger locomotives, 30 tons each, for the San Francisco and North Pacific Railroad.

In procuring patents for horax deposits, the same proceedings are requisite as in the case of applications for patents for placer mines.

BRASS LOCKS.—A large amount of money has annually been sent East for brass locks and other kinds of brass goods. The day, we trust, is fast approaching, if it has not already come, when this source of drain upon our resources will be dried up. Whenever an article can be manufactured here, equal in quality and price to the imported, merchants and consumers will naturally purchase at home, not only from a desire to encourage home industry and employment of labor, but from the most universal and, perhaps, strongest of motives—that of self-interest. We are, therefore, always pleased to learn of the establishment of any branch of manufactures that can successfully compete with Eastern or foreign markets. Messrs. Adams, Springer & Co., of the Pacific Brass Foundry, recently opened, at No. 20 Fremont street, in this city, assure us that they can supply the trade with a good article in the way of brass padlocks, ship locks, and brass locks and goods of different kinds, on as favorable terms as laid down by Sargent & Greenleaf, Barnes & Dietz, and other Eastern houses:

TINTIC DISTRICT, Utah, is said to be looking up again, now that spring has come. Favorable reports are received concerning the mines in the district.

LAST week the Little Cottonwood mines, Utah, shipped as follows: Flagstaff, 350 tons; Emma, 30 tons; McKay 20 tons; and Vallejo, 20 tons.

PAIN-KILLER.

1840.

1874.

Time Tests the Merits of All Things.

THIRTY YEARS is certainly long enough time to prove the efficacy of any medicine, and that the Pain-Killer is deserving of all its proprietors claim for it, is amply proved by the unparalleled popularity it has attained. It is a sure and effective remedy. It is sold in almost every country in the world, and it needs only to be known to be prized, and its reputation as a Medicine of Great Virtue, is fully and permanently established. It is the great Family Medicine of the age. Taken internally, it cures Dysentery, Cholera, Diarrhea, Cramp and Pain in the Stomach, Bowel Complaint, Painters' Colic, Liver Complaint, Dyspepsia, or Indigestion, Sudden Colds, Sore Throat and Coughs. Taken externally, it cures Bruises, Boils, Felons, Cuts, Burns, Scalds, Old Sores and Sprains, Swellings of the Joints, Toothache, Pain in the Face, Neuralgia and Rheumatism, Chapped Hands, Frost Bitten Feet, etc.

Pain is supposed to be the lot of us poor mortals, as inevitable as death, and liable at any time to come upon us. Therefore, it is important that remedial agents should be at hand to be used on emergency, when we are made to feel the excruciating agony of pain, or the depressing influences of disease. Such a remedial exists in Perry Davis' "Pain-Killer," the fame of which has extended over all the earth. Amid the eternal ices of the Polar regions, or beneath the intolerable and burning sun of the tropics, its virtues are known and appreciated. And by its suffering humanity has found relief from many of its ills. The effect of the Pain-Killer upon the patient, when taken internally in cases of Cough, Cold, Bowel Complaint, Cholera, Dysentery, and other affections of the system, has been truly wonderful, and has won for it a name among medical preparations that can never be forgotten. Its success in removing pain, as an external remedy, in cases of Burns, Bruises, Sores and Sprains, Cuts, Stings of Insects, etc., and other causes of suffering, has secured for it the most prominent position among the medicines of the day. Beware of counterfeits and worthless imitations. Call for Perry Davis' Vegetable Pain-Killer, and take no other.

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PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., Mar. 31, 1874.

FOR WEEK ENDING Mar. 17, 1874.*

DOOR SEOWER.—Roscoe C. Mowbray, Colorado.

EXTENSION STEPS FOR RAILWAY CARS.—Henry Albert, S. F., Cal.

GARDEN SPRINKLER.—Nathaniel Clark, S. F., Cal.

ORE STAMP FEEDER.—Thos. A. Cochrane, S. F., Cal.

CARRIAGE SPRING.—Edmund P. McCarthy, S. F., Cal.

PROCESS AND APPARATUS FOR SUPPLYING CITIES WITH MILK.—Frederick T. Newbery, S. F., Cal.

ALARM-STOP MECHANISM FOR TIME-PIECES.—Hermann J. Wenzell, S. F., Cal.

APPARATUS FOR TRANSMITTING CHRONOMETER MOTION.—Hermann J. Wenzell, S. F., Cal.

MAKING BUTTEREINE.—Budd Smith, S. F., Cal.

SUPER-HEATING STEAM.—Geo. W. Coffee, Virginia City, Nevada.

SUPPORTING BAIL FOR THE ADJUSTABLE ELEVATORS IN HEADERS.—Wm. G. Hudspeth, Santa Rosa, Cal.

REGULATORS FOR GOVERNORS TO STEAM ENGINES.—Wm. L. B. Collins and Joshua Donaldson, Vacaville, Cal.

RE-ISSUE.

LUBRICATOR.—John E. Longren, Sacramento, Cal.

TRADE-MARK.

STOMACH BITTERS.—Emil C. Jurgensen, Portland, Oregon.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. NOTE.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest time possible.

New Incorporations.

The following Companies have filed certificates of incorporation in the County Clerk's office, San Francisco: **THE BUCHANAN MINING COMPANY.**—March 25. Location: California. Directors—J. W. Gashwiler, J. M. Verdenal, John F. Boyd, O. E. Hoffmann, J. O. Kerwan. Capital stock, \$500,000, in 5,000 shares.

UTAH CONSOLIDATED M. CO.—March 25. Location: Virginia District, Storey county, Nevada. Directors—J. Glassman, R. G. Brush, Charles F. Brown and W. J. Gunn. Capital stock, \$5,000,000, in 50,000 shares.

MISSOURI QUICKSILVER M. CO.—March 30. Location: Cinnabar Mining District, Sonoma county, California. Directors—Wm. A. Stuart, E. W. Steele, A. J. Gove, Theodore S. Greasy and A. F. Pike. Capital stock, \$9,000,000, in shares of \$100 each.

SKEETER AND MIDAS M. CO.—March 31. Location: Cherry Creek M. District, Nevada, or elsewhere in the State. Directors—J. A. Pitchard, Lew Goodwin, O. W. Heeney, Charles E. Elliott and W. E. Dean. Capital stock, \$3,000,000.

WOODSIDE M. AND M. CO.—March 31.—Location: Georgetown Mining District, Dorado county. Directors—D. W. East, W. H. Wallace, T. W. Ash, M. A. Woodside and James W. Shanklin. Capital stock, \$4,000,000.

INCREASE OF STOCK.—The El Dorado North Mining Company has filed a certificate of the increase of its capital stock from \$2,500,000 to \$5,000,000, in shares of \$100 each.

Meetings and Elections.

MINT M. CO.—Mar. 31. Trustees—William Alvord, H. L. King, J. K. S. Latham, S. P. Taylor, John A. Russell, William Harvey and Isaac Cook.

BUCKEYE M. CO.—Trustees—J. Warrall, J. S. Shawhan, R. N. Van Brunt, O. E. Stevenson and W. O. Palmer.

PAGE & PANACA.—A change has occurred in the management of the Page & Panaca Mining Company, H. H. Flagg and L. Buckley, Trustees, resigning and Samuel L. Theller and Philip Falk, being elected to fill the vacancies. Philip Falk was elected President of the company.

The Pacific Rural Press,

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THE NEW U. S. MINING LAWS.

The new Laws of 1872, governing the location and purchase of Placer and Quartz Mines and Agricultural Lands in Mining Districts of the U. S., printed in circular sheet, for sale at this office. Single copies, 25 cts.

SAN FRANCISCO METAL MARKET.

WEDNESDAY M., April 1, 1874.

Sheet Pig Iron, 30 ton	\$52 00	@	—
White Pig, 30 ton	52 00	@	—
Refined Bar, good assortment, 30 lb.	—	@	34 1/2
Boiler, No. 1 to 4	—	@	5 1/2
Plate, No. 5 to 8	—	@	5 1/2
Sheet, No. 10 to 12	—	@	5 1/2
Sheet, No. 14 to 20	—	@	5 1/2
Sheet, No. 24 to 27	—	@	5 1/2
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	—	@	—
Norway Iron	—	@	—
Roller Iron	—	@	—
Other Irons for Blacksmiths, Miners, etc.	—	@	—
Copper	—	@	43 1/2
Braziers	—	@	—
Copper Pipe	—	@	—
O. Nettle Pat.	—	@	—
Sheathing, 30 lb.	—	@	25
Sheathing, Yellow	—	@	25
Sheathing, Old Yellow	—	@	10 1/2
Composition Nails	—	@	—
Composition Balts	—	@	—
Tin Plates	—	@	—
Plates, Charcoal, 1X 30 box	—	@	16 00
Plates, 10 Charcoal	—	@	14 00
Roofing Plates	—	@	—
Banca Tin, Slabs, 30 lb.	—	@	34
Steel, English Cast, 30 lb.	—	@	25
Flat Bar	—	@	—
Plough Points	—	@	17
Zinc	—	@	10
Zinc Sheet	—	@	10
Nails—Assorted sizes	—	@	8
Lead	—	@	—
Pig, 30 lb.	—	@	6
Pipe	—	@	9
Quicksilver, per lb.	—	@	1 25

LEATHER.

WEDNESDAY M., April 1, 1874.

The Leather market is about in the same unsatisfactory condition as previously reported. Local brands are very slow of sale, and the only business done appears to be in imported goods.

City Tanned Leather, 30 lb.	25 1/2	@	29
Santa Cruz Leather, 30 lb.	25 1/2	@	29
Country Leather, 30 lb.	25 1/2	@	29
Stockton Leather, 30 lb.	25 1/2	@	29
Jodot, 8 Kil. per doz.	53 00	@	54 00
Jodot, 11 to 12 Kil. per doz.	55 00	@	55 00
Jodot, second choice, 11 to 12 Kil. per doz.	55 00	@	55 00
Cornellian, 12 to 16 Kil.	57 00	@	57 00
Cornellian Females, 12 to 13	60 00	@	60 00
Cornellian Females, 14 to 16 Kil.	60 00	@	60 00
Beaumontville, 15 Kil.	60 00	@	60 00
Simon, 13 Kil. per doz.	61 00	@	63 00
Simon, 20 Kil. per doz.	65 00	@	67 00
Simon, 24 Kil. per doz.	72 00	@	74 00
Robert Calif., 7 and 9 Kil.	35 00	@	40 00
French Kips, 30 lb.	1 00	@	1 15
California Kip, 30 lb.	40 00	@	6 10
French Sheep, all colors, 30 lb. doz.	8 00	@	15 00
Eastern Kip for Boats, 30 lb.	1 00	@	1 25
Sheep Hides for Tanning, all colors, 30 lb. doz.	9 00	@	13 00
Sheep Hides for Lining, 30 lb. doz.	5 50	@	10 00
California Sheep, 30 lb. doz.	1 75	@	4 50
Best Jodot Calif. Boot Legs, 30 lb. pair.	5 00	@	5 25
Good French Calif. Boot Legs, 30 lb. pair.	4 00	@	4 75
California Boot Legs, 30 lb. pair.	4 00	@	4 75
Harness Leather, 30 lb.	30 00	@	37 1/2
Fair Bridle Leather, 30 lb.	43 00	@	72 00
Skirting Leather, 30 lb.	34 00	@	37 1/2
Leather, 30 lb. doz.	30 00	@	50 00
Buff Leather, 30 lb. doz.	15 00	@	22
Wax Side Leather, 30 lb. doz.	17 00	@	19
Eastern Wax Leather	—	@	—

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Consolidated Reforma Lead and Silver Mining Company.

Location of Mines, Mulege District, Lower California OFFICE, ROOM 10, No. 605 OLAY STREET. Correct information from the Mines of the Company can always be obtained by application at the office. LAST ASSAY, \$263 PER TON IN SILVER. JACOB SCHREIBER, President. A. D. OARPENTER, Secretary. 7428-Sm

MOTHERS, DO NOT LET YOUR CHILDREN trifle with coughs or colds. Insist on their taking *Hale's Honey of Horehound* and *Tur* without delay. See yourselves that it is done. Beware of procrastination. Crittenton's, No. 7 5th Avenue. Sold by all Druggists.
Pike's Toothache Drops cure in 1 minute.

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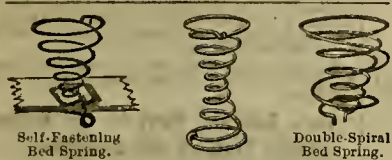


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Mining and Other Companies.

Going to the time necessary to mail the present large edition of the M. & S. Press, we are obliged to go to press on Thursday evening—which is the very latest hour we can receive advertisements.

Benjamin Mill and Mining Company.

Location of principal place of business, San Francisco, California. Location of works, Devil's Gate District, Lyon county, Nevada.
Notice is hereby given that at a meeting of the Board of Directors, held on the 25th day of February, 1874, an assessment of (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, room 7, No. 401 California street, San Francisco, Cal.
Any stock upon which this assessment shall remain unpaid on the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the 15th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.
By order of the Board of Directors,
LEANDER LEAVITT, Secretary.
Office—Room 7, No. 401 California street, San Francisco, Cal. m14-4w

Black Mountain Coal Mining Company.

Principal place of business, City and County of San Francisco, Cal. Location of works, Santa Cruz County, California.
Notice is hereby given that at a meeting of the Board of Directors, held on the 25th day of February, 1874, an assessment of three (3) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at his office, No. 402 Montgomery street, Room No. 23, San Francisco, California.
Any stock upon which this assessment shall remain unpaid on the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.
By order of the Board of Directors,
F. N. WELLS, Secretary.
Office—No. 402 Montgomery street, Room No. 23, San Francisco, Cal. m14-4w

Commercial Coal Mining Company of San Francisco.

Principal place of business, City and County of San Francisco, Cal. Location of works, Santa Cruz County, California.
Notice is hereby given, that at a meeting of the Board of Directors, held on the 25th day of February, 1874, an assessment of 2 1/2 cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold and silver coin, to the Secretary, at his office, No. 402 Montgomery street, Room No. 23, San Francisco, California.
Any stock upon which this assessment shall remain unpaid on the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.
By order of the Board of Directors,
S. B. HANSON, Secretary.
Office—No. 402 Montgomery street, Room No. 23, San Francisco, California. m14-4w

Grand Central Quicksilver Mining Company.

Principal place of business, San Francisco, Cal. Location of works, Ginnabar Mining District, Sonoma County, California.
Notice to STOCKHOLDERS.—A meeting of the stockholders of the above named company will be held at the office of the company in San Francisco, on Wednesday, the 15th day of April, 1874, at 12:30 P. M., for the purpose of adopting By-Laws for the company, and such other business as may be brought before the company. By order of the Board of Directors,
A. C. WAITT, Secretary.
Office of the company, 201 Front street, San Francisco, Cal. m14-4w

Geneva Consolidated Silver Mining Company.

Location of principal place of business, City and County of San Francisco, State of California.

Location of works, Cherry Creek Mining District, White Pine County, State of Nevada.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the tenth (10th) day of February, 1874, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
H Barrett,.....	not issued	1,250	\$312 50
G W Robbins,.....	not issued	4,750	1,187 50
I T Milliken, Trustee, not issued		2,000	500 00
I T Milliken, Trustee, not issued		110	27 50
I T Milliken, Trustee, not issued		5,000	1,250 00
I T Milliken, Trustee, not issued		5,000	1,250 00
I T Milliken, Trustee, not issued		3,145	786 25
I T Milliken, Trustee, not issued		2,500	625 00

And in accordance with law, and an order of the Board of Directors, made on the 10th day of February, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the company, Room 14, 302 Montgomery street, San Francisco, California, on Tuesday, the seventh (7th) day of April, 1874, at the hour of 12 o'clock m., of each day, to pay delinquent assessments thereon, together with costs of advertising and expenses of sale.

I. T. MILLIKEN, Secretary.

Office—Room 14, 302 Montgomery street, San Francisco, Cal. m12-1

Hudson Gold Mining Company—Location

of principal place of business, San Francisco, Cal. Location of works, Cherokee Mining District, Plumas county, Cal.

Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 24th day of February, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Geo G Burnett,.....	100	\$ 25 00
J P Curtis,.....	43	10 75
W J Collins,.....	1,700	425 00
H H Fassett,.....	100	25 00
Geo Hansen,.....	36	10 00
O G Hallitt,.....	50	12 50
G I Ives,.....	7	1 00
Chas A Kenney,.....	82	20 50
H H McCalland,.....	79	19 75
H H McCalland,.....	32	8 00
O G Palmer,.....	64	16 00
Robt Rowe,.....	35	8 75
Gregory Rockefelsen,.....	38	9 50
O H Warner,.....	34	8 50
J H Williams,.....	65	16 25
Chas D Ziehl,.....	81	20 25

And in accordance with law, and an order of the Board of Directors, made on the 24th day of February, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the Company's office, 113 Leidesdorff St., San Francisco, Cal., on the 20th day of April, 1874, at the hour of 1 o'clock p. m. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

Office—113 Leidesdorff street, San Francisco, California. m12-1

Germania Mining Company—Location

of principal place of business, San Francisco, Cal. Notice.—There are delinquent upon the following described stock, on account of assessment levied on the Third (3d) day of February, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Wm Lapham, Trustee,.....	10	\$12 50
Wm Lapham, Trustee,.....	185	46 25
Wm Lapham, Trustee,.....	190	47 50
Wm Lapham, Trustee,.....	194	48 50
Wm Lapham, Trustee,.....	206	51 50
Wm Lapham, Trustee,.....	209	52 25
Wm Lapham, Trustee,.....	223	55 75
H H Savage,.....	38	9 50
Maud Tavidge,.....	38	9 50
Joseph Chamberlain,.....	39	9 75
Joseph Chamberlain,.....	40	10 00
Joseph Chamberlain,.....	41	10 25
Joseph Chamberlain,.....	42	10 50
Joseph Chamberlain,.....	43	10 75
Joseph Chamberlain,.....	44	11 00
Joseph Chamberlain,.....	45	11 25
Joseph Chamberlain,.....	46	11 50
Joseph Chamberlain,.....	47	11 75
Joseph Chamberlain,.....	48	12 00
Joseph Chamberlain,.....	49	12 25
Joseph Chamberlain,.....	50	12 50
Joseph Chamberlain,.....	51	12 75
Joseph Chamberlain,.....	52	13 00
Joseph Chamberlain,.....	53	13 25
Joseph Chamberlain,.....	54	13 50
Joseph Chamberlain,.....	55	13 75
Joseph Chamberlain,.....	56	14 00
Joseph Chamberlain,.....	57	14 25
Joseph Chamberlain,.....	58	14 50
Joseph Chamberlain,.....	59	14 75
Joseph Chamberlain,.....	60	15 00
Joseph Chamberlain,.....	61	15 25
Joseph Chamberlain,.....	62	15 50
Joseph Chamberlain,.....	63	15 75
Joseph Chamberlain,.....	64	16 00
Joseph Chamberlain,.....	65	16 25
Joseph Chamberlain,.....	66	16 50
Joseph Chamberlain,.....	67	16 75
Joseph Chamberlain,.....	68	17 00
Joseph Chamberlain,.....	69	17 25
Joseph Chamberlain,.....	70	17 50
Joseph Chamberlain,.....	71	17 75
Joseph Chamberlain,.....	72	18 00
Joseph Chamberlain,.....	73	18 25
Joseph Chamberlain,.....	74	18 50
Joseph Chamberlain,.....	75	18 75
Joseph Chamberlain,.....	76	19 00
Joseph Chamberlain,.....	77	19 25
Joseph Chamberlain,.....	78	19 50
Joseph Chamberlain,.....	79	19 75
Joseph Chamberlain,.....	80	20 00
Joseph Chamberlain,.....	81	20 25
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Joseph Chamberlain,.....	97	24 25
Joseph Chamberlain,.....	98	24 50
Joseph Chamberlain,.....	99	24 75
Joseph Chamberlain,.....	100	25 00
Joseph Chamberlain,.....	101	25 25
Joseph Chamberlain,.....	102	25 50
Joseph Chamberlain,.....	103	25 75
Joseph Chamberlain,.....	104	26 00
Joseph Chamberlain,.....	105	26 25
Joseph Chamberlain,.....	106	26 50
Joseph Chamberlain,.....	107	26 75
Joseph Chamberlain,.....	108	27 00
Joseph Chamberlain,.....	109	27 25
Joseph Chamberlain,.....	110	27 50
Joseph Chamberlain,.....	111	27 75
Joseph Chamberlain,.....	112	28 00

And in accordance with law, and an order of the Board of Directors, made on the 24th day of February, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the Company's office, 113 Leidesdorff St., San Francisco, Cal., on the 20th day of April, 1874, at the hour of 1 o'clock p. m. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

Office—113 Leidesdorff street, San Francisco, California. m12-1

Jefferson Gold and Silver Mining Com-

pany. Location of principal place of business, San Francisco, Cal. Location of works, Brown's Valley, Yuba county, California.

Notice is hereby given that at a meeting of the Board of Directors, held on the 25th day of March, 1874, an assessment of fifty cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at his office, 507 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the 15th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office, 507 Montgomery street, San Francisco, Cal. m12-1

Lady Franklin Gold and Silver Mining

Company.—Principal place of business, City and County of San Francisco, Cal. Location of works, Silver Mountain Mining District, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the ninth day of March, 1874, an assessment of fifty cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at his office, 507 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the 15th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office, 507 Montgomery street, San Francisco, Cal. m12-1

Land Purchasers' Association—Office, No.

425 Kearney street, San Francisco, Cal.

There are delinquent upon the following described stock, on account of assessment (installment No. 39), levied on the 17th day of February, A. D. 1874, the several sums set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Beyers J. L.,.....	32, 33	10 00
David Philo,.....	1	10 00
King C. J.,.....	37	10 00
Lord T. A.,.....	68, 69, 77	30 00
Morse L. H.,.....	1, 2	20 00
Robinson H. G.,.....	150	10 00

And in accordance with the law and an order of the Board of Directors, made on the 17th day of February, A. D. 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the Secretary, 425 Kearney street, (up stairs), San Francisco, Cal., on Tuesday, the 14th day of April, 1874, at the hour of 12 o'clock m., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

Office—No. 425 Kearney street, (up stairs), San Francisco, Cal. m12-1

Missouri Quicksilver Mining Company—

Principal place of business, San Francisco, Cal. Location of works, Ginnabar Mining District, Sonoma county, California.

Notice to STOCKHOLDERS.—A meeting of the stockholders of the above named company will be held at the office of the company in San Francisco, on Wednesday, the 25th day of April, 1874, at 12:30 P. M., for the purpose of adopting By-Laws for the company, and such other business as may be brought before the company. By order of the Board of Directors,
A. C. WAITT, Secretary.
Office of the company, 201 Front street, San Francisco, Cal. m14-4w

Mansfield Gold Mining Company—Loca-

tion of principal place of business, San Francisco, California. Location of works, El Dorado county, California.

Notice is hereby given that at a meeting of the Board of Directors, held on the 21st day of March, 1874, an assessment of two and one half cents per share, was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, No. 331 Kearny street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 18th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office—Room 14, No. 331 Kearny street, San Francisco, California. m14-4w

Names.	No. Certificate.	No. Shares.	Amount.
T J Brown.....	113	100	50 00
T J Brown.....	114	100	50 00
T J Brown.....	115	100	50 00
T J Brown.....	116	100	50 00
T J Brown.....	117	100	50 00
T J Brown.....	118	100	50 00
T J Brown.....	119	100	50 00
T J Brown.....	120	100	50 00
T J Brown.....	121	100	50 00

Machine Builders.

ESTABLISHED 1851.

PACIFIC IRON WORKS,

First and Fremont streets,

SAN FRANCISCO.

IRA P. RANKIN, A. P. BRAYTON,
GEO. W. FOGG, Superintendent.

Steam Engines and Boilers,

MARINE AND STATIONARY,

IRON AND BRASS CASTINGS

Mining Machinery of Every Description,

And all other classes of work generally done at first-class establishments, manufactured by us at the lowest prices, and of the best quality.

Particular attention paid to Jobbing Work and Repairs.

N. B.—Sole Agents for sale of HUNTOON'S CELEBRATED PATENT GOVERNOR.

18v20-3m GODDARD & CO.

FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

TEAM ENGINES,

Quartz, Flour and Saw Mills,

Ayer's Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard street, San Francisco. 8-47

THE RISDON

Iron and Locomotive Works.

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....\$1,000,000.LOCATION OF WORKS:
Corner of Beale and Howard Streets,
SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors: Joseph Moore, Jesse Holladay, C. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
24v17-07

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Rolling Mill Company,

SAN FRANCISCO, CAL.

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RAILROAD AND OTHER IRON
Every Variety of Shafting.Embracing ALL SIZES of
Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames

HAMMERED IRON

Of every description and size.

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The highest price paid for Scrap Iron.

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ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS,

CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,

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Miners' Foundry and Machine Works,

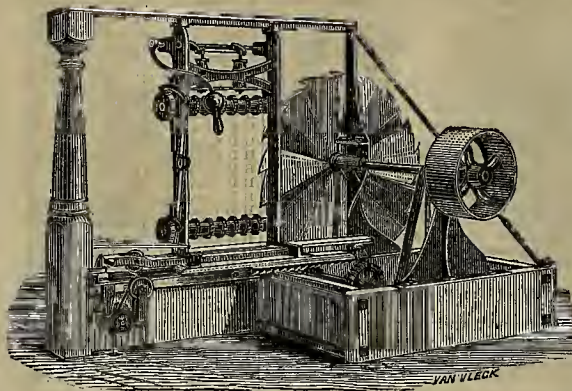
CO-OPERATIVE,

First Street, bet. Howard and Folsom, SAN FRANCISCO

Machinery and Castings of all kinds.

HUNTINGTON'S PATENT SHINGLE MACHINE.

They are now used by all the PRINCIPAL MILLMEN ON THE PACIFIC COAST.



MANUFACTURED AND FOR SALE BY

F. A. HUNTINGTON, 143 and 145 Fremont Street,

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Price, Complete, with one Saw, - - - - - \$450.00.

The inventor refers to the following parties who have these machines in use:

Macpherson & Wetheres.....San Francisco.	Harrington & Co.....Pescadero.
Pope & Talbot.....San Francisco.	Burch & Co.....Pescadero.
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Rice & Halliburton.....Woodside.	A. H. Davis & Son.....Carson City, Nev.
	S. P. Pharis, Woodside.

STEAM ENGINES, SAWMILLS, PLANING, LATH AND PICKET MACHINES, etc., made to order at short notice.

F. A. Huntington's Portable Saw Mill.

The mills are built in the strongest, most durable and workmanlike manner, and are capable of driving any size saw up to 64 inches. They are furnished with improved friction feed and gig hack, both being operated by the same lever, no belt being used to gig hack.

They are Capable of Cutting from 8,000 to 12,000 feet per Day.

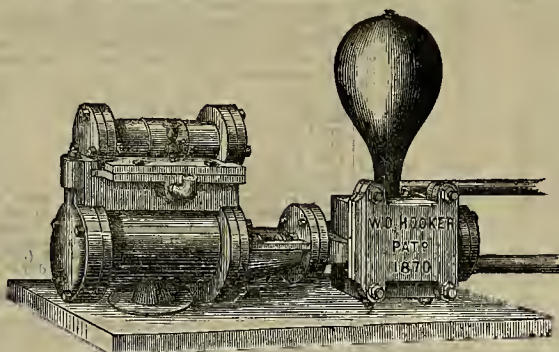
Saw Mill Machinery of all descriptions furnished to order.

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10v28-1sm-3m

143 and 145 Fremont street, San Francisco.

Hooker's Patent Direct Acting Steam Pump.



W. T. GARRATT,

Cor. Fremont & Natoma streets, S. F.,

Sole Proprietor & Manufacturer for the Pacific Coast.

SIMPLE, CHEAP AND DURABLE.

Adapted for all purposes for which Steam Pumps are used.

The Best Pump in Use.

SEND FOR CIRCULAR.

N. B.—Also manufacturer of Hooker's Deep Well and Double-Acting Force Pump. Received the Silver Medal awarded at the last Mechanics' Fair in San Francisco. 18v27-2sm3m

CAST STEEL SHOE AND DIE COMPANY,

OFFICE—Room 28, Hayward's Building, 419 California St., S. F.

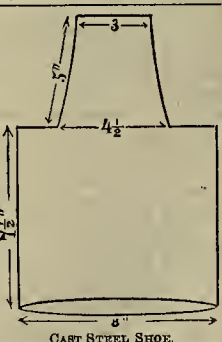
Patented CAST STEEL SHOES & DIES for Quartz Mills.

Price, 20 cents per Pound.



An improvement greatly needed—being Stronger, more Durable and Economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as bar steel; never break, keep their full striking surface. Battery of five shoes crushes one-ton more ore in 24 hours than Cast Iron Shoes, will wear as long as four set of Cast Iron Shoes, and can be worn down to 1/2 inch in thickness. The studs can be welded into Picks, Hammers, etc.

—ALSO—Cast-Steel Tappets, Cams, Hammers, Gearing and Castings

OF ALL KINDS, A SPECIALTY.
It takes forty days to fill orders.

CALIFORNIA BRASS FOUNDRY,

No. 125 First street, opposite Minna, SAN FRANCISCO.

ALL KINDS of Brass, Composition Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Belts and Gongs of superlative tone. All kinds of Cocks and Valves. Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch. PRICES MODERATE. J. H. WEED. V. KINGWELL.

THOMPSON BROTHERS,

EUREKA FOUNDRY,

129 and 131 Beale street, between Mission and Howard, San Francisco.

LIGHT AND HEAVY CASTINGS,

of every description, manufactured, 24v16or

SACRAMENTO FOUNDRY,

N. E. corner N and Front streets.....SACRAMENTO,

Steam Engines—all kinds of Mining Machinery.

SHIP, AGRICULTURAL, STOVE, RANGE AND HOUSE CASTINGS.

Iron Railings and Ornamental Work of every description

At the Lowest Rates

18v27-1y

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Dunn & Kewin, Pattern and Model Makers,

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OCCIDENTAL FOUNDRY,

137 and 139 First street.....SAN FRANCISCO.

STEIGER & BOLAND,

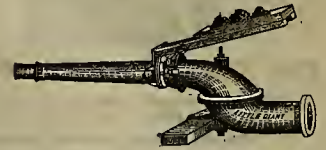
IRON FOUNDERS.

IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Rolling Pan and Callahan Grate Bars, suitable for Burning Screenings.

Notice.—Particular attention paid to making Superior Shoes and Dies. 20v26-3m

Machinery.

TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

All persons infringing on either of these patents

WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under Craig's, Rico's, Macey's and Hoskin's patents.

I Guarantee Full Indemnity to all my Customers.

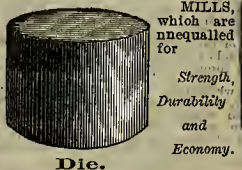
Machines of all sizes always on hand. If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an Improved LITTLE GIAN.

For further particulars apply to R. HOSKIN, Dutch Flat, Or R. R. & J. CRAIG, Room 6, 240 Montgomery st., S. F. WILLIAMSON & COREY, Marysville. Agents Dutch Flat, Aug. 10, 1873. 6v27-2m

STEEL SHOES AND DIES

FOR QUARTZ MILLS,

Made by our improved process after many years of patient research and experiment. We have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for



Strength, Durability and Economy.

Will wear three times longer than any iron shoes.

BUILDERS AND CONTRACTORS Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and general Mining Machinery in all its details and furnishers of Mining Supplies. All orders promptly filled.

MOREY & SPERRY,

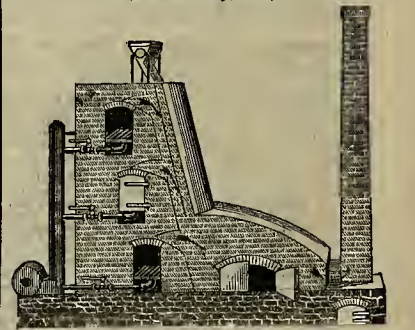
Liberty St. N. Y.

Examination solicited.

9v28-1y

EAGLE IMPROVED CHLORINIZING AND DESULPHURIZING FURNACE.

(Patented July, 1873.)



The Cheapest and Most effective Furnace now in use. Parties desirous of building above furnace, or for any information on same, address,

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Ja31-2sm No. 302 Montgomery st., room No. 14, S. F.

STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

J. HENDY, No. 32 Fremont Street. 10v27-1f

GRAND INDUSTRIAL EXHIBITION,
To be held under the auspices of the
MECHANICS' INSTITUTE
OF SAN FRANCISCO, CALIFORNIA,
Opening on August 18th, 1874.

The Board of Managers herewith announce that a grand Industrial Fair will be held in the city of San Francisco for 30 days, opening on August 18, 1874.

In view of the increasing commercial and manufacturing importance of San Francisco, its contiguity to and close connection with the various countries bordering on the Pacific, the managers have constructed a Pavilion having a floor area of 150,000 feet, and have invited to it all who are disposed to come and exhibit. All exhibitors will be placed on the same footing. Motive power will be furnished free.

The building will be open day and evening, and every facility will be extended to exhibitors and visitors. Application for space must be made without delay to the Secretary of the Board of Managers, 27 Post street, San Francisco, and all inquiries will be answered and information extended promptly.

No space can be secured unless applied for before the 20th of July next.
A. S. HALLIDIE, Pres.
J. H. CULVER, Secy.

FRANCIS SMITH & CO.,

MANUFACTURERS OF

HYDRAULIC PIPE

AND

Artesian Well Pipe.

Having the Latest Improved Machinery, we can make it an object to

Mining & Water Companies

OR

WATER WORKS,

TO CONTRACT WITH US FOR

SHEET IRON PIPE.

ALL SIZES MADE AND ALL WORK GUARANTEED

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SAN FRANCISCO. js3-1f

L. & J. W. FEUCHTWANGER
CHEMISTS & IMPORTERS.

Address 55 CEDAR ST. NEW YORK
SOLUBLE GLASS & SILICATES,
OXIDE OF MANGANESE FOR STEEL,
GLASS & PATENT DRYERS,
FLUORSPAR, FELSPAR, FLINT,
NICKEL-SALTS, ASBESTOS,
BLACK LEAD, METALS, & C. & C.,
PUBLISHERS OF TREATISES ON "GEMS,"
"SILEX AND FERMENTED LIQUORS."

10v28-3m



15v27-cow16p

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Harper's.....	\$4 00	News Dealer
Atlantic.....		AND STATIONER,
Godey.....		S. E. corner of Sansome and
New York Ledger.....		Washington streets,
Hours at Home.....	3 00	SUPPLIES ALL
Good Words.....		Eastern Periodicals,
Peterson's.....		BY THE
Arthur.....	5 00	Year, Month, or Number
Lady's Friend.....		
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FAWELL & CO.,

IMPORTERS & DEALERS IN

SHIP CHANDLERY,

HAVE REMOVED TO

105 and 107 California Street,

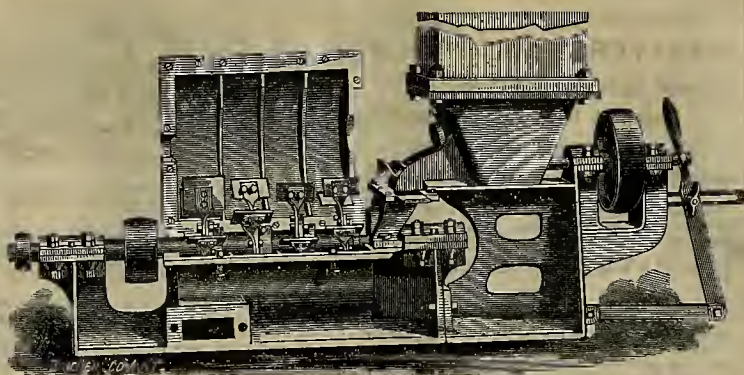
SAN FRANCISCO.

W. H. FARWELL [mr71m] JNO. O. HANSOOM

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WHELPLEY & STORER

CRUSHERS AND PULVERIZERS,



For Crushing and Pulverizing Dry Ores,

PLASTER, COAL, BONE, MINERAL PHOSPHATES, PAINT STUFFS, DRUGS,
PLUMBAGO, CLAY, DYE WOODS, ETC., TO A FINE POWDER.

THEY ARE THE MOST

ECONOMICAL and DURABLE MACHINES.

In practical operation. They reduce much finer and at less expense per ton, giving better results than can be obtained with any other class of machinery. Miners should make a thorough examination of these machines before purchasing any others.

GEO. D. WYMAN, Agent for Pacific Coast.

OFFICE—215 AND 217 MAIN STREET, BETWEEN HOWARD AND FOLSOM,

SAN FRANCISCO, CAL.

13v28-1f

WARING ROCK DRILL COMPANY.

SOLE PROPRIETORS AND MANUFACTURERS OF

WARING'S IMPROVED SELF-FEEDING

Rock Drill,

BY FAR THE MOST

Simple and Effective Machine

FOR ALL DESCRIPTIONS OF

MINING, RAILROAD AND QUARRY WORK

Office, 835 Broadway, Cor. 13th street,

NEW YORK.

10v28-6m

GIANT POWDER.

Patented May 26, 1868.

THE ONLY SAFE BLASTING POWDER IN USE.

GIANT POWDER, NO. 1,

For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

GIANT POWDER, NO. 2,

For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc. Its EXCLUSIVE use saves from 30 to 60 per cent. in expenses, besides doing the work in half the time required for black powder.

It is the only Blasting Powder used in Europe and the Eastern States.

v22-3m16p

BANDMANN, NIELSEN & CO.,

General agents, No. 210 Front Street.

THE PACIFIC REDUCTION WORKS,

GUIDO KUSTEL,

Superintendent,

WILL PURCHASE

Gold and Silver Bearing Ores, Cuperiferous Silver Ores,

GOLD SULPHURETS, ETC., AT THE HIGHEST RATES,

OR WORK THE SAME FOR OWNERS' ACCOUNT.

The works will commence operations on or about the 1st of April. Sampling, Assaying of all kinds of Ore, and working of small lots of ore in any desired way, will be promptly attended to and reliable results returned.

mr21-16p

OFFICE—210 FRONT STREET, SAN FRANCISCO.

W. T. GARRATT & CO.

CITY

Brass and Bell Founder,

Corner Natoma and Fremont Streets,

MANUFACTURERS OF

Brass, Zinc and Anti-Friction or Babbst Meta
CASTINGS.

Church and Steamboat Bells,

**FAVERN AND LAND BELLS, GONGS,
FIRE ENGINES, FORCE AND LIFT PUMPS.**

Steam, Liquefied, Soda, Oil, Water and Flange Cocks, and Valves of all descriptions, made and repaired. Hose and all other joints, Spelter, Solder and Copper Rivets, etc. Gauge Cocks, Cylinder Cocks, Oil Globes, Steam Whistles. **HYDRAULIC PIPES AND NOZZLES** for mining purposes. Iron Steam Pipe furnished with Fittings, etc. Coupling Joints of all sizes. Particular attention paid to Distillery Work. Manufacturer of "Garratt's Patent Improved Journal Metal." Highest Market Price paid for OLD BELLS, COPPER and BRASS.

W. T. GARRATT, JAMES HILLMAN, W. T. LITTLE

N. W. SPAULDING,

Saw Smithing and Repairing

ESTABLISHMENT.

No. 17 and 19 Fremont Street, near Market.



MANUFACTURER OF

SPAULDING'S

Patent Tooth Circular Saws.

They have proved to be the most durable and economical Saws in the World.

Each Saw is Warranted in every respect:

Particular attention paid to construction of

Portable & Stationary Saw Mills.

MILLS FURNISHED AT SHORT NOTICE

At the lowest Market Prices.

KABATH & LADD,

109 California Street, SAN FRANCISCO.

HAVE JUST RECEIVED IN PRIME ORDER, PER
"CLEOPATRA,"

A FRESH SUPPLY OF

EASTERN IRON KEG POWDER,

Manufactured by the World-Wide Known

LAFLIN & RAND

POWDER COMPANY.

PATENT SAFETY FUSE,

Electrical Blasting Apparatus, Electrical
Fuse, Rubber Tubing,

LEADING AND CONNECTING WIRE CAPS, ETC.,

AND EVERYTHING IN THE LINE OF

MINE & MILL SUPPLIES.

Send for Further Information.

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and Progressive Industry.

BY DEWEY & CO.,
Patent Solicitors.

SAN FRANCISCO, SATURDAY, APRIL 11, 1874.

VOLUME XXVIII
Number 15.

Knox & Osborn's Quicksilver Furnace.

The discovery within the past year of a large number of quicksilver deposits in this State, and the scarcity of the supply of the article, have caused much attention to be turned to the subject of quicksilver. In order to ensure cheap mining of this article the form of furnace used is important. Several inventors urge the claims of their respective furnaces upon the miners, and the subject of style of furnace, percentage saved, economy etc., have provoked considerable discussion. During latter months of the past year our columns bore evidence of the interest

grate level, showing the form of the fire space and outlet vapor passage; also the form of the interior of the furnace at the fire level, the top representing the fire, and opposite to it the vapor passage.

The furnace is intended to work continuously for months without stopping. One of them now in operation has run 12 months without stopping the fires, and no reason appears at present why it should not continue to run as much longer. The owners claim that if properly worked, there is no possibility of the operatives being affected by the vapors of mercury in a way prejudicial to health, which ought to be a strong recommendation. Another feature claimed for the furnace is the manner in which

varying circumstances, price of wood and quality of ore, making the cost more or less. This cheapness of reduction naturally saves much expense in sorting ore. When material can be put through the roasting process for 56 cents to \$1.25 per ton, it is not profitable to spend much time in cleaning the ore of surplus rock, as it can be done only moderately close for \$5 per ton, while in sorting close for retorts it always costs more if the work be well performed.

It is not claimed by the inventors that this is the cheapest furnace, considering only first cost; but they aver that the economy of working, repairs and complete reduction, render it cheaper in the end. The furnaces may be made available for any kind of fuel. Rough

the ore open, and to some extent admitting the fire into the center of the mass, while by its own combustion it puts fire into its very midst. We are told that in this way, with moderately dry ore, twenty tons of fine and coarse have been put through in twenty-four hours.

The inventors, Messrs. Knox & Osborn (Golden Gate Foundry, Nos. 19 and 21 Folsom street, San Francisco), have also prepared estimates of cost and plans for building small prospecting furnaces for mines not fully developed.

MINERAL LAND DECISION.—Commissioner Drummond has made a very important ruling under the law providing for the sale of lands

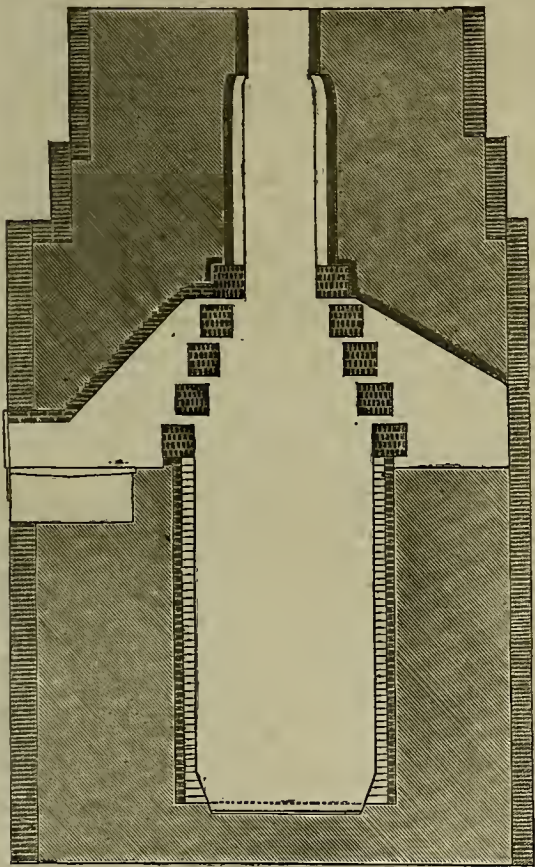


Fig. 1.—Cross Section of Furnace, Walls and Vapor Way Arches.

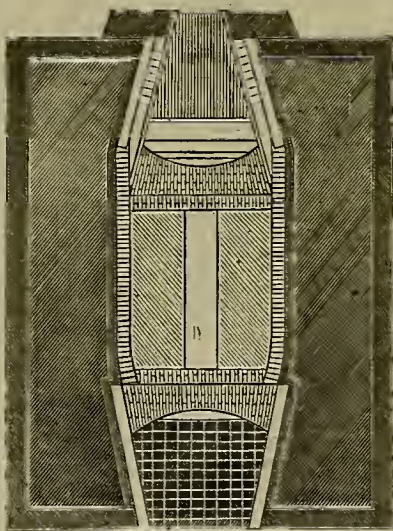


Fig. 3.—Horizontal Section at Fire-Grate Level.

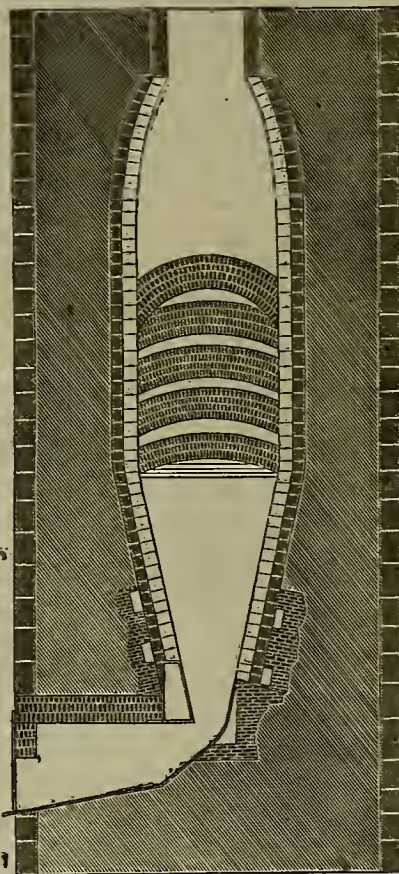


Fig. 2.—Cut Transversely from Fig. 1.

KNOX & OSBORN'S QUICKSILVER FURNACE.

which these questions excited. Without presuming to decide on the relative merits of the different furnaces now in use, we give, for the benefit of our readers, diagrams showing the construction of the Knox & Osborn furnace, a California invention, which was frequently mentioned in the discussions in our columns last year. There are now seven of these furnaces working in this State, at the following mines: Redington Quicksilver Mining Co., Knoxville, (two); California Quicksilver Mining Co., Knoxville, (one); Manhattan Co., Knoxville, (one); Cerro Bonito Quicksilver Mining Co., Panoche, (one); Phoenix Mining Co., Pope Valley, (one); and Etna Mining Co., Pope Valley, (one).

The cuts show the interior and walls of the furnace, as if cut in twain in the middle.

Fig. 1 shows the charging port at top, and draw or discharge at bottom; also the width of the chamber from top to bottom, transversely with the current of vapors.

Fig. 2 shows the furnace cut at right angle, or transversely from No. 1, and showing charge and draw-ports, as also the fire and vapor channel; also the form of ore shaft where the vapors pass through the ore in reduction.

Fig. 3 shows a horizontal section of the fire-

the heat is economized. By a patented arrangement of air-flues, they are enabled to take the heat from the roasted rock, and, by transferring it into fresh air, thus make this a hot-blast furnace. This is accomplished, not by forcing the air in, but by producing a partial vacuum by means of a suction-pump on a blower. A large portion of this hot air is admitted above the fire, that it may go directly into the charge of ore, where the oxygen, combining with the sulphur, produces much of the necessary heat, diminishing to that extent the amount of fuel required.

At the mine of the Redington Quicksilver Co., where the ores are rich in sulphur, one cord of oak wood runs two of these furnaces for twenty-four hours, during which time forty-eight tons of ore are put through. At this mine, these two furnaces being worked at the same time, the inventors inform us that the expense of running them has been reduced below that attending any other single furnace; and a careful account of expenses kept shows the cost of reduction at these furnaces to be only fifty-six cents per ton! At single furnaces, reducing twenty to twenty-four tons of ore per diem, the cost of reduction will vary from eighty cents to one dollar and twenty-five cents,

wood and logs which cannot be split, of twenty inches diameter, pass into the fire, and when wood is scarce and chapparal abundant, through the use of an attachment planned by Knox & Osborn, brush serves the same as wood, and even coal or coke could be made to answer equally well if other kinds of fuel could not be easily obtained.

This furnace was never intended to run a greater amount of fine ore with the coarse ore or broken rock, than would allow the gasses from the fire to freely pass through and amongst the ore. If a greater amount is put in, it checks the reduction by keeping the fire from the center of the mass of ore, and by driving it along each side of the furnace, only heating the center of the mass through contact of particles or conduction; and as this loose ore is a very poor conductor, the heat makes its way through it slowly. This change in the size of the ore will reduce the working from twenty-four tons per day to sixteen, and if the ore is very wet, to twelve or fourteen tons per day. The inventors have found, however, that this falling off may be partially remedied by putting in some wood with the ore at the charging port. This wood serves the place of coarse ore in part, keeping

within the mineral belt. The Comstock lode, Nevada, is situated in township 17 north, range 31 east of Mount Donner. The meridian portions of this township, comprised in sections 19, 20, 21 and 28, were returned by the Surveyor-General as rocky, barren and mineral in character. These portions, however, have been claimed by the Central Pacific Railroad Company and the State of Nevada. In order to procure their patents these parties have filed evidence to prove that the lands do not contain any known veins of gold or silver or other minerals, and that no valuable minerals have been found therein. The commissioner decides that when lands have been returned as mineral in character, he shall require that the burden of proof shall rest on parties who desire to locate, the same as agricultural lands, and it is sufficient to prove that there is no evidence that they are mineral in character. Parties must show clearly that the lands are agricultural in character. In the cases of the applications made by the railroad companies and the State of Nevada, no such proof is given, and on the contrary it is shown that the lands are barren and unfit for cultivation. The lands are therefore reserved from entry, and held as mineral lands.

CORRESPONDENCE.

Mining in Plumas and Sierra Counties. No. 5.

[By our Special Correspondent.]

Pine Grove,

Lying between St. Louis and Howland Flat, was, not many years ago, a lively mining camp; but owing to the introduction of modern improvements in mining, the force of men required to work the mines is so small, as compared with the old system, that nearly every mining town in the State looks dull to the stranger, until he understands the reason why it seems so. Pine Grove has shipped her millions of treasure to all parts of the world, through the distributing office, San Francisco, and has millions more still garnered in her golden treasury vaults. The Comet company, of this place, rented the water privilege from the Union company of Howland Flat, after its first use by the latter company, thus enabling them to hydraulic off the old drifted out ground, that would otherwise have been worthless to the company, making it pay them some sixty-six cts. per cubic yard. Immediately adjoining the Comet is a large amount of consolidated ground, owned by Thomas Eve, Esq., a great portion of it being hydraulic ground, and if properly opened, the balance can then be successfully drifted. Capitalists would do well if they could succeed in obtaining possession of this ground. In going still further up we pass to the right of

Granite Hill,

Which is all owned by Messrs. George Cox & H. F. Williams, aggregating about 100 acres. They are well prepared for working their mine to an immense advantage; having a copious supply of water owned by themselves. Two sets of monitors are employed, crushing and crumbling away the gigantic banks that rise high in the air above them, rolling the precious metal downwards, where it calmly rests, until resurrected by its lucky owners. In turning around a sharp point, we come in sight of the once celebrated

Howland Flat,

A beautiful town in summer, as it nestles in quiet repose at the base of Table Rock, which towers high in the air with majestic grandeur some 7,200 feet above the sea level. But now it looks as though an avalanche of snow from the mountain side had buried it almost from sight. Nearly all of the claims in this place have been worked by the drifting process, and have paid well for the money invested. All of the front ground has been consolidated, and is owned by Messrs. Stout, Chittenden & Co., who design opening it so as to work all of the ground by the hydraulic process. There is none but who admits it will pay the company handsome dividends, although most of the ground next the bed rock has been drifted out, yielding several million dollars. One mine alone, the Union company, in its palmy days, produced over one million dollars. About one mile east of the Flat, we came upon a little mining camp called

Potosi,

Where the Hawkeye, Pittsburg and Monumental companies have worked with immense results, by drifting out on the main channel of the "Blue Lead." Immediately above them is a

San Francisco Company,

Known as the Empire company, who are, under the able management of Mr. DeNoon, who is one of the shareholders, about opening out on the same channel, with fine prospects ahead. In crossing the several head branches of Slate creek, we first come to a small town, that once sported the euphonious name of

Whiskey Diggings,

A name that still clings to it, although by an act of the Legislature, it was changed to that of Newark. But the miners have nicknamed it Widowville, owing to the numerous grass widows and real widows, who have, and still do, make it their home. With three such names the town is deserving of success.

We find here several companies engaged in running tunnels to tap the rich channel of the western branch of the

Slate Creek Basin Channels,

Which has paid, enormously in former years along the rim rock, where the gravel has overflowed its rich, but deeper bed.

About one and one-half miles further up, on the head of a branch of Slate creek, is another small town called Hepsidam, where we find the "North America," Pilot Peak No. 1, and Pilot Peak No. 2, all three of which are tunnel claims. In a recent letter to the *Mountain Messenger*, its La Porte correspondent said, that "the main lead of the North America had been lost, having jumped off in Pilot No. 1." This is a mistake. No doubt the *Messenger's* correspondent was misinformed on that point, and in no wise intended to misstate the prospects of the company. Instead of losing the lead, the foreman and others inform me they have just struck it. He says there is not a white man working in the claim (some eighteen in number) but that

will tell you his pick is worth to the company \$20 per day. The gold can be seen all through the gravel while working with the pick in the different breasts. Mr. Morgan, the superintendent of the company, is deserving of great credit for the persevering energy with which he has prosecuted the work in this mine. No matter what the obstacle that appeared in his way, it must be removed. In all his efforts to benefit the company, he has had the able and efficient support of his foreman, Myles Schofield. There are a great many men employed rolling the yellow dust to the front, and the shareholders in "Merry England" will, before the season has passed away, have no cause to regret investments in the North America. Joining the North America on its northerly line is the

Pilot Peak No. 1,

Whose tunnel is now in 1,800 feet, and it will not be long before they tap the same rich lead struck in the North America, as it runs directly across the Pilot ground, and its course is not far from the inward terminus of their tunnel. Contiguous, and running parallel with Pilot No. 1, is

Pilot Peak No. 2.

The company are not working their claims, for the want of capital; but have, I understand, banded them to San Francisco capitalists for the pitiable sum of \$12,000. It is no wonder these men grow rich, when such valuable property as this will eventually become, can be obtained for the paltry sum of \$12,000. This system of

Bonding Claims

Works great injury to the State and country wherein located, as well as to the parties bonding. If the system was done away with entirely, and capitalist would invest their money at once, how much sooner our vast resources would be developed, and their golden treasures thrown into the market. As it is, most claims are bonded to speculators. The claimant may live in hopes of getting his money at the expiration of the bond (which is generally from one to two years), only to find them blasted by disappointment. There may have been plenty of opportunities to sell, but that right is denied, because of the bond. One might starve before he could realize a dollar from valuable property he owns but cannot control. My remarks will more particularly apply to mines that are known to be valuable and in a state of non-development for want of capital by their poor and unfortunate owners.

From Pilot Peak No. 2 we turn our face westward. Passing Newark, we come upon the old Sierra Nevada tunnel mine to the left of the Gilsonville road, situated on one of the tributaries of Slate creek. This mine has yielded its thousands of treasure, but at the present writing is nearly worked out. About one mile further down the creek we come upon the little town of

Gibsonville,

Which, like most of the mountain towns, has seen its best days. The claims at this place have been mostly tunnel mines. Messrs. Lang & Brandenburg, have completed their preparations for working these old worked out mines, by the hydraulic process, and will, no doubt, be well rewarded in their enterprise, as it is a well known fact that all the surface gravel embraced in the "Blue Lead" pays well—some of it immensely. Jillsou, Gould & Co., at the west end of the town, are fully prepared to set their giant pipes to work as soon as water starts. This company have a large amount of ground, which pays them well for their money and labor invested in opening them up. About one-half a mile below Gibsonville, we come to

Gibson Creek.

Here we find the Chalcedony, Boot Jack and Taber mining companies, all of which are tunnel mines. Taber & Co. have a valuable mine here in course of development. Some of the heavy capitalists of San Francisco are interested with him, and no one doubts for a moment the richness of the mine. The Chalcedony and Boot Jack companies have labored under great disadvantages. The ground they have worked has been rich; but lying low, they have great difficulty in keeping it free from water, not having machinery of sufficient power. I understand the Chalcedony was bonded in San Francisco for \$39,000, the bond running out last February. If it were the fault of the San Francisco party that the mine did not change hands, they certainly, for once in their lives, made a great mistake.

Further down are the Lsst Chsnce and Go-Ahead companies, composed mostly of owners in the Bald Mountain claims, in Forest City. I understand they intend to commence this spring to open up and develop their claims, being confident of success; and think they will rival, if not excel, the best mines in Northern Sierra. Here I shall close my brief review of those mines in Sierra lying west of Slate creek.

In my rapid transit from Newark to Gibsonville, I forgot to speak of the Mount Pleasant mine—

The Union.

This has been a good tunnel mine, but is nearly worked out. If the company had water for hydraulizing, it would pay well for years to come. The Michigan Company are intending to open up their claims this season; and if they prove as rich as they are thought to be, Gibsonville will be able to appear in a new dress on Sundays.

In one of my previous letters I spoke of the consolidation of the Buckeye and Monitor claims, at Sawpit Flat, by J. H. Thomas, of

La Porte. The former claim recently made a clean up, averaging \$25 per day to the pick. Mr. J. C. Foulk, the Superintendent, says if Mr. Thomas had not already purchased, he could not get the claim for double the money paid, as they have struck gravel richer than ever, that promises to be very extensive.

MAXIMILIAN.

St. Louis, March 29, 1874.

Glycerine in Mucilage.

EDITORS PRESS:—I see in your paper of March 7th, a prescription for paste, as follows: Gum Tragacanth..... I drachm.
Glycerine..... VI drachms.
Aqua Pura ad..... X ounces.

Please tell your readers if the glycerine has any adhesive properties; if not, what advantage there is in adding it.

A good paste is made of rice flour. Respectfully,
J. H. WALCOTT.

San Francisco, March 28, 1874.

[The glycerine is used for several reasons. Its antiseptic and undrying properties ensure permanency to the mucilage; its syrupy consistency gives a good "body;" but the principal reason is found in the fact that gum tragacanth appears to be composed of two different constituents, or to exist in an amorphous condition, one part soluble in water and resembling gum arabic, the other swelling in water but not dissolving—glycerine renders this latter portion manageable and thus produces a mucilage of uniform consistency. We think that the receipt for rice paste has been published in the Press.—Eds. Press.]

Platinum.

In speaking of the precious metals at the Vienna Exposition, *Engineering* speaks of platinum as follows:

As for our last precious metal, platinum, we looked in vain for samples from Russia, which is the chief producer; but in 1871 she only got 4,100 lbs. of this precious and valuable metal. The platinum diggings of Russia are near Bogoslovsk, Miask, Newjansk and Nischnei Tagilsk, in the Ural mountains; they were discovered in 1824; and at six places in 1868, 1869 and 1870, from 494,000, 367,000 and 263,000 tons of sand, 6,675, 7,770 and 6,455 lbs. of raw platinum were obtained respectively. The metal contains always some other substances; thus Le Play found in a sample from Nischnei Tagilsk, 75.1 platinum, 1.1 palladium, 3.5 rhodium, 2.6 iridium, 0.6 osmium, 2.3 osmium, 0.4 gold, 1.0 copper, and 8.1 iron. The raw metal is almost entirely sold to England and Paris, at a price of about 144. per pound of pure metal. It is there refined before it can be worked up into manufactured articles. Of such objects we found some chemical apparatus exhibited by Demontis-Gueneres & Co., who hold a leading position in Paris, and Heraus, of Hanau, in Germany, the former firm also showing metallic ruthenium and palladium. The prize for such work, however, is due to Johnson, Matthey & Co., of Hattongarden, London, who exhibited a splendid platinum still for sulphuric acid works, worth about 3,500. There was also an ingot of palladium worth about 2,000, which had been extracted from a mass of platinum of a value of over one million pounds. Very remarkable also was a nugget of platinum, weighing 4,728 grammes, in a collection of platinum sand and washed platinum, while the alloys of iridio-platinum and platino-iridium deserved great attention, the latter being intended for normal metres, and being smelted in lime crucibles, after the method of Deville. Amongst the exhibits from New Zealand was also a sample of feriferous platinum sand from Orepuki diggings, north shore of Foveaux straits. The extracted metal contains 55.37 platinum, with a little iridium, 13.65 iron and 0.98 gold and quartz. In the Imperial Brazilian Museum's collection were also some samples of platinum sand and platinum from Minas Geraes, in Brazil, where its original matrix is syenite. The annual produce of platinum in Brazil, Columbia, California and Borneo seems not to exceed about 1,000 lbs.

A CURIOSITY. — Ex Governor Blasdel has shown us a great curiosity which he found in the Franklin mine, American Flat. It appears that in some part of the mine a wooden spout was put up to conduct a stream of water out of the way of the men working in a drift or tunnel. This was done years ago. During a late visit to the mine Mr. Blasdel discovered that the inside of the wooden spout had been formed a second spout of stone. The stone resembles marble, and both on bottom and sides appear regular layers resembling the "growths" of a tree, about an eighth of an inch in thickness and differing slightly in color. This stone cast of the spout presents on the under side a fac simile of the grain of the wood of the board forming the bottom of the spout, and it was the opinion of many persons who examined it, that a portion of the wood had been petrified and thus incorporated in the mass of stone forming the imitation spout. The material thus solidified appears to be almost pure silica, with perhaps aggregations of some grains and particles of other matter. The water forming this singular concretion, almost as hard as flint, is as clear as the water of any ordinary spring or fountain. A similar coating of stone would doubtless be formed in or upon any article carved in wood and placed where the water would flow over or around it, and some curious things might thus be formed. —*Enterprise.*

The Bladen Mines.

The San Diego *Union* says: As this new mining district has recently absorbed a large share of public attention, a more detailed description of the locality and ledges than has yet been given, will be of interest. The Bladen gold and silver ledge is situated near the summit of the highest foothills of the Coast Range mountains, and is distant about eighty miles from San Diego, and fifteen miles northeast of Temecula. The mining district borders on the San Jacinto plains, at the base of the San Jacinto and Coahuilla mountains. It is twenty-five miles from "Old Grayback," the highest peak of the San Bernardino mountains.

The ledge has been discovered at different points each side of the Bladen mine for a distance of about fourteen miles, and bears a northwesterly and southeasterly direction, following the range of hills in as straight a line as may be in the direction of the Julian mines on the south, and the San Bernardino mountains on the north.

Water is abundant at the mines at this time, and is said to run in the San Jacinto creek during the year. Oak timber is plentiful enough in the district for fuel, and will supply quartz mills for many years to come; while in the mountains, from fifteen to twenty miles distant, abundance of fine redwood and cedar timber of the best quality is found.

The appearance of the country is in every way favorable to the existence of extensive mineral deposits.

The Bladen ledge has been opened up in six or eight different places by shafts sunk only a few feet in depth. The deepest shaft is about fifty feet, in which the ledge is solid the whole distance between the wall rocks, and is over four feet in width. In all of the other claims the ledge averages over six feet in width from the surface down, and in some of them much more than this width. The "walls" are excellent, with the proper dip and gauge well marked in every claim.

The altitude of the locality is about five hundred feet below that of the Julian district, which is about sixty-five miles distant. The character of the country immediately surrounding the Bladen district is more hilly and broken than that around Julian, and the land apparently is neither as good for farming or grazing as that of the latter section. But six miles southwest the country opens into low rolling hills, covered with grass and flowers, which are still more abundant and beautiful in the valleys which lie at short intervals between the low ranges and extend for miles in many directions, until they widen out into the Temecula valley, which is an extensive country, of good soil, well watered and timbered.

North of Bladen, about five miles, is the head of the San Jacinto plains, from which point one might travel a long day's journey north, south and west, over a country as level, apparently, as a floor, save where occasionally barred by a grassy hill, jutting out to mark the boundary separating one beautiful valley from another. This part of San Diego county is unsettled, although profitable farms and homes might be made there for hundreds if not thousands of families. About fifty thousand sheep and many cattle roam the hills and valleys.

Two mining districts have now been formed; the Bladen and the Crystal district, which adjoins the former. Good local mining rules have been adopted in conformity with the provisions of the mining laws of Congress. Work on the ledges will be pushed with vigor, and if the ledges prove permanent, of which there is little doubt, mills will soon be running, and there will soon be a very prosperous mining camp in that northern portion of our county. No observer of experience has expressed a doubt of the existence of a boundless store of mineral wealth. The ore has been tested several times, and yields from all parts of the ledge not less than \$80 in silver and \$20 in gold per ton.

GOLD ON THE YELLOWSTONE.—Since the summer of 1873, and at regular intervals, discoveries of gold in paying quantities have been reported from the tributaries of the Yellowstone river in Montana. The latest exciting news from the undeveloped auriferous deposits of the Territory is contained in a letter addressed to the *Bismarck Tribune* by a resident of Bozeman, Montana. According to this communication, the new El Dorado is the Tongue river valley, about midway between Bozeman and Bismarck. In February a large expedition was organized at Bozeman, composed of over 100 men armed with needle guns and three pieces of artillery, with plenty of grape and shell. Other expeditions are forming, which will increase the number of miners and explorers near Tongue river to 200. The original discoverer says that he sunk shafts in two gulches and on one bar, and from 11 buckets of dirt he got \$6.60 of coarse gold. The expedition mentioned carries provisions sufficient for each man for six months. They go determined to make a permanent stand and hold the country, if possible. Many business men are preparing to transfer their business to the mines in early spring.

QUICKSILVER.—The annual report of the Quicksilver Mining Company has been presented, showing that this Company have paid up all the first mortgage bonds, which were due on the first of June last, and amounted to \$500,000. They have also a balance on hand of \$320,000. The contracts to supply their products at \$30 and \$50 per flask have expired, and the company have now advanced their rates to \$100 per flask.

SCIENTIFIC PROGRESS.

Sulphuric Acid.

Sulphuric acid, or oil of vitriol, is certainly the most important of all chemical products. It is seldom used for domestic purposes, and we presume there are thousands of our readers who never saw an ounce of the concentrated acid in their lives. But this sour, corrosive liquid is of immense value to mankind. In the great industrial world it occupies a position second perhaps to no other substance. If the amount of its manufacture and consumption by any people does not measure the degree of their civilization, it must be regarded as a common pivot around which revolve all the industries pursued by any nation.

It is through the agency of this acid that we have soda, soap, glass, paper, bleaching and dyeing salts, nitric acid, aniline colors, kerosene oil, superphosphates for farmers, and a thousand other agents which our modern civilization demands. Indeed, it is from the reactions to which it gives birth, that the greater part of the chemical products employed in the arts and sciences, the greater part of the medicaments used in the art of healing, result. Only those who are engaged in some pursuit demanding its employment, or those who are specially acquainted with chemical industries, have any correct idea of the colossal scale upon which this acid is manufactured both in this country and in Europe. At one establishment in the city of Brooklyn, N.Y., the stream of concentrated acid which runs from the platinum retorts is nearly three-fourths of an inch in diameter, and this stream is constant, day and night, month after month, and year after year. This is but one of the many immense acid factories scattered over our country.

In Europe it is produced upon a still grander scale, and the united streams of the fiery liquid, which flow from the thousands of retorts in active operation, would aggregate in volume some of the mountain cascades so much admired in Switzerland. It is estimated that the annual production in Europe reaches 800,000 tons. In order to gain some conception of the volume of the liquid, let us imagine that all the acid made in Europe were carried to Central Park and poured into a canal lined with lead. This canal would require to be six and a half feet deep, 34 feet wide, and more than half a mile long. The acid would nearly fill the basin of the beautiful lake over which the boatmen convey passengers in their gay barges, during the summer.

In Europe the acid is manufactured mostly from iron pyrites, and in this country the pyrites are to a considerable extent being substituted for sulphur. The acid made in this city from the mineral is sold at a lower price than that from sulphur. The strength and effectiveness of the acid from the two sources are the same, but the iron sulphide is apt to contain traces of arsenic, which is found in the acid. This does not, however, interfere with its use in the arts. The enormous consumption of the pyrites in Europe in this manufacture fills one with astonishment. It is estimated that more than 660,000 tons are used, a quantity which would require nearly 100,000 railroad cars to convey the mineral from the mines to the acid works. The statements here presented are well calculated to show the great importance of one of our industrial products not well understood by the majority of readers. —*Journal of Chemistry.*

THE OXYHYDROGEN LIGHT.—Dr. John Nicol describes, in the *British Journal of Photography*, a new mode of making lime cylinders as follows: Four parts of precipitated chalk are intimately mixed with one part of ponderous carbonate of magnesia, and the whole made into a stiff paste with mucilage of gum arabic. The mass should be well beaten in a mortar, or in any other way to ensure thorough incorporation, and made a little stiffer than glazier's putty. It then may be rolled on a slightly oiled marble or porcelain slab, or smooth board, till it assumes the form of an ordinary ruler, and then cut into suitable lengths. The holes are easily made with a wire of the proper thickness; and if the wire be "olive ended," like those used for piercing tobacco pipe stems—that is, having a tiny bulb or button at the end to be inserted—it will penetrate straighter and easier. The cylinders thus finished only further require drying, which may readily be done in the kitchen oven; and as they must be thoroughly dry, they may be left there for two or three days.

THE heat of the sun nowhere penetrates the ocean more than six hundred feet. At a depth of from one to two miles the temperature is about four degrees below the freezing point, caused, probably, by the ice water poured into the ocean from the Arctic regions, northern and southern. This, being heavier than the surface water, sinks to the bottom and forms currents ever flowing toward the equator, to take the place of the water which, there heated and rendered lighter, rises to the surface and forms the Gulf and other warm streams. As these flow again toward the Arctic regions, it will be seen that a perpetual circuit is kept up, the Arctic waters continually lessening the heat of the tropical waters, and these, in their turn, giving out their heat as they flow away from the tropics. England is warmer than Greenland only because of the warmth derived from the Gulf Stream.

Electrical Art.

Marvelous things have come from the jerking of the leg of Volta's frog. The nerve fibers of that dissected Batrachian have culminated in telegraph wires stretching over the globe; and the mysterious force that thrilled them under the hands of the earliest of electrical experiments is now applied to half a hundred uses, some of them utilitarian to the case, some of them reaching upward to the confines of a man's loftiest philosophical knowledge. The wires that Melloni extended from a thermoelectric pile to the neck of a sleeper still prove the correlation of vital and physical force; the conversion of electricity to heat when retarded by an imperfect conductor, is the foundation of the most recent plan for illuminating streets and buildings.

Indeed, vast as has been the advancement of electrical science, we are hardly more than beyond its nearest and narrowest edges. Some time since, in conversation with one of the most eminent of electrotypers, we were told that more than one obvious drawback from perfection in that much improved art is yet to be removed by new inventions; studying the records of 30 years ago, concerning the relations of the electric fluid, so called, to vegetable life, we found the question of its utility in promoting plant growth not yet fully answered in the negative; taking a broad view of many of the uses to which bleaching powders are put, we find ozone proposed as a substitute, and its chief obstacle, its cost, only to be obviated by cheapening the production of the electric currents, by which ordinary oxygen is converted into its more powerful allotropic form; casting a glance at the science of medicine, we find electricity, long the foundling of empires, giving evidence of a value not yet fairly understood, and it may be, as yet, somewhat dangerous to trifle with; and in the more ordinary and common place realm of the mechanics' workshops, and the draughting board of the engineer, electricity takes its place in projects for motive power, for regulating time pieces, for protecting buildings from fire and burglary, for signaling on railways, and for igniting the gas jets in the lamps of streets. And even more than this, telegraphy itself, which has exercised the best inventive intellect of the world for more than twenty years, gains new triumphs in novel means of transmitting two messages simultaneously in opposite directions over the same wire, thus at once doubling the facilities of communication in all existing lines. From this hasty view of electrical art, and not one-half of the whole is here included, we may well venture the prediction that this occult science has yet undiscovered fields of usefulness before it; that new forms of industrial life are to arise from "the death and decay of metals" in the battery jars. —*Newark Manufacturer.*

WIND AND CURRENTS.—The commonly received hypothesis with regard to the trade-winds is now called in question by some of the best scientific minds. This hypothesis, as is well known, assumes that the lower strata of the atmosphere near the equator, being over-heated by the sun's rays, expand and rise into the upper regions of the aerial envelope, their place being taken by a cooler air, which rushes from the higher latitudes of the north and south; and, moreover, that the ascended heated air travels backwards, as an upper current, to the latitudes where the cool air originates, and then, descending again, the aerial circulation is completed. One of the most striking objections now made against this theory is, that the equatorial zone is far from being the hottest part of the tropical and sub-tropical regions. It is shown, as a matter of fact, that in the North Atlantic basin, the great Desert of Sahara has a temperature from twenty to fifty degrees hotter than the equatorial zone; yet, so far from a cool current of air being drawn in from the Atlantic toward this heated region, the northeast trade-winds pass straight onward in their southerly course, without the slightest indraught toward the African coast.

ODOR.—Mr. S. J. Lyman recently lectured in Montreal on "The Diffusion of Odor." The theories regarding odor were illustrated by many facts of great interest—indeed, it is seldom so much of interest is crowded into an hour's lecture. The history of Jane Bruce, who was deaf, dumb and blind, was given. This girl was left with only the sense of smell and touch, yet was able to recognize friends after a long absence by the characteristic odor of each, and even to select her own linen from the laundry. The fact of the Cariboo detecting the hunter's approach at a mile distance by the odor, was also given to illustrate its diffusion. Quite a sensation was produced when a pair of fine eekns were presented to the audience on the platform. These much dreaded animals, which are extremely pretty, were handled by the lecturer without fear, but it was difficult to impress the audience with the idea of their safety in so close proximity. Mr. Lyman proved that the odor from these animals was so diffused that there were only 1-23,232,000th of a drop in each cubic foot of air pervaded by this nauseous perfume.

SEVERAL specimens of barrels of novel construction were recently on exhibition in the St. Louis Exchange. They are double-staved—really a barrel within a barrel—and all joints being broken makes them perfectly water-tight. The cost of them is to be no more than that of an ordinary barrel, and they are intended to carry all kinds of liquids, as well as flour, fruits, etc.

MECHANICAL PROGRESS.

The Largest Gun Ever Made.

"The Sataliff gun, recently cast at the West Point Foundry, weighed in the rough state 72,000 pounds, and is the largest gun ever made. The gun is made of iron, standing a pull of 30,000 pounds, and is now 19 feet long. It is to have a steel barrel four inches thick at the breech and three at the muzzle, with rifle bore, and weighing 44,000 pounds. The shot will be nine inches in diameter, and will weigh about 250 pounds. It will require eight days to cool the monster by the Rodman process, water being run through the bore during all that time. The gun is made for Government experiments."

The statement that this is the largest gun ever made, appears to be a very decided mistake.

Mallet, in speaking of cannon, divides the subject into four parts, corresponding to the different epochs of improvement, and says:

"The first or earliest was that of stone balls—the stone of the ancient catapult transferred to a new agent of propulsion. The artillery prepared for throwing these was of great caliber, sometimes as much as two feet, and was either formed of forged iron staves, and rings shrunk on them hot, as in the Bombard of Ghent, Mons-Még at Edinburgh, etc., or cast in bronze as in the Kammerlichs of the Dardanelles."

As early as 1452, Mohammed II. established a foundry at Adrianople, for the express purpose of casting "a cannon capable of throwing a ball of stone of sufficient size to batter the walls of Constantinople." Such a cannon was then cast of brass, by one Urban, a Dacian or Hungarian, who had deserted from the Greek army. In speaking of this monster cannon, Gibbon says that it was of such enormous size that in order to transport it, it was necessary to link together 30 wagons; and a team of 60 oxen was required to draw it.

According to Leonardus Chiensis, the ball for this cannon weighed 1,200 pounds, but this statement is hardly to be believed, especially in view of the fact that other authorities place the weight at 600 pounds. Gibbon tells us that the explosion was felt or heard for a distance of 12 miles, and the ball was driven above a mile; and on the spot where it fell it buried itself a fathom deep. The caliber of the gun was 22 inches, and unless the stone, of which the ball was made, was exceedingly heavy for stone, it would be impossible for a ball of 22 inches diameter to weigh 1,200 pounds.

We are also told by Gibbons and others, that a cannon more enormous than that of Mohammed, just mentioned, still guards the Dardanelles. This cannon has a caliber of 28 inches, and if the report of its trial a few years since be true, "the effect was far from contemptible." "A stone bullet of 1,100 pounds weight was once discharged with 330 pounds of powder; at a distance of 600 yards it shivered into three rocky fragments, traversing the strait, and leaving the water in a foam, again rose and bounded against the opposite hill."

Phillips tells us that the largest cannon ever made was cast in India in the year 1685, of brass; but we are unable to find any account which will tell what part of India, or the dimensions of the cannon.

He also states that at Ehrenbreitstein Castle, one of the strongest forts in Germany, is a prodigious cannon, 18½ feet long, a foot and a half in diameter in the bore, and three feet four inches in the breech. The ball made for it weighs 180 pounds, and its charge of powder is 94 pounds. The inscription on it shows that it was made by one Simon, in 1529. In Dover Castle is a brass gun called Queen Elizabeth's Pocket Pistol, which was presented to her by the States of Holland; this piece is 24 feet long.

The largest, though not the heaviest, gun of which we have any accurate description, is the Great Kremlin Gun of Moscow. An inscription on it shows that it was made at Moscow in 1586. The dimensions are: Total length, 18 feet; exterior diameter, about 48 inches; and caliber, thirty-six inches. The weight of the cannon is 97,000 pounds. All the cannon mentioned so far were originally intended for throwing stone balls; and after the idea was conceived of casting metal balls, they were tried in the old cannon, many of which were thus destroyed.

In 1856 a mortar was constructed at Woolwich Arsenal, with a caliber of 36 inches. It weighed about 35 tons finished. The shell for this mortar weighed about 3,000 pounds.

Another mammoth mortar was constructed in England a few years since after plans by Robert Mallet. The complete mortar weighs 50 tons, and is of 36 inches caliber. This mortar was constructed at an immense cost, but proved to be an utter failure. The shell unfilled weighed about 2,600 pounds.

The great cast-steel gun of M. Krupp, of Essen, Germany, weighs 112,000 pounds, or 52 English tons, and with its carriage and turntable weighs 90 tons. The diameter of the bore is 14 inches, and the length of the gun is 17½ feet. Its solid shot weighs 1,212 pounds, and its shell 1,030 pounds.

The largest gun ever made, intended for throwing metal projectiles, was made at the Fort Pitt Foundry, Pittsburgh, Pa., on the

11th of February, 1863, under the superintendence of R. Anlick, U. S. N. The muzzle is marked: "20 inch No. 1, Fort Pitt, 1864, 116,497 pounds." The dimensions are: Total length, 20 feet 3½ inches; length of bore 17 feet 6 inches; greatest diameter, five feet four inches; least diameter, two feet ten inches; caliber, 20 inches.

From this it would appear that the Sutcliff is not the largest gun ever made, but that, on the contrary, guns of larger size and greater weight were made several hundred years ago, and from that time to the present the largest gun made for modern projectiles being cast in the United States.—*Arifan.*

Agricultural Machinery.

Prof. Fawcett, in his able paper on Wealth and Wages in Great Britain, says: Numerous instances may also be given of the extent to which employers are induced to economize labor by the introduction of improved industrial processes when trade is unfavorably affected by any such circumstances as a deficiency of raw material or a scarcity of labor. Thus it is said: "In their gallant struggles in the difficult times following the war in America our manufacturers developed the resources of machinery to a greater extent than had ever been attempted before, and they succeeded in making a considerable reduction in the amount of labor employed." In consequence of the extremely high wages which are prevalent in the United States, Americans are far more interested than Englishmen in applying machinery with the view of saving labor. Machinery is not only far more largely used in agriculture in the United States than it is in England, but many of the improvements which we have introduced into agricultural implements have been obtained from America. I find it stated that in the United States the application of labor-saving machinery to agricultural operations is increasing every year. The number of patents issued for agricultural implements was, in 1847, 43; in 1863, 390; in 1864, 563; in 1866, 1778; and in 1867, 1800. It can scarcely be doubted that even the comparatively small rise which has taken place in the wages of English agricultural laborers since the formation of agricultural unions, has already acted as a stimulus to many farmers to adopt various means of economizing labor, such as the employment of more machinery. If the supply of agricultural labor should be diminished, as seems not improbable, by a large emigration of agricultural laborers, it cannot be doubted that the farmers would be prompted to make still greater efforts to economize labor, and thus the rise in wages, which would naturally result from a diminution in the supply of labor, would be to a considerable extent counteracted.

THE CRANSTON ROCK DRILL.—An English exchange thus speaks of a new drill—one of the class intermediate between hand and machine tools: The machine is simple in its construction, and yet can be applied in a great variety of ways. For instance, the drilling tool is self-rotary, but the machine is so arranged that the drilling tool can be rotated by hand, which is of great advantage when working stone of unequal hardness or containing cavities. Again, the self-rotary motion can be readily exchanged to a slotting motion, and it can be applied to drill at any angle. It is much shorter and lighter than any other drill, the machine and tripod-stand together weighing only two cwt. The valve can be readily adjusted so as to regulate the force of the blow to the varying nature of the stone to be bored; and it will bore a hole two feet deep without changing the drill. Through Aberdeen granite it bores at the rate of from two to four inches per minute; and at an iron-stone mine in Cumberland, a hole, two inches in diameter and four feet six inches in depth, has been drilled in 32 minutes in hard hematite iron-ore, with a pressure of 35 lbs. of air at the machine. The drill is extremely strong and compact, and so easy to work that any ordinary miner can very soon acquire a thorough knowledge of it.

PEAT AND PETROLEUM.—Costly coal has had the effect of fostering the production of rival fuels and gas-producers. The result of experiment has been to launch various projects for producing peat fuel on the market. Gas is now obtained from petroleum instead of coal. These pregnant facts induce the careful observer to disregard the warnings of the croakers who predict the rapid exhaustion of our coal supply and the consequent decline of English prosperity. A hundred years ago the power of steam—if known to a few students—had not yet been applied to the purposes which have contributed so largely to the advancement of the present century. It is not likely that discovery will come to a full stop at once, or that our descendants will prove less able than ourselves to unravel the hidden secrets of nature.—*Iron.*

IMPROVED POTATO DIGGER.—A scraper removes the portion of the earth which covers the potatoes, leaving a corrugated roller suspended from the beam to act with good effect upon the smooth surface thus formed. A double or V-shaped plow, following immediately after, is thus enabled to elevate the earth in which the potatoes lie embedded, without injury to them, and with comparatively small expenditure of force. The roller also acts as a colter wheel, in respect both to the scraper and the plow, governing the depth to which they penetrate the soil.

Weekly Variations in Stocks.

(Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.)
For 6 days ending Wednesday, Apr. 8, 1874.

NAME OF COMPANY.	SHARES IN MINES.	HIGHEST.	LOWEST.	ADVANCE.	BEHIND.
WASHOE.					
Alamo.....	300	6000	16TH	13TH	
Alpha Con.....	3000	3000	6TH	6TH	
American Flak.....	1500	18000	8TH	8TH	
Bacon M. & M.....	65	24000	10TH	10TH	
Baltimore Con.....	1040	10400	8TH	8TH	
Belcher.....	224	22400	37TH	35TH	
Best & Belcher.....	20	3000			
Bowers.....	2500	25000	9TH	8TH	
Bullion.....	5000	50000	38TH	37TH	
California.....	2500	25000	62TH	60TH	
Chollar.....	130	24500	104TH	99TH	
Confidence.....	3450	34500			
Cons. Gold Hill Quartz.....	1800	18000	8TH	8TH	
Cons. Virginia.....	1600	16000	24TH	24TH	
Cook & Geyer.....	600	10000	8TH	9TH	
Crown Point.....	2000	20000	55TH	54TH	
Danely.....	70	25000	55TH	54TH	
Empire M. & M.....	75	50000	59TH	43TH	
Exchequer.....	400	8000	43TH	36TH	
F. Mount.....	3000	12000	11TH	11TH	
Flowers.....	1200	12000	31TH	29TH	
Franklin.....	400	16000	57TH	57TH	
Globe.....	184	10000	7TH	6TH	
Gold & Norcross.....	2000	20000	44TH	43TH	
Imperial.....	2000	20000	11TH	11TH	
Insurance.....	2000	20000	11TH	11TH	
Jacob Little.....	2000	20000	11TH	11TH	
Julia.....	2000	20000	11TH	11TH	
Justice.....	2000	20000	11TH	11TH	
Kentucky.....	2000	20000	11TH	11TH	
Knickerbocker.....	1200	24000	24TH	21TH	
Kossuth.....	2000	20000	11TH	11TH	
Lady Bryan.....	3500	35000	50TH	35TH	
McMeans.....	1500	50000	14TH	13TH	
Mint.....	3000	30000	42TH	39TH	
Nevada.....	3000	30000	42TH	39TH	
New York Con.....	3500	35000	50TH	35TH	
Occidental.....	800	10000	24TH	22TH	
Ophir.....	1400	16500	24TH	22TH	
Overman.....	1200	37400	55TH	57TH	
Paul Sheridan.....	1200	24000	10TH	9TH	
Piedmont.....	2000	20000	11TH	11TH	
Rock Island.....	2000	20000	11TH	11TH	
Sage.....	800	16000	104TH	99TH	
Seg. Belcher.....	1600	6000	13TH	13TH	
Seg. Caledonia.....	1000	10000	13TH	13TH	
Seg. Rock Island.....	2000	20000	11TH	11TH	
Sevier.....	2400	24000	26TH	21TH	
Sierra Nevada.....	2000	20000	10TH	9TH	
Silver Hill.....	5400	10000	10TH	9TH	
South Comstock.....	2400	24000	3TH	24TH	
South Overman.....	1500	15000	3TH	3TH	
Succor M. & M.....	1500	15000	3TH	3TH	
Sutro.....	20	50	5TH	5TH	
Trench.....	20	50	5TH	5TH	
Union Con.....	2000	20000	16TH	15TH	
Utah.....	1400	20000	6TH	5TH	
Woodville.....	1400	24000	24TH	13TH	
Yellow Jacket.....	1200	24000	8TH	7TH	
NEVADA.					
Adams Hill.....	5000	50000	26TH	26TH	
Alps.....	800	30000	26TH	26TH	
Amador Tunnel.....	3000	30000	5TH	4TH	
American Flak M. & M.....	300	30000	7TH	6TH	
Belmont.....	1500	15000	7TH	6TH	
Belmont.....	1500	15000	7TH	6TH	
Chapman M. & M.....	3000	30000	7TH	6TH	
Charter Oak.....	1000	30000	6TH	5TH	
Chief of the Hill.....	3000	30000	6TH	5TH	
Chief East Extension.....	3000	30000	6TH	5TH	
Columbus M. & M.....	10000	50000	15TH	14TH	
Corder.....	2000	25000			
El Dorado South.....	20000	20000	15TH	14TH	
Enterprise Con.....	1000	10000	15TH	14TH	
Excelsior.....	12000	12000			
Harper.....	30000	30000			
Hays.....	1000	10000	2TH	2TH	
Hermes.....	1000	10000	2TH	2TH	
Home Ticket.....	3500	30000	12TH	12TH	
Hunt & Hunt.....	1000	10000	12TH	12TH	
Ingram.....	1000	10000	12TH	12TH	
Ivanhoe.....	1000	10000	12TH	12TH	
Jackson.....	3000	30000	12TH	12TH	
Josephine.....	5000	50000	24TH	24TH	
Junius Con.....	5000	50000	24TH	24TH	
K. K. Con.....	1000	10000	24TH	24TH	
Kentucky.....	1000	10000	24TH	24TH	
Kinston.....	1000	10000	24TH	24TH	
Lillian Hall.....	1000	10000	24TH	24TH	
Louis.....	2400	30000	24TH	24TH	
McMahon.....	1000	10000	24TH	24TH	
Marion.....	1000	10000	24TH	24TH	
Meador Valley.....	2400	60000	11TH	11TH	
Mocking-Bird.....	1200	30000	12TH	12TH	
Monitor-Belmont.....	2000	24000	12TH	12TH	
Murphy.....	2000	24000	12TH	12TH	
Newark.....	800	32000	24TH	24TH	
Pacific Tunnel.....	2400	10000	24TH	24TH	
Pais & Paisano.....	2400	10000	24TH	24TH	
Peavine.....	1000	30000	24TH	24TH	
Phoenix.....	1000	50000	12TH	12TH	
Pioche.....	1000	20000	6TH	5TH	
Pioche West Ex.....	25000	25000	6TH	5TH	
Pioche-Phoenix.....	4000	40000	12TH	12TH	
Portland.....	5000	30000	12TH	12TH	
Raymond & Ely.....	5000	30000	12TH	12TH	
Silver Peak.....	1500	30000	12TH	12TH	
Silver West Con.....	1500	30000	12TH	12TH	
Star Con.....	13000	13000			
Starlight.....	6900	25000			
Sterling.....	3000	30000			
Spring Moon.....	3500	35000			
Spring Mt. Tunnel.....	2000	20000			
Ward Beecher.....	200	30000	4TH	2TH	
Washington & Crooke.....	200	30000	4TH	2TH	
Yellowstone.....	200	30000	4TH	2TH	
CALIFORNIA.					
Alpine.....	1200	12000	2TH	1TH	
Bellevue.....	3000	30000	2TH	1TH	
Calaveras.....	3200	20000	3TH	3TH	
Oderberg.....	2400	24000	3TH	3TH	
Chariot Mill.....	2400	24000	3TH	3TH	
Cottonwood Creek.....	20000	20000			
Dunderberg M. & M.....	20000	20000			
El Dorado.....	1600	25000	3TH	3TH	
Eureka.....	1600	25000	3TH	3TH	
Gillis.....	1600	25000	3TH	3TH	
Independent.....	1600	25000	3TH	3TH	
McKinnon.....	1500	10000	12TH	12TH	
St. Jefferson.....	1500	10000	12TH	12TH	
Oakville.....	1500	10000	12TH	12TH	
St. Lawrence M. & M.....	1500	10000	12TH	12TH	
St. Patrick.....	3000	30000	24TH	24TH	
Teensuch.....	3000	30000	24TH	24TH	
Yule Gravel.....	400	10000			
IDAHO.					
Empire.....	1500	25000	9TH	7TH	
Golden Chariot.....	1500	25000	9TH	7TH	
Ida Elmore.....	1300	10000	3TH	2TH	
Mahogany.....	720	10000	3TH	3TH	
Red Jacket.....	1000	20000	24TH	24TH	
South Chariot.....	1000	20000	24TH	24TH	
War Eagle.....	1000	10000	4TH	1TH	
WHITE PINE.					
Consolidated Loe.....	1000	20000			
Mammoth.....	1900	35000			
Noondy.....	1000	20000			
Orig. Hidden Treas.....	800	21300	9TH	8TH	
Silver Wave.....	2400	24000			
Ward Beecher.....	2400	24000			
UTAH.					
Deseret Con.....	2400	30000			
Wellington.....	5000	50000			
OREGON.					
Virtue.....	2500	20000			

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Delinq't.	Sale.	Secretary.	Place of Business.
Alpha Gold M. & M Co	Amador Co Cal	6 1 00	Mar 10	April 14	J. E. Lightner	438 California st
Alpine Gold M. & M Co	Cal	6 1 00	Mar 10	April 14	J. E. Lightner	438 California st
Andes S M Co	Washoe	1 50	Mar 2	April 6	Edward Landers	507 Montgomery st
Arizona and Utah M Co	Gold Hill	9 75	Mar 11	April 16	J. McGuire	419 California st
Chief of the Hill	Ely District	9 75	Mar 11	April 16	J. McGuire	419 California st
Daney G. & S M Co	Washoe	9 50	Mar 31	May 5	G. G. Spinnery	419 California st
El Dorado South Cons M Co	Nevada	3 1 00	Feb 26	Mar 31	W. Willis	419 California st
Globe M Co	Gold Hill	12 1 00	Feb 11	Mar 16	J. McGuire	419 California st
Gould & Curry S M Co	Washoe	22 2 00	Mar 26	May 30	W. Willis	419 California st
Huhn & Hunt S M Co	Ely District	9 30	Mar 5	April 16	T. L. Kimball	419 California st
Ida Elmore M Co	Idaho	12 1 00	Feb 12	Mar 18	W. Willis	419 California st
Indus G. & S M Co	Idaho	12 1 00	Feb 12	Mar 18	W. Willis	419 California st
Knickerbocker M Co	Gold Hill	8 1 00	Feb 14	Mar 21	David Wilder	419 California st
Lady Bryan M Co	Nev	2 50	Mar 31	May 4	Henry Boyle	Stevens Building
Mahogany G. & S M Co	Idaho	1 50	Feb 25	April 7	F. Swift	215 Sansome st
Mammoth S M Co	White Pine	1 50	Feb 25	April 7	F. Swift	215 Sansome st
Miner G. & S M Co	Washoe	1 10	Feb 5	Mar 13	J. L. King	419 California st
Newark S M Co	Ely District	6 1 00	Feb 13	Mar 25	D. Bagley	419 California st
North Belmont M Co	Nevada	10 10	Mar 17	April 18	D. L. Thomas	419 California st
Original Gold Hill G. & S M Co	Washoe	1 50	Mar 24	April 24	Joseph Marks	419 California st
Pioche West Ex M Co	Ely District	6 25	Feb 27	April 6	T. L. Kimball	419 California st
Quintana M Co	Nevada	1 10	Feb 27	April 18	H. C. Kibbe	419 California st
Rock Island G. & S M Co	Nevada	1 10	Feb 27	April 18	H. C. Kibbe	419 California st
Rye Patch Cons M. & M Co	Nevada	2 1 00	Feb 25	April 7	D. F. Verden	419 California st
Savage M Co	Washoe	1 50	Mar 5	April 8	E. Holmes	419 California st
Silver Cloud G. & S M Co	Gold Hill	1 25	Mar 19	April 22	A. Noe	419 California st
Great Blue Grass S M Co	Nev	9 2 00	Feb 24	Mar 30	A. Noe	419 California st
South Overman S M Co	Washoe	1 50	Apr 4	May 5	D. Widner	419 California st
St. Lawrence M. & M Co	Placer Co Cal	5 50	Feb 25	April 4	R. B. Noyes	411 California st
St. Patrick G M Co	Washoe	4 30	Mar 9	April 16	D. F. Verden	419 California st
Tyler M Co	Washoe	4 30	Mar 9	April 16	D. F. Verden	419 California st
Union Cons S M Co	Washoe	5 50	Mar 2	April 8	J. M. Buffington	419 California st
Wellington G. & S Co	Utah	4 50	Feb 17	Mar 24	R. W. Wrenner	414 California st
Woodville M Co	Gold Hill	6 1 00	Feb 19	Mar 14	A. Noe	419 California st
Yellow Jacket M Co	Washoe	17 5 00	Feb 10	Mar 14	G. W. Hopkins	Gold Hill

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Benjamin M & M Co	Nevada	1	5	Mar 17	April 25	May 15	Leander Leavitt	401 California at
Black Mountain Coal M Co	Cal	3	3	Feb 25	April 6	May 4	F N Wells	402 Montgomery st
Cedarburg Ist N Extension M Co	Cal	4	10	Mar 7	April 10	April 29	J N Webster	420 Montgomery st
Champion Cons M. & S Co	Nevada	1	30	Mar 26	May 1	May 20	J M Sullivan	Merchants' Ex
Commercial Coal M Co of S F	Cal	2	35	Feb 25	April 6	May 4	S B Hanson	402 Montgomery st
Dry Creek T & Fluming Co	Cal	50	Jan 29	Mar 10	April 14		Walter Turnbull	445 California st
Emerald Hill M Co	Utah	6	25	Mar 13	April 14	May 11	F Madge	Merchants' Ex
Esmeralda Hill M Co	Utah	6	25	Mar 13	April 14	May 11	F Madge	Merchants' Ex
Esta Eugena Cons S M Co	Nev	9	25	Apr 1	May 8	June 8	A Noel	419 California at
Eureka M & Smelting Co	Nevada	4	25	Feb 17	Mar 25	April 15	T P Beach	411 California at
Glasgow G M Co	Yuba Co Cal	2	25	Mar 30	May 1	May 20	O S Cartisa	419 California at
Globe Consolidated M Co	Gold Hill	1	75	Mar 11	April 16	May 4	J McGuire	419 California at
Great Blue Gravel Range Co	Cal	5	10	Feb 12	Mar 19	April 10	W H Watson	302 Montgomery st
Green Horn G M Co	Cal	3	100	Feb 9	Mar 13	April 9	J F Lightner	438 California at
Hall & Van Dyke Cons Coal Co	Wyoming	2	1 00	Mar 9	April 20	May 15	F Swift	419 California at
Highland Cons M Co	Nevada	1	25	Feb 2	Mar 13	April 11	R H Brown	402 Montgomery st
Iowa M Co	Nev	10	10	Apr 3	May 11	June 8	A Carpenter	605 Clay st
Jefferson G & S M Co	Cal	9	200	Mar 26	May 1	June 1	O V D Hubbard	214 & 216 Pine
Josephine Quicksilver M Co	Cal	9	200	Mar 26	May 1	June 1	O V D Hubbard	214 & 216 Pine
Josephine Quicksilver M Co	Cal	9	200	Mar 26	May 1	June 1	O V D Hubbard	214 & 216 Pine
Lane & Kurtz Caribbo M Co	Col	6	110	Mar 27	April 27	May 27	G Snacke	305 Sansome at
Lady Franklin G & S M Co	Cal	30	Mar 9	April 17	May 12	June 12	J S Juty	507 Montgomery st
Lane & Kurtz Caribbo M Co	Col	6	110	Mar 27	April 27	May 27	G Snacke	305 Sansome at
McMahon S M Co	Shell Creek	7	25	Mar 21	April 30	May 30	R B Minor	411 California at
Monte Cristo S M Co	Nev	1	60	Mar 21	April 27	May 30	G R Spence	320 California at
Mount St Helena G M & S M Co	Cal	1	10	Mar 10	April 24	May 12	D T Bagley	401 California at
Flynn's Black M Co	Utah	2	7	Feb 9	Mar 12	April 12	A Badlam	418 Montgomery st
Jacot M Co	Idaho	3	100	Apr 13	May 7	May 30	Wm Willis	412 California at
Sanderson G M Co	Calaveras Co	9	25	Feb 11	Mar 10	Mar 31	Wm Stewart	113 Liederdorff at
Santiago M Co	Nevada	4	30	Mar 8	April 23	May 15	D T Bagley	401 California at
Stanislaus River M Co	Nev	5	5	Mar 30	May 5	June 2	O S Cartisa	113 Liederdorff at
Silver Cord M Co	Idaho	3	75	Feb 14	Mar 25	April 21	J W Clark	418 Clay st
Stanislaus River M Co	Cal	5	40	Mar 19	April 20	May 9	G W Stuart	113 Liederdorff at
Star King M Co	Nevada	5	25	Feb 20	Mar 26	April 14	L Paskett	Merchants' Ex
Valley Copper M Co	Cal	9	40	Mar 12	April 17	May 7	J S Sanborn	531 California st
Valley Copper M Co	Cal	9	40	Mar 12	April 17	May 7	J S Sanborn	531 California st
Ward Ellis S M Co	Nevada	1	10	Mar 5	April 13	May 3	W H Martin	Merchants' Ex
Washington M Co	Cal	9	10	Mar 27	May 5	May 26	T B Winard	410 California at
Washington M Co	Nevada Co Cal	9	25	Feb 13	April 23	May 19	L Hermann	422 Montgomery st
Zacatore G M Co	Cal	1	25	Mar 24	April 29	May 19	L Hermann	422 Montgomery st

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR COUNTY.

IREMS.—*Ledger*, April 4: J. H. Lowery has recently struck very rich diggings about one-fourth of a mile south of his residence. Ludikins & Co.'s claim, in French gulch, near Aqueduct city, is paying from \$5 to \$10 a day to the hand. Two claims new being worked by Italians near Aqueduct are doing remarkably well. One of the claims is paying over wages, while the other, we learn, returns \$20 a day to the hand in heavy coarse gold. The claims of E. Bowers & Bro., situated near Aqueduct, are looking remarkably well and are paying over wages. Extensive work is being done on the claims of Louis Ludikins; these claims are also located near the village. Mr. T. S. Craft is now mining in Red gulch, to find the channel lost by former miners in the gulch, with every indication of success. The claims of Rendall & Bricker, near Union mill, one mile from Pine Grove, are looking remarkably well. The hydraulic claims of J. Evans and Bro., in the vicinity of Aqueduct, are rewarding their owners for their labor. The claims known as the Alsado claims have proven to be very valuable.

PROGRESSING.—The tunnel recently commenced under Butte mountain, under the superintendence of Mr. George Kelton, is, we learn, progressing rapidly, the tunnel being now in over 50 ft. This enterprise is an important one, and if driven in a proper distance, we believe the most satisfactory result will follow.

GOOD ROCK.—The rock in the 900-ft. level in the Oneida mine continues of excellent quality, and the chimney increases in length. A further sinking of this mine will develop very fine rock.

CALAVERAS COUNTY.

WEST POINT DISTRICT.—*Chronicle*, April 4: A recent discovery on the north portion of the Woodhouse turns out splendid ore. The vein rapidly increases in width; ten inches thick at the surface, twenty inches at the depth of nine feet. About one hundred tons of fifty dollar ore are lying on the dumps of the Harris mine, near South Fork. Carlton mill has been running steadily on Lone Star ore since the weather permitted hauling. The Harris mill which was recently rebuilt, increasing its capacity to ten stamps, is also pounding away incessantly. The south level of the Zacatero, at the depth of about 290 feet, shows ore two feet wide, and plenty of free gold. The San Joaquin, a strong and valuable vein, is about to be re-opened. Judge Beeler is extracting some healthy ore from his mine above Skull Flat. The hoisting works, water wheel, etc., of the Pescos mine are completed. Sinking will be resumed as soon as the pump is planted. Good Faith is idle. The True Blue company have commenced work on their mine. An attempt has been made, by Stockton parties and others, to jump the Austrian mine, owned by A. M. Harris. The Yellow Jacket employs but a small force of hands, but the Superintendent intends to resume active operations in the main shaft at an early day. The hoisting works of the mine are a pattern of economy and convenience. The Granite Crown, one of the strongest veins of this county (over forty feet wide), will start up soon. The ore of this mine is low grade on the average, but its capacity is immense; coarse north and south; inclination east, contrary to the general dip of the veins in the vicinity. The Grigg's tunnel is within a few feet of one of the veins intended to tap. A portion of the property changed hands lately. The Henry tunnel is also being steadily extended. The Superintendent of the Mina Rica is expected here in a few days to commence active operations; also the Superintendent of the Ohio.

SAN BRUNO.—Operations are still briskly pushed in the San Bruno at Mosquito. Rock is not being taken out very rapidly at present, however, owing to the fact that work is principally confined to raising from the lower to the upper level for the purpose of ventilation. It is so hot in the mine that the workmen can only labor for a few minutes at a time.

INYO COUNTY.

ANOTHER MILL FOR BENTON.—*Independent*, March 28: Mr. Williams has commenced operations. A practical architect and draughtsman has been employed to draw the plans and specifications; considerable lumber is on the ground, and carpenters have gone to work on the frame. A five-stamp battery, two large amalgamating barrels and one settler goes into it; the engine is a plain slide valve, 10-inch cylinder, with a horizontal, tubular boiler, 14 feet in length by 3 feet in diameter. The barrels will be constructed in size similar to those in Mr. Mack's mill. The settler is a Henley improved, with iron bottom and wooden sides, all from the Union Foundry, Sacramento. The mill site is adjoining the foothill of the volcanic tufa forming the base of the lava mountain south of Benton.

MONTEREY COUNTY.

ASSAY.—*Argus*, March 23: An assay of a new lead just discovered by Mr. Charles Clusker, gives \$39.59 silver. The assay was made by Mr. Craig.

The following is the assay of the Alta mine, lately located by Messrs. Taylor and Cox:

Gold \$29.79; silver, \$67.87, and 70 per cent. lead.

NEVADA COUNTY.

IDAHO.—*G. V. Union*, April 4: New shaft now down very nearly to the 800-ft. level, and the men are now timbering it in a substantial manner. It will be sunk and timbered to the 8th level by about the 1st of May. Old works are now idle, and have been for some time; but it is the intention to repair the shaft, build a new engine house, put a new and much larger engine in it for use in pumping, exclusively. The month past shows an improvement in the ore coming out of the mine, the yield for the five weeks being about \$70,000.

EMPIRE.—Several hands were discharged from the Empire during the first part of the week, because underground appearances were not good. About the same time the miners retained struck into a rich body of ore. Next Monday the mine will put to work its usual number of miners, because of the good ore found within a day or two.

NORTH STAR.—Prospects improved greatly during March. Gold to the value of something like \$14,000 was taken out in a four weeks' run.

MAGENTA.—The mine is looking well and is furnishing an abundance of ore.

INDEPENDENT.—The new tunnel is about 700 ft. in length and strikes under the gravel bed. The mine will soon be drained and the work of drifting out will begin.

TOWN TALK.—Gravel is steady as usual, and gives its two owners something over a thousand dollars a month in profits.

CINNABAR.—Some specimens, which look like cinabar, were brought to town from the regions of lower Wolf creek. These specimens were found north of the Nickerson location.

MANZANITA MINE.—The Nevada Transcript of the 2d says: We yesterday visited this mine and found fifteen men busily at work, and better than all, they are all white men. Not a Chinaman works around the diggings. The Manzanita now is in working condition.

KENTUCKY.—This mine has been suspended as to operations for some time. Water in the mine and the difficulty of getting a supply of wood—owing to soft roads—caused work to be stopped.

RAY'S RANCH.—Shaft down only 50 ft., but it runs through fine rock. From the bottom of the shaft drifts have been run both toward the north and the south.

SLATE LEDGE, or Perrin's mine, is paying regularly with good appearances underground. About 50 ounces of gold per week has been taken from the amalgamators during the past month.

NEW YORK HILL.—Work is going steadily on in this mine. Connection with an old tunnel is being made to get air, which gives about 150 ft. of backs in the rich deposit. The lower tunnel is in 350 ft.

EUREKA.—There is nothing new to report from this mine. The mill is taking out gold which more than pays expenses.

COE.—This mine is drifting from the bottom of the shaft which is over 500 ft. down on the incline. The drift is in 25 ft. and is in good rock. The ledge is three feet thick.

SEVEN-THIRTY.—The new shaft is down about 50 feet and is in good quartz all the way.

DARTMOUTH.—Good gravel is coming out and is washed in a common sluice box. This gravel is paying, as we understand, about \$20 per day to the hand.

PLACER COUNTY.

ST. PATRICK.—*Herald*, April 4: At the St. Patrick mine the old administrator, J. H. Crossman, after a few months rest, has again taken hold. The mine never looked more promising.

MAMMOTH.—No. 1 shaft is down 115 ft. Water power (over-shot) is used for a motor. Levels are being driven to develop the mine. Its prospects are very encouraging. On No. 3 ledge the ore recently extracted and milled yielded \$23 per ton, at a cost not exceeding \$10 for mining and milling.

BUCKEYE.—The deepest workings are at the Buckeye, on which the company have recently erected new and substantial steam hoisting works. The ores now being extracted from shaft No. 1, 242-ft. level, are unusually rich. Fire assays of the sulphurets, that show no free gold, range from \$1,000 to \$1,500 per ton.

ST. LAWRENCE.—The St. Lawrence mine, near Ophir, the Hathaway lode, is being worked systematically under the superintendency of Chas. Purdy. The vein is strong, say from 3 to 4 ft., and heavily mineralized.

SANTA CRUZ.

HOOSAO.—*Sentinel*, April 1: The great amount of snow has seriously retarded the work, but a few men being engaged in developing the mine during the past month.

The mines in Newark Valley are reported to be in splendid condition; and we learn by letter from a party in that place, that the mill will be started up on Monday next.

RICHMOND.—Work still continues on the McGee shaft, the workmen being engaged in running the tunnel from the shaft to connect with the mine, which is still worked through the Lisette tunnel. The new ore dump being erected for the convenience of shippers in loading their wagons, is rapidly approaching completion. The furnaces are still idle, owing to the non-receipt of coal, the impossibility of which is caused by the stormy weather.

K K.—This mine is in excellent condition. The ledge discovered about two weeks ago, in the drift northeast of the Marcelina shaft, still holds out, and the work on the winze, which is being sunk through the solid ore, still con-

tinues. The drift east of the 3d level is advancing and is now in nearly 50 ft.

RUBY CONSOLIDATED.—About 30 men at work. Quality of ore found very good. The company will use coke at the furnaces this season, and will start them up as soon as the condition of the weather permits.

EUREKA CONSOLIDATED.—The company still receives enough coal to keep one furnace going. At the mine about 100 men are at work, which number is not one-half of the force usually engaged.

TUOLUMNE COUNTY.

BUCHANAN.—*Democrat*, April 4: This well known mine, incorporated some years ago as the Tuolumne Mountain G. and S. M. Co., capital stock, \$165,000, in 1,650 shares, was reincorporated last week as the Buchanan; capital stock, \$500,000, in 5,000 shares.

NEW ALBANY ONE.—We saw a large piece of rock from this vein, which was profusely adorned with free gold and sulphurets. Several tons fell from above, in the tunnel, a few days ago; the piece we saw was brought down as a sample of the "fall."

RIVERSIDE.—J. L. Murphy, superintending work at this mine, on the other side of the Stanislaus river, says a goodly quantity of ore is already out, that promises to pay well, and the mine looks very promising. He is getting the mill ready for crushing.

RICH POCKET.—L. K. Hough and Fred. Cope, of Garrote, for several months worked on the old Cosmopolite claim, making about wages, until two weeks ago they struck a pocket which yielded \$1,000 that day, and the next Thursday they took out \$1,200.

CHAPPAAL.—Samples of ore taken from this mine, located near Buchanan, are quite rich in gold, easy to be seen with the naked eye.

TRINITY COUNTY.

DOING WELL.—*Journal*, April 4: In the claim of Hump & McInnery, Weaver Basin, two men and a Little Giant are this season doing as much work as was done by eight men under the old system of "gouging." In fact, the only difficulty now is to get the dirt out of the way. A flume of a mile in length, with a grade of only 2½ inches to 12 feet, must be allowed to take its time. Want of fall is the great drawback to the hydraulic mining here in the Basin, but even with this great obstacle there is not a claim but that is paying, and paying well, too.

Nevada.

WASHOE DISTRICT.

OPHIR.—*Enterprise*, Apr. 4: Miners are now engaged at work calculated to open connection from the 1,300 down to the 1,700-ft. level. Good progress is being made in the several winzes and uprisings that are in progress for the opening up of connections from level to level.

GOULD & CUBAY.—The prospecting drifts on the 1,500 and 1,700-ft. levels are continued. On the lowest level (1,700-ft.) more rapid work is accomplished with the aid of three Burleigh drills.

IMPERIAL-EMPIRE.—Sinking below the 1,900-ft level is progressing at the rate of 2 ft. per day. Two winzes on the 1,700-ft. level, known as the north and south, still continue in favorable looking quartz.

HALE & NORCROSS.—The main drift on the 1,900-ft. level has been driven southward to the southern boundary, and is already extended into the Savage mine. The drifts already commenced in this direction have been delayed in their progress on account of the close atmosphere, and the vein has not yet been reached.

LADY WASHINGTON.—After the pumping machinery is ready for work sinking will be resumed in the shaft. When the shaft shall have attained a depth of 300 ft., a station will be opened and a drift started for the lead.

CALIFORNIA.—The drifts on the 1,300-ft. level from the Consolidated Virginia and Ophir mines are making very regular advancement. These drifts will be connected and the ventilation of the mine secured within one or two weeks from the present date.

CAWTON POINT.—The middle winze, 1,400-ft. level, has again reached good ore. The north winze, same level, is still in good ore; also, the east cross-cut still continues in good ore and has not yet reached the east wall. The daily yield of ore is 500 tons.

KNICKERBOCKER.—The main shaft is down 515 ft., 15 ft. having been made this week. They now hoist the water out in a tank.

THE GOLDEN EAGLE.—Work has been resumed on this mine and the ledge between the shaft and the main tunnel shows a fine quality of ore. A powerful engine has been contracted for from the firm of Sellers & Co., Pittsburg, Pennsylvania, to do the hoisting of the mine.

LEO.—The rich deposit of ore found in the tunnel is holding out well. The winze now being sunk in it will in due time develop the deposit and define its course and extent.

UTAH.—On the 400-ft. level the work of development is vigorously prosecuted. The drift running south is 40 ft. from the main west cross-cut in vein material. The raise from this level is 60 ft. above the track floor, and is making rapid progress.

CALEDONIA.—The drift lately started west from the station is making good headway. The winze from the third station level is down 82 ft.

GOLDEN FLEECE (PEAVINE).—Three shifts of men are employed and the work is being pushed ahead day and night. The rock in the face of the tunnel is growing harder, which is thought to indicate that they are now nearing the ledge.

SILVER HILL.—The foundrymen and ma-

chinists are actively engaged in finishing up the new machinery, and it is thought that the works may be started up again next Thursday.

BELCHER.—The ore breasts on the 1,400-ft. level are showing exceedingly well as they are opened out. The main east drift on this level is in 358 ft. and the face is in ground which works well. The main incline below the 1,400-ft. level is down 156 ft. in hard blasting ground. The daily yield of the mine is 550 tons of ore.

ANDES.—Main west drift is now in a distance of 140 ft. The rock continuing very hard and requiring constant blasting the progress is necessarily very slow.

UNION CON.—Good progress is being made in the drift running into this ground from the 1,300-ft. level of the Ophir.

BALTIMORE CON.—The rock in the bottom of the shaft has changed and is now in material more favorable to rapid progress in sinking.

YELLOW JACKET.—Good headway is being made on the incline. Prospecting is still going on in the several drifts and cross-cuts on the 1,400 and 1,540-ft. levels.

SEO. ROCK ISLAND.—A body of favorable looking quartz has been found in the east cross-cut from the north drift. The main north drift in the direction of the American Flat is being pushed forward.

JULIA.—Still drifting southward on the 900-ft. level, encountering ore of a very fair character.

ALHAMBRA.—No work is now being done in the shaft. The business now in hand is the erection of hoisting works and the setting up of the machinery.

NEW YORK CON.—Re-timbering the main shaft will be completed by Monday. All the surface work will be completed and the new machinery in running order by the twentieth instant. About the first of May the work of sinking will be resumed in the shaft. The last 100 ft. in the shaft cut a number of very promising veins of quartz, which it is hoped will be found concentrated in one body at a greater depth. When the shaft shall have attained a depth of 550 ft. a station will be opened and a drift started for the lead.

OVERMAN.—Day before yesterday one of the rods of the new Burleigh compressor was broken, but it was found that working one cylinder furnishes sufficient air to run not only the hoisting engine at the winze on the 100-ft. level, but also a drill on the 300-ft. level. The winze is now down (measuring on the incline) 300 ft.

CHOLLAR-POTOSI.—The drift at the fourth station has been extended 12 ft. during the past week. During the week 600 tons of ore have been extracted from the ore-producing sections of the mine and shipped to the mills for reduction. The billion product for the month will exceed \$80,000.

WOODVILLE.—Good progress is being made in the erection of the new mill.

JUSTICE.—The rock in the bottom still continues to be a mixture of porphyry, clay and quartz.

EUROPA.—The winze is down 38 ft. Ground works well. Will make a cross-cut into the lead when the winze shall have reached a depth of 50 or 60 ft.

ALPHA.—The indications are about the same as last week.

LADY BRYAN.—The new shaft has attained a depth of 55 ft. As yet they are not troubled by any influx of water.

MONTEZUMA.—Ore is being encountered which is being saved with the intention of having it milled.

SUTRO.—Still pumping, with some decrease of water noticeable during the past three days.

TYLER.—Main shaft down 240 ft. Rock in the bottom working well.

SIERRA NEVADA.—*Enterprise*, April 4: The shaft is now down 310 feet. No increase of water and the rock blasts well. The work of excavating for the foundation of the new hoisting works is about one-fourth completed. About 20 men are now engaged on this work. The hydraulic works will be started up about the 1st of May.

CONSOLIDATED VIRGINIA.—The main shaft is now sunk and timbered to a considerable depth below the 1400-ft. level. On the 1,400-ft. level the drift from the shaft is already 100 ft. south of the station. The drift from the winze on the same level is now in 48 ft. The Occidental and the Sacramento mills, of a monthly reducing capacity of 3,000 tons, will assist this month in the production of bullion.

SAVAGE.—Connection with the Hale & Norcross, by means of a drift on the 1,900-ft level, will be made to-day. The west cross-cut on the 1,900-ft. level, back of the station, is now in a distance of 135 ft.

Arizona.

MORE GOLD.—*Miner*, March 28: Mr. Geo. Heintzelman arrived in town last night, from Big Bug mining district, with about seven ounces of gold dust, which he sold at the rate of \$18.25 per ounce.

We saw to-day, at the store of L. Bashford, nearly \$1,000 worth of gold, taken from the placers in the past few weeks. Head & Co., Campbell & Buffins, Asher & Co., have each about as much.

RICH ORE.—Mr. Marcens, of Antelope, has recently taken a lot of very rich ore out of his mine, the Marcens. He is now arranging said ore.

The five-stamp mill of Mr. Stanton is coming from California. It is to work the Great Sexton mine near Antelope.

MANY miners have gone, and more are talking of going, to Humboldt district, which lies south of Bradshaw.

White Pine.

Past, Present and Future.

The following article appears over the signature of "A. C.," in the White Pine News. White Pine at its birth, six years since, was a prodigy. The chloride ores of the Hidden Treasure and the Eberhardt were unknown to the North American continent, and had a parallel only in the Charnacello and kindred Chilean mines. Their richness running into the thousands, and their docility extending nearly to assay value, excited the greed or interest of all within hearing. These, together with the misapprehensions of their extent, caused by the profuse exhibition on Chloride and Bromide flats, inflamed the public to a degree unknown since the birth of California. Electrified by the prospect of interminable wealth, multitudes took their lue of march for the new Mecca, and so great was the hegira, that indifferent to sickness or climate, within the first season some ten or twelve thousand men had established themselves in huts and caves, nine thousand feet above the sea. All locomotives were in requisition, from shanks' mare to the impromptu coach, and teams groaned under the burden of subsistence for the pilgrim army. In the midst of the small-pox, with the thermometer at zero, a carnival of riot and speculation was inaugurated; mines, lands, wood and water were claimed, towns were built, lots rose to the thousands, and mining claims, good, bad or indifferent, were bought and sold at unconscionable prices. Toll roads were located, the postoffice and Wells Fargo's Express established, and the Bank of California not only contributed a branch, but some of her most enterprising operators. The motley assemblage of miners, experts, speculators, three-score and ten lawyers, and roughs, were a tumult, but each and all sedulous in his vocation. Thirteen thousand mining claims were located, many of them in conflict, from the ignorance or knavery of their owners, titles were adjudicated pell-mell, by the aid of experts and their profusion; many of the suits terminating at the exact period when their seeming worthlessness was demonstrated. A dozen mills were erected on the presumed extent of the chloride ores, and what were called the base ores were scoffed at as worthless, and not provided for in the category of reduction.

With few exceptions, no serious efforts were made to explore the mines. The absorbing idea was a sale, and a failure to accomplish this was a signal of apparent abandonment. A few pounds of ore and a barrow full of rock were tokens of ownership, that unfortunately extends to the present time, preclusive of subsequent legitimate labors, that in hundreds of cases would have been instituted. Within a short period, attention was attracted to the smelting ores of the district; and, in consequence, some thirteen furnaces started up like mushrooms, and, like mushrooms, vanished; devoured by insufficiency in construction, and by the inexperience of their operators. Earthquakes are seldom, and not prolonged. Excitements, however violent, must subside, and to a point beyond the normal one.

A revulsion followed the excess in White Pine. The speculative miner and operator, unable to realize \$20,000 for a hole in the ground, withdrew; and, to account for his recession, had to disparage the district. The Chloride Flat man, bottoming his shaft in the shallow intercalated masses of Treasure Hill, ignorant of the origin of these ores, joined in their criminations; and, loudly declaiming against the existence of true veins in limestone, took up his blankets and "walked." The excess of mills over explored chloride ores, the failure of the furnaces from improper materials and lack of knowledge of their owners, the non-appreciation of the base ores, conspired to depopulate the district, and it snubbed on the mischiefs it had unwittingly inflicted on Belmont, Antsin and Virginia, and to which a short future may impose on Pioche.

Fire has lent its flaming aid to depopulation and depreciation, by the destruction of two mills, and the chief part of Hamilton; but, in spite of these calamities, a review of the present, when made with judgment and dispassion, is not hopeless of the future; on the contrary, it "should cheer but not inebriate." The mountains have not been removed. We have three of them, obliquely parallel to each other; they aggregate nineteen miles in extent, and no observant men can be skeptic enough to deny their reeking with ore—ore of all the valuable varieties—save tin and platinum, and requiring the various modes of reduction. The chloride ores are confined to the summit, south and northwest ends of Treasure Hill, while the complex and leaden ores are distributed on its sides and over Babylon Hill and White Pine Mountain. Blue Hill alone would make a respectable rival to ordinary mining districts; but, when the whole of the mountains are comprehended, with their numberless rich mineral crops, the district is peerless; and, without any claim to prophecy, it is as safe to premise a silver future as to declare a sad past. The Chloride Flat fiasco will be understood when it is shown that the unreliable beds of ore were the natural outflow of superabundant veins, that near the surface found it easier to uplift the rocks than to rupture them, and hence the superfluous chloride ore flowed into the intercalated spaces. When the bedding rock is searched for fissures they will be found; and, when wrought, will develop into a system of metallic lodes, that will amply restore the repute of the Chloride, Bromide and Pogonip Flats and

disabuse the cavilers against metalliferous limestone. Intermediately, these eorners can have a full field on the west side of White Pine mountain, where the three formations, mined in Eastern Nevada, are rife; they can there delve in slate or quartzite, or gratify a penchant by digging in granite.

There are now in the district nine quartz mills, with one hundred and sixty five stamps, and a fifty ton tailing mill, capable of a daily reduction of 200 tons, which could be readily supplied from existing sources, and tripled, if ten per cent. of the ventures now made at Pioche or Virginia were had. This could be done without trenching on the base ores requiring a modified treatment, or the leaden ores legitimately due the furnace. These last furnish a vast reservoir from which wealth will flow, making the district as conspicuous for the amount and value of its base bullion as it is now for the docility of its ores. The knowledge acquired, since the discovery of White Pine, of furnace construction and fluxation of ores, ensures a success that will wipe out the disgrace of an early defeat. Bull run will be forgotten in the "march to the sea."

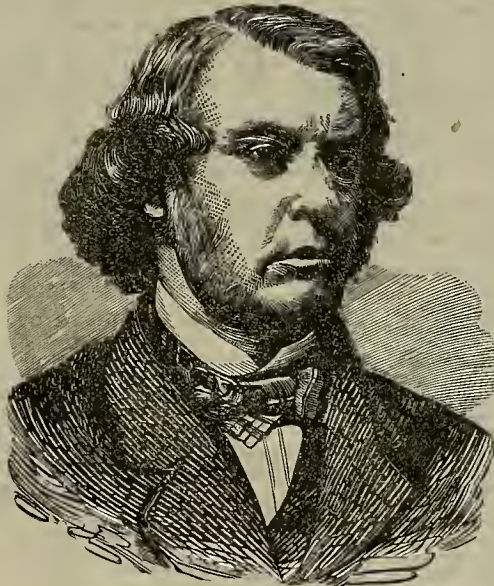
The Aurora lode, two and one-half miles in length, and 75 to 100 feet in width, abounding in rich chlorides, has been explored only for 3,500 feet, to a depth of less than 300 feet, and now presents an expanse of ore that proclaims a future rivalry with the Comstock. This is not a solitary reliance, though it promises to be a gigantic one, as the Eberhardt will again exhibit its millions, unless all mining history is a cheat and a lie. No rich creasing exhibitions can be followed by perpetual barrenness. The original fertility will, from time to time, recur, and reward bountifully the persevering operator. Charnacello, Grass Valley, the Comstock,

A True Statesman.

The decease of Hon. Charles Sumner, at the age of 63, has been marked by the sincere sorrow of the nation. We have too few, among living politicians, whose conduct is governed by purely honorable motives, not to regret deeply the loss of one whose character has been beyond assaunt. Whatever mistakes Charles Sumner committed, and in whatever personal collisions he may have been involved, no one dared to impugn his integrity. During his career as a statesman, Mr. Sumner had constantly to face embittered attacks from political opponents on all sides, whom his unflinching determination had stung into enmity. No man of any strength could have lived amid the stirring events which have occurred during our national history without making enemies, and bitter ones. Even Washington, who was one of the very few men who met with appreciation during their lives, was attacked in the same manner.

Sumner first came to the front during the excited sectional debates which preceded the attempt to dismember the Union, and his firm, unwavering course, through all those anxious days, did much to inspire confidence among loyal men, while it naturally made him a mark for the personal abuse of the secession party, culminating in the disgraceful attack upon his person.

Mr. Sumner evinced a remarkable aptitude for his work as a statesman. He was well versed in the intricacies of international law, and had a long experience in the councils of the nations. His merits were so conspicuous that he was often called upon to assume the



CHARLES SUMNER.

and hundreds of Mexican mines have had their preludes of dissolution, but survived to a long life of usefulness, under energetic management. The Pocotillo will be restored by shafting at the original opening, the early riches of the Virginia will be recovered, the Sunbeam requires only an additional blow, while the Grant & Colfax, the Copper Silver Glance, the Imperial and fifty others will expand into capable and valuable mines under persistent exploration. The Trench, the Caroline and the Mobile illustrate the advantage of regular and systematic working. Not only self-supporting, they accumulate capital in means and ores, and, at the same time, demonstrate increased breadth and fertility in their veins. On an earnest and unprejudiced scrutiny of all the conditions of the district, it is impossible to forbode other than a success to a renewed and energetic effort, and the only possible shadow to be cast, would be an apprehension of a lack of fuel for comprehensive workings. This, it is to be hoped, will be dissipated by the offerings from the Paucake and, possibly, from the Mokomoke mountains, as well as from a future connection with the Central Pacific railroad. Nature has indicated the route, and when White Pine has culminated to her natural importance the road will readily be built.

RICH STRIKE.—The vein of rich ore found in the Leo mine, Gold cañon, a short distance this side of Devil's gate, mentioned in our last regular mining report of Thursday, has since developed into a strike of considerable importance. It is in the face of the main tunnel or adit running into the hill, following the ledge, and has widened to about two feet in width. It came in at the bottom of the drift, and has raised now nearly to the top. The greater part of it is a soft black ore, which assays as high as \$5,000 to the ton, in gold, it containing but a small proportion of silver. In fact, both fine and coarse gold is easily and plentifully washed or "horned" out of it. This rich streak increases in size and richness and promises to develop into a good sized body or chimney of ore. Mr. Moyle, the superintendent, feels quite elated over his success, and, of course, is carefully securing all of this good ore for future reference.—*Gold Hill News.*

more responsible duties of the Senate, and served upon the most important of the Senate committees.

But it would be purely gratuitous to dilate upon the worth of a man so well and widely known. Suffice it to say that our country has suffered an irreparable loss, a loss which will be felt by all who have heard the name of Charles Sumner.

PROVIDING AGAINST COLLISIONS.—A correspondent writes to the *Scientific American*: It seems to be more dangerous now than ever to go to sea, as vessels are so much more numerous, and sailing so much faster causes a great increase of danger. Is there not a remedy? I think there is. I believe the Ville du Havre and Loch Earn might still have been afloat if they had been provided thus: Put a chain of the same weight as the anchor chain around the ship outside, supported by iron brackets with rings in the ends of them to pass the chain through and keep it in place. These brackets or chains supporters should be 18 inches long and from one to four feet below the main deck, according to size of ship, and about eight feet apart. Large passenger steamers might have two such chains, one one foot below the main deck and the other four feet below it. Such ships, in colliding, would have to break or pass through the chains before making holes in each other's sides. Level with main deck, have two beams, running out from eight to 15 feet beyond the cutwater, one on each side of cutwater, eight to 12 inches in diameter, so constructed that, when they come against a vessel or any outside object, they would yield and spring back slowly to within a foot of cutwater.

MINT OPERATIONS.—The Director of the Mint reports the coinage at Philadelphia, San Francisco and Carson, exclusive of minor coins and bars, during March as follows: Gold coin, \$4,216,400; trade dollars, \$4,845,485; subsidiary silver coin, \$127,085; total, \$9,188,970. Of the above amount, the mint at San Francisco coined over \$3,600,000 in gold, and \$250,000 in trade dollars. Orders from Japan and China for trade dollars are still increasing, and the mints are kept busily employed supplying the demand.

The Copper Interests.

While searching for the more precious metals of silver and gold, we are led to ignore the riches contained in the immense amount of rock bearing copper ore which abounds in our adjacent mountains. There are several well developed properties of this nature on White Pine mountain, one of which has been patented by an eastern company, and will probably be worked the coming season. The value of this article is becoming enhanced daily, and by the reports from the leading markets of the world we read that its scarcity is being made a subject of remark. The Lake Superior copper mines, which have heretofore produced a great proportion of the metal, are said to be becoming barren, or so much so as to render their working unprofitable. Also mining in other portions of the world is fast losing its former profitable character on account of the increased expense of extracting and working the mines. In view of these facts, copper speculators are commencing to turn their attention to hitherto neglected properties in search of a supply of the article, and if we do not advertise our country in this particular we cannot expect them to hunt us up. Not only in this district are favorable evidences of the existence of copper in large quantities, but also in the neighboring district of Robinson a great extent of country has been successfully prospected, showing indisputable evidences of permanency and quantity. This mineral, as found elsewhere, is generally but slightly tainted with silver or gold, but in the case of the district last mentioned both these properties exist, sometimes to an astonishing degree. One would be astonished on visiting the locations already made and now being worked more or less, at the vast extent of the croppings traceable over the country, and would be astonished why more capital has not found its way thither. Some will say that the work done has never proved remunerative to the owners, and why? The great distance from railroad communication and thence to market, causing enormous expense in transportation, united with the necessities of the usually poor shippers, requiring them to sell at reduced rates to moneyed men, and the various and inexplicable loss in weight, etc., between the points of departure and arrival, all operate to our disadvantage. We require men of capital who will come among us, extract the ore, erect their own furnaces, and ship the matted copper to the best markets. The profits arising from this valuable branch of industry will be apparent both to the poor and rich. Nature has done her best to make Eastern Nevada the miner's paradise. All that is needed to unlock her hidden treasures is the magic key of money. We are aware of several parties who intend visiting this section as soon as the snow goes off sufficiently to allow an inspection of properties to be made, and we are confident our advice will be acted upon and comprehensive development be at once commenced. In the mean time our mining friends must not frighten moneyed men away on account of extravagant and exorbitant prices.—*White Pine News.*

A GREAT FEAT IN STONE SAWING.—One of the stone saws of Messrs. Emerson, Ford & Co., 28 inches in diameter, carrying 14 steel chisels, making 22 revolutions per minute, recently cut lengthwise through 9 blocks stone each measuring 4 feet 6x10x10 inches. The saw cut 1 inch ahead at each revolution—1 foot per minute. The 9 blocks were cut in 87 minutes, being 28 feet of linear cutting and 56 feet of surface. The machine was driven by a four-inch belt from a 12-inch pulley. A fresh set of chisels was inserted for each block, the time occupied in changing being two minutes for each shift. The chisels weigh 200 to the pound, and cost half a cent each. The cost of splitting the 9 stones was \$1.50, power included. The stone was a hard, chert-gritted sandstone, much used in Pittsburg for building purposes; and 45 cents per superficial foot is paid for hand dressing the same stone.—*Manufacturer and Builder.*

ARIZONA MINES.—The "Oro Blanco," a mine close to the Sonora line, is claimed by some Mexicans, who say that, should its American owners attempt to take possession of the property, the State of Sonora will forward march against them. Mexican bluster, this. The Americans who lay rightful claim to the mine had better take some white friends down there, show the white of their eyes to the Mexicans, and settle the business. The *Citizen*, from which we learn these things, informs its readers that the disputed mine is rich in free gold; that its American owners agreed to permit a few Mexicans to arastras from it, but never agreed to allow troops of Mexicans to squat upon and rob it, which they are now doing.

FROM PANCAKE.—Col. A. Lewis arrived from the coal mine at Pancake late last evening. He informs us that the machinery is all up and working in a satisfactory manner. The north incline is down a distance of 150 feet, following the vein which still preserves the same width, being from four and a half to five feet wide. Ten men are at work on the mine at present. According to the estimates of surveyors, and experience in sinking other shafts, the water-lie is expected to be struck at about 210 feet from the surface, when it is thought a sufficient quantity of coal will be found to use in making coke for smelting purposes.—*Eureka Sentinel.*

USEFUL INFORMATION.

Horse-Hair.

So greatly has the change of fashion increased the demand for horse-hair during the last ten years, that, although the supply has greatly augmented, it has been so far beneath the requirements that the price has risen fully fifty per cent. We depend on South America chiefly for this article. For it is sacrificed the tails and manes, if not the lives of an enormous number of those wild horses which roam in such countless hordes over the far-stretching plains, which are the great physical feature of that continent. We obtain also no small quantity from Russia, the product of many horses which abound in the Tartar-inhabited steppes of Siberia. To this is to be added what is gathered from our horses at home, which, though superior in quality, bulks very small when compared with what comes from abroad. During the last few years our imports of horse-hair have amounted to about 720 tons. A large amount, no doubt, yet nothing as compared with the quantity of manufactured hair sold, much of it, too, at a far lower price than the raw horse-hair had cost. To understand these apparent anomalies we must be acquainted with the process by which curled hair is produced.

Before horse-hair is fit to be used for bedding, it has to go through several processes, each of which requires the application of considerable skill. In the mass it is lumpy, dirty and of diverse qualities; it has, therefore, to be sorted according to strength and color, and afterward passed through a mill, which opens up the lumps, and frees it from dirt and extraneous matter. It is then prepared for the hands of the curler, who, by the aid of a machine adapted to the purpose, twists it into a hard-knotted rope. It has afterward to be thoroughly soaked or boiled in water, and baked in a hot oven, which, when opened out, gives it that durable curl which bestows on it the lasting softness and pleasant spring that render it so excellent a stuffing material.

To take out the supply of horse-hair, which, from the very nature of the esse, must always be limited, the hairy tufts at the ends of the tails of oxen are much used. The hair from these, though never so good as the best which the horse yields, is quite equal to the ordinary qualities; and that it is of great utility is evident from the fact that, although an immense quantity is collected at home, an average of 180 tons is annually imported.—*Cabinet-maker.*

Burning Bricks with Non-Explosive Oil.

A subscriber states that the saving in burning by this method is not less than 33 per cent. One hundred dollars worth of oil will burn 60,000 hard burnt, beautiful facing bricks, and 40,000 hard burnt ordinary bricks, giving a brick equally burnt from top to bottom. End, side and heart of the whole pile all present the same hard burnt, beautiful looking bricks. There is no smoke, neither is there any soot or dirt arising from the fuel during the process of burning by this method; but one continual heat from the beginning until the bricks are sufficiently burnt. After the "water smoke" has passed off the bricks, the heat is regularly increased to any pitch which may be required; and in 48 or 50 hours, a regular, equalized, high pitch of heat is obtained, sufficient to melt cast or wrought iron if required, with little or no loss in burning, producing a hard unshaken brick, imperishable in water or atmosphere, and proof against change of temperature.

But in order to make a brick of this character, it must be borne in mind that all does not depend on the manner in which the bricks are burnt, whether with wood, coal, gas or oil. To make a brick proof against the changes of temperature, the first thing to be done, after it is ascertained that the material of which the brick is to be made is of the right quality, is to dig and cast up loose, in the fall of the year, as much stuff as it is intended to make into bricks in the following season, in order that the rain, snow, frost, thaw, and atmospheric air may decompose and mature every particle possible, and prepare it, ready for the tempering machine in the forthcoming spring.

Bricks, whether of clay or clay loam, prepared in this manner and burnt with non-explosive oil, are vastly superior, as to quality, beauty, and durability, to bricks made of immature raw material. There being neither smoke, dust, nor soot entering the kiln during the process of burning, the bricks, when taken from the kiln, have the appearance of newly planed small blocks of wood.

This method of burning bricks and other clay articles is most certainly destined to revolutionize the whole system of burning clay, throughout the whole of the United States.—*Scientific American.*

AN IRON FILTER.—Spongy iron is produced by calcining powdered iron ore with charcoal. Such iron forms a most excellent filter, more powerful, it is said, than even animal charcoal. It is said that even sewage water filtered through a layer of this substance is completely purified, and will remain sweet for almost an indefinite time.

It is said that if one part of sugar is dissolved in three parts of water and digested with one-fourth part of calcic hydrate, the resulting liquid will readily dissolve glue warm, and the solution will remain fluid on cooling, without having lost any of its adhesive properties.

Adulterated Pepper.

We are adverse to giving private information about any kind of adulterations, for the simple reason that such information may be turned to a bad account, while publicity is the best way to suppress this growing evil. The principal adulteration of the present day was first commenced in France and Germany, and accomplished with refuse material from potato flour factories, which are very common in Europe, but not here for the simple reason of the cheapness and abundance of all other kinds of flour. The dried particles of potato skin are pulverized and mixed with ordinary black pepper. The easiest way to distinguish this adulteration is the microscope or magnifying glass. Good pepper consists of black particles mixed with yellowish gray ones, giving a dark gray appearance, while the adulterating powder consists of uniform dark gray particles. The latter also floats longer on water than good pepper, and the color communicated to the water is also different in the two kinds of pepper. The adulterated pepper is also at first sweetish and afterwards burning to the mouth, notwithstanding it has a much weaker taste and odor. Finally, good pepper contains very little starchy matter, while this kind of adulteration is rich in it, as is easily detected by means of a solution of iodine, which colors starch blue. Other adulterations are pulverized beans, peas, and linseed cake; but these are very easily distinguished by the microscope, as well as earthy matters, which besides are easily separated by burning or calcination, when they remain behind. Also white pepper is often considerably adulterated with lime, chalk, soapstone powder, or starch. The purpose of all these adulterations is twofold; first, to increase the quantity directly, and secondly to improve the appearance of an inferior looking article. There are now in France two principal kinds of adulterated pepper, which Bonhardt, who investigated this subject thoroughly, calls "poivre léger" and "poivre blanc." The first is at present mostly adulterated with the potato skins named, the second with chalk, soapstone, starch, etc.—*Manufacturer and Builder.*

SALT AS A PRESERVATIVE FOR WOOD.—We may learn many things from the experience of others; but, unfortunately, we are very much inclined not only to overlook this, but even often to neglect the lessons of our own experience. The experience of many nations who possess an available seashore is, that timber immersed for some time in sea-water, before being sawed in the mill, is better, harder, and much more durable than if immersed in fresh water; and, in Holland, where very active shipbuilding has been going on for centuries, this fact is universally admitted, and its knowledge applied. It is also found that wooden piles driven in the sand of salt marshes last for an unlimited time. External causes of decay, such as dampness, may be made inoperative by the painting of the wood; but dry rot takes place, irrespective of the presence of paint, and seems to be due more to heat than to dampness. Paint only protects wood from atmospheric causes of decay; but the internal dry-rot can only be prevented by treatment of the wood when seasoning; and among the simple and cheap preventatives, salt appears to be the most available. It appears that, even after the dry-rot in timber has commenced, immersion in salt water effectually checks its progress and preserves the remainder of the wood. In the salt mines of Hungary and Poland, the galleries are supported by wooden pillars, which last unimpaired for ages, in consequence of their having become impregnated with the salt. Pillars of brick and stone, used for the same purpose, crumble away in a short time by the decay of their mortar.—*Car Builder.*

RESTORATION OF OIL PAINTINGS.—The linseed oil used by most artists contains 80 per cent. of linoleine, while the poppy oil contains 75 per cent. of that substance. This linoleine, acidified by exposure to the air, increases in weight 10 per cent., giving a hard transparent mass called by Mulder linoleine, which preserves the colors with which it has been used. To the picture when finished, varnish is ordinarily applied consisting of solutions of resins in turpentine or fatty and drying oils. If the varnish cracks, more is applied to fill up the pores, and several repetitions may have the effect of ruining the picture. The picture allows moisture to condense upon them, which is evaporated, and in process of time more is condensed, the result finally being a dulling of the picture. Indeed, the author states, that, by wetting a varnished surface with distilled water, and evaporating the water, wetting again, and again drying, a white spot may be readily made. M. Pettenkofer restores the brightness of the picture by exposing it to the vapor of alcohol, which, by condensing on the picture, causes a solution of the film of varnish, and thereby restores to the resin its uniformity. A varnish of balsam of copaiba, which dries more slowly than most others, is also found to act as a preservative. By way of preparation for the alcohol treatment, the pictures are washed first with water to remove dust, etc., and then with turpentine to remove the excess of resin.

Dr. SAGE, of Geneva, thinks that sodic acetate is far superior to common salt, and will preserve meat and vegetables in a condition much more akin to the fresh article.

GOOD HEALTH.

Meat-Tea.

Bogoslowsky has re-examined the theories of Kemmerich in regard to the action of meat-tea, which was supposed by him to depend wholly on the potash salts contained therein. Bogoslowsky says that Kemmerich used too large doses, and the fact that a rabbit can be killed not only by a large amount of beef tea, but by the salts extracted from a similar amount, proves nothing, except that both are (in enormous doses) poisonous. With small doses the difference is a marked one. While, for example, a rabbit was killed by the injection of extract of seven hundred grammes (1 pound and 10½ ounces) of meat reduced to thirty cubic centimetres (about one ounce), the ashes of the same quantity dissolved in thirty cubic centimetres of water produced, in another rabbit only a transient acceleration of the pulse, and the animal completely recovered. Nine days after, it died in an hour and a half after the injection of the corresponding quantity of meat-tea. It was shown that injections of warm water caused an increased rapidity of the pulse, but of meat tea, a much greater and more lasting acceleration. The salts hardly differ from warm water; or in larger doses, the acceleration may last somewhat longer. The author was able to produce these phenomena to a slight degree in his own person, but in another individual did not succeed. After large doses (ten, twenty, thirty grammes), in the latter case the pulse fell, while the thermometer was unchanged. After forty grammes gastric symptoms appeared, and the pulse rose. He concludes, as a practical result, that extract of meat is not so innocent a dietetic substance as is generally supposed, but always calls for care in its administration. (If Leibig's or any similar extract is here referred to, it would seem that the danger is not great unless the quantity used considerably exceeds that mentioned in the directions accompanying the packages.) In endeavoring to determine to what ingredient meat-tea owed the excess of its action over that obtained from the salts, Bogoslowsky found that creatinin, which exists in extract of beef in considerable quantities, when injected either into the jugular vein under the skin or into the stomach, produced a slight acceleration of the heart's beat, but he could not get any fatal effect.

From all which it appears that the stimulant action of ordinary doses of beef-tea is due partly to the warm water, the salts, and the creatinin. It would seem, however, from the observations last quoted, that the presence of creatinin is not sufficient to account for the difference between the action in beef-tea and the salts obtained therefrom. It is only in exceedingly large doses that the salts alone are sufficient to account for a fatal effect by their depressing action upon the heart. Leube has made use of the following method of preparing a solution of meat, to replace the complicated and costly process of Meissner with natural peptin, which is, besides, objectionable on account of the disagreeable taste and smell of the product. One thousand grammes of lean beef is placed in a porcelain pot, with one thousand cubic centimetres of water and twenty cubic centimetres of pure hydrochloric acid. The mixture is heated in a Papin's digester for ten or fifteen hours, and occasionally stirred. The mass is then rubbed down in a mortar to the consistence of an emulsion, and boiled fifteen or twenty hours more without the cover of the digester being lifted. It is then neutralized with carbonate of soda, evaporated to the consistence of a pap, divided into four portions, and dispensed in pots. The muscular fibres are broken up to a fine detritus, and the greater part of the albumenoid constituents is dissolved. The preparation is well borne and willingly taken, but it is better to use some other easily digestible food therewith, in order not to disgust by too constant use. The taste may be improved by the addition of Liebig's extract. The solution can be used in acute gastric ulcer and in chronic dyspepsia. It is supposed to give rest to the stomach by sparing it the labor of digestion, the albumenoids being already converted into peptones.—*Boston Medical and Surgical Journal.*

Real and Apparent Waste.

All is not waste that seems such. The time spent in the pastimes of childhood and youth is funded in health and strength, and a whole exchequer of delightful memories, on which the man or woman can draw at will. The time spent in school and for cultivation, is a splendid investment for all after years. The time taken out of business for needful rest and recreation is not wasted, but saved. The danger is not that we shall rust out, but that we shall wear out and break down before our time. The men who live on the jump, in a perpetual rush and whirl, as though an instant were an eternity and their fate depended on its use, are more wasteful of time than those who move to a slower measure and in more leisurely ways. The man who bolts his dinner as though he had a set of mill-stones in his stomach to grind the food he does not stop to chew, may save five minutes in a day; but he may lose hours of sleep and months in debility, and carry a shattered constitution to a premature grave. A distinguished physician has said it would be a wise economy for every business man to spend one year in ten in travel, or comparative leisure;

for what he would lose in that way would be more than added, with interest, to the length of life. Every literary man knows that the half days wasted on the beach or in the woods, in lounging about the shops, or out in the golden sunlight that covers the hills, often prove the most profitable periods of his life. The bankrupt millionaire touched a great truth when he said "what he had was swept away, and what he saved was lost; but what he had given away was saved." The days wisely wasted in recreation and beautiful fellowship and helpful charities, are most grandly kept.—*Herald of Health.*

Health Maxims from the Apocrypha.

The chief thing for life is water, and bread, and clothing, and a house to cover shame.

Better is the poor, being sound and strong of constitution, than a rich man that is afflicted in his body.

Health and good estate of body are above all gold, and a strong body above infinite wealth. There is no riches above a sound body, and no joy above the joy of the heart.

Death is better than a bitter life or continual sickness.

Give not over thy mind to heaviness, and afflict not thyself in thine own counsel.

The gladness of the heart is the life of man, and the joyfulness of man prolongeth his days.

Envy and wrath shorten the life, and carelessness bringeth age before the time.

A cheerful and good heart will have a care of his meat and diet.

Watching for riches consumeth the flesh, and the care thereof driveth away sleep.

Watching care will not let a man slumber, as a sore disease breaketh sleep.

If thou sit at a bountiful table, be not greedy upon it, and say not, there is much meat on it.

Eat as it becometh a man those things which are set before thee; and devour not, lest thou be hated.

Better is he that laboreth, and aboundeth in all things, than he that boasteth himself, and wanteth bread.

Sound sleep cometh of moderate eating; he riseth early, and his wits are with him; but the pain of watching, and cholera, and pangs of the belly are with an unsatiable man.

Whoso is liberal of his meat, men shall speak well of him; and the report of his good house-keeping shall be believed.

Show not thy valiantness in wine; for wine hath destroyed many.

Learn where is wisdom, where is strength, where is understanding; that thou mayest know also where is length of days, and life, where is the light of the eye and peace.

Whosoever is brought upon thee take cheerfully, and be patient when ye are changed to a low estate.

Be not insatiable in any dainty thing, nor too greedy upon meats.

Rise up betimes, and be not the last; but get thee home without delay.

Salt for the Throat.

In these days, says the *Religious Herald*, when diseases of the throat are so universally prevalent, and in so many cases fatal, we feel it our duty to say a word in behalf of a simple, and what has been with us a most effectual, if not a positive, cure of sore throat.

For many years past, indeed we may say during the whole of a life of more than forty years, we have been subject to sore throat, and more particularly to a dry hacking cough, which is not only distressing to ourselves, but to our friends, and those with whom we are brought into business contact.

Last fall we were induced to try what virtue there was in common salt. We commenced by using it three times a day, morning, noon, and night. We dissolved a large tablespoonful of pure table salt in about a half a small tumbler full of cold water. With this we gargled the throat most thoroughly just before meal time. The result has been, that during the entire winter we were not only free from coughs and colds, but the dry hacking cough has entirely disappeared.

We attribute these satisfactory results solely to the use of the salt gargle, and most cordially recommend a trial of it to those who are subject to diseases of the throat.

Many persons who have never tried the salt gargle, have the impression that it is unpleasant. Such is not the case. On the contrary, it is pleasant, and after a few days' use, no person who loves a nice clean mouth and a first-rate sharpener of the appetite, will abandon it.

MEDICAL VALUE OF ASPARAGUS.—A medical correspondent of an English journal says, that the advantages of asparagus are not sufficiently estimated by those who suffer with rheumatism and gout. Slight cases of rheumatism are cured in a few days by feeding on this delicious esculent, and more chronic cases are much relieved, especially if the patient avoids acids, whether in food or beverage. The Jerusalem artichoke has also a similar effect in relieving rheumatism. The heads may be eaten in the usual way, but tea made from the leaves of the stalk, and drank three or four times a day, is a certain remedy, though not equally agreeable.

GLYCERINE PLASTER.—A stiff plaster can be made with 150 grains starch boiled in one ounce of glycerine. A sedative plaster is made with three grains sulphate of atropia, two grains ceratrin, eight grains sulphate of morphia, one drop otto of roses, one ounce hard glycerine ointment.



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Rotundity of the Earth.

In looking over one of that interesting series of pamphlets—"Half-hour Recreations on Popular Science," (Bancroft & Co.,) we came upon an item on the subject referred to. It seems strange that at the advanced stage of knowledge in which we now are, that any one should have returned to the old belief that the earth was a flat surface. But it seems that at even this late day there are some who still maintain this belief, as will be seen by the item to which we refer, which is as follows:

"A fruitless attempt has been made for some years past to induce the belief that the earth is a flat surface; and a Mr. Hampden, who seems to have been persuaded that it is so, rashly risked five hundred pounds on the issue of an experiment on the Bedford Level, in order to test the truth of the assertion. His offer was taken up by Mr. A. R. Wallace, and arrangements satisfactory to Mr. Hampden having been made, the experiment was tried by means of three disks, rising forty-two feet above the level of the surface of a piece of water large enough to show the curvature, if there were any. Therefore decided against Mr. Hampden, the central disk rising considerably above the line formed by the two outer disks, as seen from one end through a selected and approved telescope. The curvature to and fro in six miles to the extent of about five feet was proved."

A PROSPEROUS MINE.—"Jefferson" writes to us that the Legal Tender silver mines at Clancy, famous as the most important silver mines in Montana, are expected to produce this season more than triple the usual quantity of ore. The company have just completed the erection of machinery and steam-hoisting apparatus capable of hoisting 2,800 buckets in 24 hours. Work in the main shaft will be immediately commenced, sinking to and running out two new levels, both east and west, at a depth of 240 feet and 320 feet. In the 160-foot level are heavy breasts of rich ore. The stopes are yielding shipping ore worth \$400 per ton. The mining force will probably be increased to 100 men. Concentrating works are in course of erection. The company have on dump about 750 tons of ore preparing to ship to Freiberg, Germany.

Coal was last week discovered on the bank of Bear river, Placer county.

Amalgamation of Silver Ores.

Aaron's Method as Practiced in Mono County.

This method of amalgamation, introduced about five years ago, by C. H. Aaron, is a modification of the Mexican "fondo," and is somewhat similar to the "Chilian process," described a short time since in the Press. The latter, however, in which, according to the description, neither steam nor metallic copper is used, is not found to answer with the ores of Blind Spring district, which consist in great measure of "Partzite."

The ore is crushed fine, either wet or dry, and is amalgamated in barrels similar to Frieburg barrels, except that steam is introduced through the journal. From 15 to 40 pounds of sulphate of iron, about 50 pounds of salt, and from two to 10 pounds of iron borings are put with a ton of ore into the barrel. Also a quantity of copper in the form of balls or small bars. Steam is applied till the pulp is boiling hot, and then the quicksilver is put in.

The amalgamation, inclusive of charging and discharging the barrels, occupies from 12 to 24 hours, at the end of which the pulp is passed to the separators as usual.

The object of using sulphate of iron is to produce, with the aid of the salt, dichloride of copper from the copper contained in the ore. The dichloride of copper is the chief agent in this, as in the Chilian method, and if there were no copper in the ore it would be necessary to use bluestone.

An improvement, invented and patented by Mr. Aaron, consists in using a solution of sulphurous acid in water, in place of sulphate of iron, by which the dichloride of copper alone is produced, directly from the ore; while the sulphate of iron produces also protochloride of copper, which must then be reduced to dichloride at the expense of time and consumption of the metallic copper and iron turnings. It also injures such quicksilver as remains in the barrel at the time of charging. This improvement is not yet worked on a large scale.

The loss of quicksilver, which in the "fondo" is very heavy, it is claimed is now reduced, by proper arrangement of the settlers, to 1½ lbs. per ton of ore.

The results attained by this process are such as to tax the credulity of the San Francisco metallurgists, some of whom decline to believe that 90 per cent. is averaged in Mack's mill at Benton; but we are assured it can be done. Indeed, Mr. Aaron asserts that he has himself worked rich ore to 97 per cent. of the mint assay, and has averaged 85 per cent. on all grades from \$70 per ton upwards, with very imperfect means of crushing.

The mill above alluded to crushes the ore dry, through a 60-mesh screen, and works the barrels 24 hours. The Pioneer mill at Montgomery crushes dry, through a 40-mesh screen, works the barrel 12 hours, and extracts 85 per cent. Formerly this mill crushed wet in an arrastra, with results varied from 70 to 97 per cent.

Mr. A. B. Williams is now building a new mill at Benton, to work the ore from the Diana mine, and as he is a millman and mechanic, and has had several years experience with this process, he will undoubtedly produce first-class results.

If the ore were passed through a screen of 100 meshes to the linear inch, it is thought that at least 95 per cent. of the silver could be obtained from these ores; while the time consumed in working them in the barrel would be lessened.

From experiments made some years since, it appears that the ores of the Comstock vein can be worked to 90 per cent. with great care, by a slight change in the process, and the bullion would be fine; but as the process cannot be worked in pans, there might be some difficulty in getting it adopted, though the inconveniences of barrels will probably soon be surmounted by a new machine invented, and about to be tried by Mr. Aaron, which combines the mechanical convenience of the iron pan with the chemical possibilities of the wooden barrel.

THE FRENCH GUIANA MINES.—These mines, which a few months ago were attracting considerable attention, have not proved what was expected by the sanguine prospectors. A miner who has returned to Salt Lake City from French Guiana, gives a most discouraging account of his experience in that country. He says the climate precludes the possibility of successful white labor, and the stories of the richness of the gold placers are highly overdrawn. It would be a miracle almost for a North American to run the gauntlet of the poisonous water and atmosphere of the mining district and come out alive. Most of the Utah party are heartily sick of their venture, and are trying to get back. We did our best at the time of the excitement to warn miners about the climate of the country and its general unhealthiness, but some men are never contented unless they are looking up new fields; the further off the better.

The company organized last fall for manufacturing iron at Ogden, will commence building in a few days, and expect to have their works running by September.

Native Alloy on the Comstock.

On calling to return a book to our old friend and correspondent, Mr. Melville Attwood, we found him engaged preparing some objects for the microscopes; and on enquiry of what they consisted, he informed us it was the native alloy or argenteriferous gold of the Comstock lode. He had devoted much time to the investigation, and made numberless assays; and the result was, that he found the gold of that great lode occurred in the form of a native alloy—different from any he had ever heard of—and was composed of nearly equal parts of gold and silver. He showed us specimens taken from this lode to the north of Virginia and southward beyond Gold Hill, and from the croppings down to the deepest workings, all having the same character and composition. Mr. Attwood's researches prove to him that this alloy exists in all parts, and at all depths of the Comstock, in an unchanged form. The alloy is finely disseminated in, and intimately mixed with the mineralized silver, having the following characters: hardness, 3; specific gravity after melting, from 13.571 to 13.7; color, white, with a pale yellowish tinge; after melting, a grayish white, with a shade of yellow; contains 55.37 per cent. of gold, 42.87 of silver, and 1.74 of substances as yet undetermined. The great difficulty in getting a fair sample of the alloy, was in freeing it from the mineralized silver.

In Dana's System of Mineralogy, page 9, is mentioned an ore named Kustelite, viz: Auriferous Kustelite (1866) contains from 10 to 30 per cent. of silver; color, white to pale brass-yellow. There is a gradual passage to argenteriferous gold. (See gold.) The name Kustelite was given to an ore from Nevada having the following character: H = 2—2½. G = 11.32—13.10; color silver-white, somewhat darker than native silver on a fresh surface. Richer found in it silver, lead and gold, the first much predominating; from the lode of the Ophir mine, Nevada, in bean-shaped grains.

This is so different in character from that now under examination, that we think it can hardly be the same. As it appears, however, to be named after Mr. Guido Kustel, the able metallurgist of this coast, to whom California and Nevada owe so much, Mr. Attwood feels anxious that the alloy should still bear his name. Mr. Attwood is indebted to Mr. H. G. Hanks, for assistance rendered in checking the results arrived at in assays, etc. Mr. Hanks is now getting ready a paper for the Microscopic Society, describing the various forms of the mineralized silver found in the Comstock lode.

Value of Silver and Gold.

The basis upon which the value of silver is computed in the U. S. mint and its branches, is as follows: 99 ounces of pure silver is worth \$128 00; or 11 ounces of standard silver (900 fine) is worth \$12.80; hence one ounce of pure silver is worth \$1.29.23, and one ounce of standard silver is worth \$1.16.36. The premium or discount on silver varies with the supply and demand. One grain of pure silver is worth \$0.0026936; one ounce Troy of pure silver is worth \$1.292929; one pound avoirdupois of pure silver is worth \$18.5547; one ton (2,000 pounds) = 29,166.6 ounces Troy equals \$37,709.50; one cubic inch is worth \$7.15; one cubic foot is worth \$12,355.20.

It is presumed that many people do not understand the expression of "fineness" in connection with gold and silver. In speaking of bullion, what we usually call "fineness" is simply the weight of fine metal contained in a given quantity of mixed metals and alloys. For instance, in a gold or silver bar, which is expected to be 850 fine, it is simply meant that in 1,000 parts by weight, 850 are fine gold or fine silver, as the case may be. In our mint the value of gold is computed from standard weight; that is, gold which is 900 fine, that being the fineness of our gold coin as required by law. Of pure gold (1,000 fine) 387 ounces are worth \$8,000. Hence one ounce is worth \$20.67183-34625, and the one-thousandth part of an ounce, decimally expressed as .001 fine, is worth \$0.020671834625.

The gold of this State yields on an average 880-thousandths of the pure metal; that of Australia 925-thousandths. This of course varies greatly with the locality. We know of places only two miles apart where the gold from the upper mine was sold to storekeepers for \$16 per ounce, while that from the lower mines only brought \$11.50 and \$12 per ounce. The reason of this variation in value is very simple. The gold from the upper mines contained very little silver, while that from the lower contained a large proportion of silver, bringing it down in value according to equal weights. Fine gold 1,000 fine is denominated 24 carats fine. Gold containing two parts of alloy in 24 is said to be 22 carats fine. Jewelry is generally made of 18 carat gold.

METEOROLOGY.—As a strong argument against the terrible destruction of our forests, it has been predicted that the rainfall would fall off from year to year. California differs radically in many things from our Atlantic States, where this is an accepted theory. But we were not prepared to see this meteorological law so completely reversed in the Pacific States. This winter seems to proclaim that as our forests disappear our winter rains will increase.

Society of Engineers of California.

The Society of Engineers held their first ordinary meeting on Tuesday evening, at the Mechanics' Institute, President George F. Alhardt, C. E., in the chair. Those present, who had not already signed the rules of the society, did so, and Mr. Hanscom then read a paper on the objects and influences of the society and the duty of members toward it, which elicited an animated discussion on the many subjects of importance in engineering which should be taken up and ventilated by the society. Among these are our water supply, harbor protection, drainage, roadways, inter-communication by land and water, irrigation and kindred subjects of importance to the State.

The society is a new one and will be of great benefit to the members and the community. Mr. Hanscom's paper on the "Objects of the Society" was as follows:

"In reading the scientific and practical engineering journals of the day, one may wonder at the rapid strides which have been made in the increasing number of designs and constructions which are at any one time being developed and completed. From every quarter of the civilized world we read of almost countless projects in the various branches of engineering science which increase in boldness and utility, so that we may almost wonder where will science and skill finally reach. And at the present time the various journals are eagerly sought, for almost daily information as to some new and grand piece of construction, or the development of some wonderful design. Even the daily newspapers consider it important to chronicle in their telegraphic despatches the progress, almost step by step, of some new triumph of learning for the benefit of humanity. How many engineers have watched with the closest attention the reports, from week to week, of the construction of the East river bridge, from the caissons and their form and strength to resist the pressure of air, through all the various arrangements for placing in position—the removal of earth for a proper bed—the appliances for maintaining an atmosphere underneath in which men could live and work—to the gradual raising of the stone-work for its cables, which are to constitute one of the arteries of living New York, over which humanity will pulsate daily.

There is information for the architect, the hydraulic, and may we add pneumatic engineer, the gas engineer, the mechanical and civil engineer, each of itself requiring the most extensive knowledge and practice in its own particular branch; and I believe it is a fact that no engineering project in the world is looked upon with so much interest; and why? because from the experience developed in the construction of the undertaking. Scientific engineering knowledge is developed and disseminated in every place.

Thus we see that the grand effort is to obtain knowledge, and that so much the more is information imparted, so much is the standard of qualification raised among people of all classes and branches of professions. Can we not from this understand that the interchange of ideas, communication of thoughts and theories from study and practice, emulate and inspire us with more effort and intelligence to operate in our various positions in life? It is the natural desire for companionship that makes us agreeable in company, and a natural desire for information that makes two of a profession interchange ideas. By our gradual but wonderful means of rapid communication throughout the world we are all becoming familiar with each other, and by this means are mutually increasing our store of knowledge and daily applying new learned principles to immediate practice.

It is from such considerations that the effort has been made to organize and develop the Society of Engineers of California. All acknowledge its necessity and value; and not even those immediately connected with it, but the community at large. Who does not know the necessity of able and public discussion of the water supply of this city; or the gas; or the drainage; or railways? and do not all commercial men in the community recognize the importance of protection to our water front? And of no less importance is our communication with each other in the State by land and water.

Are not our agriculturists aware of the vital importance of irrigation in certain portions of our noble State? All these, and many others of much importance, are subjects on which one and all desire information; and here is the place for each to add his efforts for the benefit of others, from his study and experience. It seems a duty, then, that we owe each other, to give to all who may be interested such knowledge as we may possess, and can without injury to ourselves. How often do we in common conversation catch some new idea, which in some future time develops into a portion of some work which it seems exactly to fit. Then let each and all endeavor to bring some result of study or practice on his particular branch for the discussion and benefit of others, and we shall have a society which will be of value and honor to ourselves and the community surrounding us."

The paper on boiler pressures by Mr. Jamea Spiers was postponed on account of illness of the author, until the next ordinary meeting, which will be held on the first Tuesday in May. Mr. C. H. Lougee gave some very interesting accounts of his experience in submarine diving in China, in making examinations of the U. S. steamer Oneida, which was sunk in one hundred and forty feet of water. After which a general discussion took place until ten o'clock, when the meeting adjourned.

Improved Threshing Machine.

We illustrate this week a threshing machine constructed in accordance with patents issued to James T. Watkins, of Santa Clara, December 17th, 1872, and Mr. Watkins and Jasper E. Scott, also of Santa Clara, January 20, 1874. The improvements covered by the former patent are, briefly, as follows: The employment of a series of parallel slats, *b*, shown separately in the foreground of the wood-cut, arranged in the form of a comb in the rear of the threshing concave, which receives the straw from the cylinder and passes it to the apron, while the grain is allowed to fall through the slats upon the grain belt below. Just below this comb a shaft, *c*, passes across the frame, carrying a number of long teeth, which alternate with the teeth or slats of the comb. By means of a crank outside, the shaft can be turned so as to bring the teeth to a vertical position between the teeth of the comb, where they serve as a supplementary row of concave teeth, or it may be turned so as to disengage the teeth. A third improvement consists in a very ingenious device for regulating the blast of the fan. Two semi-circular plates, *e*, *e*, are pivoted, one above and the other below, so that by moving their opposite free ends toward each other or apart the opening can be made larger or smaller, as desired. Motion is communicated to these plates by rods, *g*, *h*, which connect the free ends of the plates with the ends of a lever, *i*; thus

The unthreshed straw is ordinarily fed into the throat, from which it is taken by the cylinder, by hand; this is a very laborious as well as irregular method, sometimes clogging and partially stopping the machine, and sometimes leaving it with too little straw, so that it will run too fast. The new feeder consists of the forks, *D*, *D*, each of which is operated by an arm, *F*, from a crank-shaft, *J*, which is driven by belt connection with the machine. *G* is a short upright post, secured on the top of the threshing. One end of each of the arms, *F*, *F*, is secured to a crank on the shaft, while its middle is provided with a curved slot, through which a pin passes into the post, *G*. A friction-roller may be placed upon the pin, if desired, to relieve the friction. The forward end of the arm is pivoted to the middle of the fork-handle, while one end of a connecting rod, *H*, is secured to the upper end of the handle, its opposite end being fixed to the upright post, *G*. As the crank shaft is rotated, the arms, *F*, *F*, will be moved back and forth, while the curved slot lifts and lowers the forward end, causing the fork to describe an oval track, and thus rake the straw down the incline to the cylinders. The forks, of course, act alternately.

This form of feeder also acts as a regulator, for the forks are always carried back at a certain height from the bottom of the throat, and if any masses of straw should be brought to them, they would force back the overplus, and only take a certain quantity forward. Their motion may be regulated by shifting the point of attachment of the arms, *F*, *F*, and rods, *H*, *H*, up or down along the fork-handles, causing

The Seattle Coal Mines.

A subscriber of ours, writing from Seattle, thinks that the press of San Francisco maintains a dignified silence with regard to the mineral interests of that section of country. He says that although they have no gold and silver mines, they have plenty of coal, a product of the earth quite as necessary as gold or silver. He says that they have a coal mine there which would buy all the gold and silver mines in California, if it was ever developed. He refers to the Rentan (?) coal mine. In speaking of it he says:

"Here is a mine worth speaking of, and its equal does not exist outside of Pennsylvania. In this mine there are four seams which will cut fifty feet of coal; another beauty of it is that at least 3,000 feet on each seam lays above the water level. Only think of a sheet of coal 50 feet thick, 3,000 feet wide and six miles long. This is quite a pile, and would keep all the gravel and quartz mills busy to pay for its product as fast as it could be got out at \$2.00 per ton. Millions of tons of superior coal only waiting to be dug out and put in the market, and no notice of it in the papers. Yet if a fair sized lead of quartz should be discovered in Arizona, California, or Nevada, how the ink would fly. You should not forget that there are other and more profitable metals than gold and silver to be mined. Here in this part of the

capitalists, and those who have made money out of them will be very likely to invest more, if it can be proven to them that there is a fair show to make a profit in the investment.

Academy of Sciences.

At the last meeting of the California Academy of Sciences, held on Monday evening, the following gentlemen were elected resident members: W. O. Gibbs, Manuel Aspizoz, Ferdinand Lantern, Rev. F. E. Shearer and George W. Deitzler. The donations to the cabinet were as follows:

Dr. D. E. Hungerford presented a large collection of shells, corals, star-fish, fish, two specimens of crustacea, vertebrae of shark, tortoise shells, copper ore, pearl fish-hook, etc., mostly from the Gulf of Lower California.

Dr. Marshall presented the cast of a mastodon's tooth, from San Mateo.

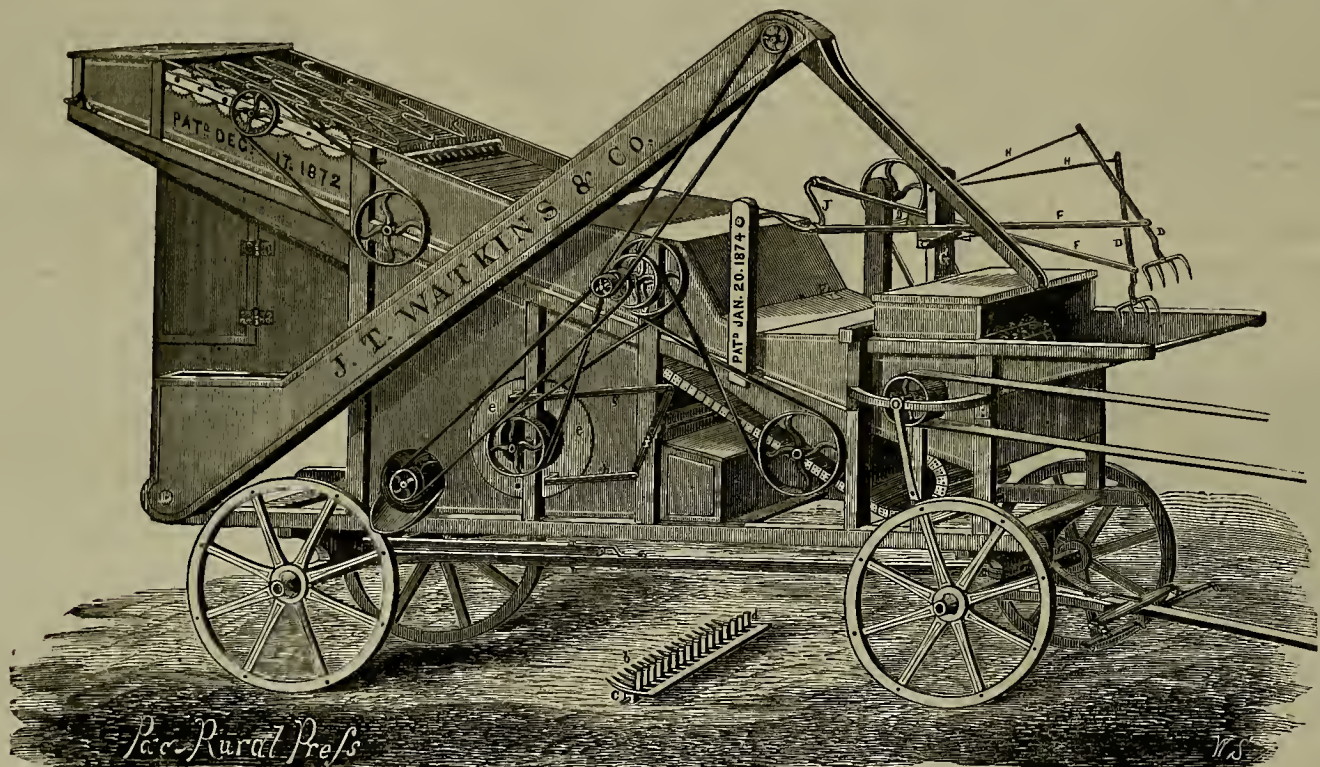
Capt. D. C. Woods presented the snout of a saw-fish, caught off the coast of Mexico, and a pair of cow walrus tusks, taken from the animal at Cape East, Behring's Strait.

Mr. W. G. Blunt presented a case of twenty-five species of eggs.

Mr. F. Gruher presented several specimens of stuffed birds.

Judge Ford, through Barry & Patten, presented the skull of a marine animal (not determined).

J. W. Michael presented a fossil sea lion's skull washed out of a clay bank of Chorro creek,



AN IMPROVED THRESHING MACHINE.

each part is actuated simultaneously. Another improvement is the adjustable tail-board (not shown), which is composed of several strips or boards, united together by straps or hinges, allowing it to be raised or lowered to any height desired by turning up or down one or more of the strips.

Instead of beaters, above the straw-carrier, one or more series of long teeth or fingers are employed, which, without beating the straw, gently pick it up and loosen it with a shaking motion, so as to release the grains and allow them to pass through the carrier. Over the upper straw-carrier are agitators, *m*, of peculiar shape, each being a metal rod, bent in a zigzag manner back and forth, and each two adjoining ones alternating. The gearing by which they are revolved is shown upon the outside. The resultant motion is undulatory, somewhat like a process of kneading. The inventors claim that agitators constructed of this form are superior to any other kind, because they do not heat the straw, but simply agitate it sufficiently to free the grain. The movement of the screen is effected by a link and crank, giving the desired shaking and jarring motion. The screw-conveyor extends across the lower end of the elevator, thus avoiding choking and clogging, and keeping the grain in motion so as to be distributed to the buckets of the elevator.

We regard the automatic feeding apparatus as the most ingenious part of the machine. The improvement in feeding devices is the subject of the second patent, dated this year. The inventors, after spending considerable time and effort in the attempt to produce a really effective automatic arrangement, devised and adopted the apparatus figured above the front of the threshing machine. They employ one or more forks, which are so connected with supporting and operating arms that they will, by suitable machinery, be alternately reciprocated back and forth in front of the throat of the machine, and feed the straw by a raking motion.

them to describe a greater or smaller oval, and thus adapt themselves to the requirements of the machine, because the larger the oval described, the more straw will be fed.

The machine is made throughout as automatic as possible, and the labor of attending to it is very slight. One of the inventors, Mr. Scott, who has lost the use of one leg, successfully managed one of these threshers entirely by himself, last summer, for an entire day, and attends to the engine, which drove the thresher at the same time. He found time to bring the straw to the machine, remove the grain and chaff, and regulate all the working parts, without difficulty.

THE DISCOVERER OF GOLD.—The California Pioneers, at their last meeting, elected James W. Marshall, the discoverer of gold in California, an honorary member of the Society. This reminds us that Mr. Weamer, who also claims to be the discoverer of gold, is still in the land of the living, although spoken of as dead some time ago by many of the papers. He is about to locate permanently in Phoenix, Arizona, where he has been to prepare a home for his family. Mr. Weamer still insists that he was the first discoverer of gold. He says that he and Marshall were standing near together when he—Weamer—picked up the piece of gold which Mrs. Weamer still has in her possession. The lady resides at Oamhria, California, and still retains the famous piece of gold.

THE CLARA BELL MINE, Bakersfield, Kern county, has a ledge a foot thick which will mill \$40 per ton. The Cinderella, with a two and a half foot ledge, will mill \$20 per ton. It is owned by Blade & Co.

THE CROWN POINT MINE has received a steel wire cable weighing 17,750 pounds—a heavy weight to raise every time a car load of ore is raised.

country we have iron as a close neighbor to the coal, and both of good quality."

"Iron Mountain if worked would bring more gold than has ever been dug on the Pacific coast, with the aid of the coal to work it, and in some cases both coming out of the same shaft. In the Seattle mines there is a mint of money waiting to be brought to light, and just in the shape we most need it. This coal has fallen into the hands of a lot of mining sharps, and a 'freeze out game' is going on while the mines are standing still. This coal should be sold in the San Francisco market at retail for \$6 per ton of 2,240 lbs. But that would be encouraging mining out of certain limits, and it seems to be the policy of the moneyed men of your city to encourage the importation of foreign coals rather than to help develop the rich and inexhaustible mines at home."

Our correspondent seems to entertain almost as poor an opinion of San Francisco capitalists as he does a high opinion of the mines he describes. There is little doubt that if he could prove his assertions about the mine he speaks of to any of them, that it would be quickly bought up. The trouble is with many men receiving the aid of capital, that they look at all the advantages of the situation through a magnifying glass and are totally blind to the disadvantages. They describe their mines in such glowing colors that the capitalists think they "smell a mice" and pay no attention to anything the owner may say. We hardly think that any of the San Francisco papers ignore either the coal or iron interests of this coast entirely. They are all anxious that coal deposits may be found which will enable us to work our iron, and are willing to do all they can to call the attention of moneyed men to favorable localities. The people here do not know much about coal mining, and, perhaps, do not want to put their money into a business they do not understand. All the coal mines on this coast are, however, worked by San Francisco

San Louis Obispo county, twelve miles from the coast.

Six specimens of ore from Utah and Colorado were received from ex-Governor Purdy.

Henry Edwards presented specimens of scorpions, tarantulas and lizards, collected on the Colorado river, Arizona.

H. G. Bloomer donated a specimen of the Australian Carpet snake.

From Mr. Button, two alcoholic specimens of lizard.

A specimen of tapa, or native cloth, from the Pacific Islands, varnished and of a peculiar pattern, differing from any in the collection of the Academy, was received from Mr. Raymond.

Mr. McHenry presented some fossil leaves from Seattle, Washington Territory.

Charles D. Gibbs read a paper on the "Reclamation of Swamp Lands," illustrated by diagrams.

Dr. Behr exhibited and described the nature of a species of mangrove, adapted to this State and found in New Zealand. He had, after considerable difficulty, procured some of the seed in a perfect condition, and was experimenting in raising the tree.

A technical paper on some tertiary fossils found in a well at San Diego by Henry Hemphill, was read on Professor Dall's behalf by Mr. Stearns.

Dr. Gibbs, Sr., made some brief allusions to the reported volcanic actions at Bald Mountain, which he believed were the results of chemical actions, similar to those at our own Geysers.

A circular from the Agassiz Memorial Committee was read, which is referred to at length in another column.

After some discussions relative to proposed changes in the constitution, the academy adjourned.

The quicksilver mania has taken hold of the Point Arenates.

The Gould & Curry Air-Compressor.

We yesterday visited the Gould & Curry, for the purpose of seeing in operation the Burleigh air-compressor which has just been set up at the works of that company. The machine was set up under the supervision of L. C. Parke, agent for the Pacific coast and Japan, of the Burleigh Drill Company, for their drills and air-compressors, and was set in operation for the first time, evening before last, about 5 o'clock. The compressor is a very powerful, compact and handsome piece of machinery. Combined with it and compactly fitted into the same heavy iron frame, is the engine by means of which it is driven. The air is forced from the two large cylinders of the air pump through a strong iron pipe into a receiver, standing a few feet from the machine. This receiver resembles a large steam boiler standing on end. From the receiver runs a strong iron pipe resembling a steam pipe; this goes down the main shaft of the mine and connects with the drills, engine, or whatever is to be driven by the compressed air. The compressor is a piece of machinery well worth seeing, easily understood when seen, but not easily described. We may state, however, that by a very simple arrangement a spray of cold water is constantly thrown into the cylinders in which the air is compressed, both cooling the air and cylinders and serving as a lubricant for the pistons. But for the jets of cold water thrown into the cylinders they would become so heated by the compressed air that they would eventually melt. Whatever extra moisture is thus forced into the air is condensed upon entering the receiver and is drawn off at its bottom. They were yesterday engaged in testing the main pipe, leading down into the mine, for leaks. By forcing air through the pipe the leaks were discovered, marked and afterwards stopped. They have on hand the drills (very compact and ingenious machines) to be worked by the compressed air, and will have them in operation in two or three days. As a miner said yesterday—"It 'pears like these 'ere air combusters is a-going into the mines most everywhere."—*Enterprise*.

Mining in Arizona.

Nothing but fierce Indian wars can now retard the mineral progress of Arizona, and these we do not look for, so long as Gen. Crook holds command of the small military force in the Territory. A very wet winter has aroused the old spirit of go-aheadiveness in the breasts of our miners, and, with prospects for the speedy erection of mills, furnaces, etc., miners and others reason that the future looks promising.

The fall and winter's working, with the 10-stamp mill at Wickenburg, the numerous arrastras in Yavapai, Pima and Mohave counties, the smelting furnace in Yuma, at Castle Dome, and the hundreds of rockers, sluices and hydraulic pipes, have more than satisfied all who were, or are, in any way, interested. The yield, in gold and silver, of all this working and of all these appliances, is not, of course, known with any degree of certainty; but, judging by the gold that has found its way to Prescott and then to San Francisco, we may safely set down the yield of gold and silver, since last Christmas, at \$150,000, leaving out of all question amounts still held by miners and the value of about 100 tons of ore shipped to San Francisco from Mohave and Pima counties.

Miners have now the assurance of three months' supply of water, and those living and working within a radius of 45 miles of Prescott will, in that time, take out in the neighborhood of \$100,000, as their claims are pretty well opened and quite rich.

At the end of this time, we confidently expect to see between 300 and 800 men in Bradshaw mining district, at work on the Tiger, Benton, War Eagle and other great mines there, as, by that time no less than three companies say they will commence active operations there. Mr. Wright, who left here yesterday morning, started away more than pleased with what he observed in Bradshaw district, and the general belief here is that his tribe will purchase the Tiger. Small matter, however, should they fail to come up to their agreement, as the agent of another company stands ready to purchase and work the mine, should Messrs. Ganahl, Wright and others see fit to crawl out of their "bonded" promise. A mine like the Tiger, that is traceable for miles; that has yielded ore worth nearly \$1,000 per ton; that has on its dump about 800 tons of ore, worth, at least, \$100 per ton; that has shipped 35 tons of ore to San Francisco, which netted the company over \$16,000; all of which ore came out of a shaft a little over 100 feet in depth, is not likely to go begging at this greedy time of the world's history. Another strong inducement is its location, in the midst of many other rich mines, and in a country where wood, water and grass are abundant.

Besides this show for mining life and activity, we have hopes that the Vulture company will soon do something; and our faith that the arrastras now being driven by water-wheels in Big Bug, Hassayampa, Walker and other districts will do well for their owners and the country is unbounded.

Going to Mohave county, we find that, since the fear of a long war with the Hualpais has faded, miners have gone to work as if no danger of this kind threatened.

The furnace recently erected at Castle Dome is just the trick to work much of the ores of Mohave county; and as the owners of said fur-

nace offer to purchase all ores which they can master, a market is thus opened to the miners of Mohave and other counties of the Territory. The boats of the Colorado Steam Navigation Company will stop and take on ores at any place on the river, so that there is now no excuse for idleness on the part of owners of lodes carrying argenteiferous lead ores.

Taken all in all, our Territory is not so ground down as croakers would make it appear. True, government contractors and some Indian agents are and have been doing all they can to ruin it; but, with Crook to keep it from being turned into an estate of the Interior Department; with our mining, farming, grazing and other resources; with the chances—now good—for the speedy completion of the Southern Pacific railroad, we are of the opinion that all true Arizonans can still defy the Devil, Columbus Delano, Gen. Howard, Dr. Tonner and Postmaster-General Creswell.—*Arizona Miner*.

Mining Operations in Nevada County.

The Nevada Transcript of March 27th contained the following:

Eighteen or twenty years since, Cement Hill was regarded the richest mining camp in this vicinity. An ancient river channel was found there which was cut by the Native American ravine. At a point where the ravine strikes the hill the ground was worked and found to be very rich; but after two or three years the lead was worked out or it could be traced no further. It remained unworked until about ten years ago, when E. F. Peck came into possession of it, and from prospects obtained and a thorough survey of the surroundings, he came to the conclusion that the ground which had been worked was only a section of the channel, which had been forced there by a land-slide, and the original channel lay further back in the hill, at the west side of the ravine. Acting on this theory, he commenced running a tunnel, eight years ago, for the purpose of finding it. He drove this tunnel 500 feet, but did not succeed in reaching the point desired. Last fall he made arrangements with a Mr. Foot, and started another tunnel. After running 300 feet he succeeded, without doubt, in finding the old channel, and it is the opinion of all who formerly knew the character of the ground, and those who have examined it since the discovery, that it will prove fabulously rich. The situation of the bed of gravel is said to be unusual, from the fact that 25 feet of soft granite bed rock overhangs the gravel. Other ground on the west has been located, and the County Surveyor will, to-morrow, complete surveys of the whole vicinity.

The gravel mines on the ridge are displaying a great deal of enterprise in the way of opening up their mines and making preparations for a thorough working of the ground that belongs to them. The Grass Valley Union says: "At French Corral, V. G. Bell is engaged in running a tunnel on the Milton ground through the hardest kind of rock which has cost \$86 a foot, and that, too, while using single-handed drills and giant powder. This tunnel will require about two years more to complete. Then he will be able to work the large tract owned by the Milton company with profit and system. At Empire and Kate Hays Flats, the miners are all busily engaged in preparing for a brisk summer's campaign—doing considerable blasting and some tunneling. At Birchville a busy scene is presented in the mining portion of the town. At Sweetland the Manzanita tunnel is in 3,000 feet and is as straight as an arrow—so straight that a candle lighted at the face can be seen at the mouth of the tunnel. It is regarded as a curiosity by all who have seen it. The grade is gradual and uniform all the way. It has considerable distance yet to run. It also is the property of the Milton company. The Sweetland creek mines are all doing well. At Buckeye Hill, George D. McLean, formerly a Grass Valley man, is washing and running the tunnel ahead at the same time. George has opened the mine systematically, and we understand it is paying well. A head of 1,000 inches of water is regarded as rather small at the Buckeye. This mine is owned by an English company. The Yuba tunnel comes next. They have been washing for some time. Last summer they were compelled to shut down because they could not get water. Their main pipe is 14 inches in diameter. The American mine is the next neighbor of Yuba tunnel, as can be noticed by the white stakes that show the boundaries. Their new tunnel is in 3,000 feet, and has some 2,000 feet to go. Their main pipe is 32 inches in diameter, which feeds five pipes—the largest of which having a six-inch nozzle. Thirteen under-currents are run by them to catch the gold. Davie & Bowen have been steadily washing since Christmas with 400 inches of water. Their working force is eight men. Smith & Buga have a small claim running over 200 inches of water, and are making good wages. At Montezuma Hill, two miles south of San Juan, the mine is being worked energetically and profitably. The main pipe is 6,000 feet long and 12 inches in diameter.

The Eureka Lake company are engaged in extensive mining at Columbia Hill. This company, during the past year, says the San Juan Times, purchased almost every foot of mining ground in that locality, and during the past fall and winter, mined extensively on what was known as the Richardson claims, close to the town of North Columbia. A clean-up of 30 days' run, the past winter, realized over \$20,000 over expenses, allowing eight cents per inch for water.

The Highest Mountains.

All the highest mountains in territory belonging to the United States are west of the Missouri river. Professor Hayden, the Government geologist, gives a list of more than sixty notable mountain peaks. In this list, only two are included in the Atlantic States, and these figure as mere pigmies by the side of the great mountains of the Pacific Coast. According to this authority, the highest mountain is not in California, but is really in Alaska. Two mountains in that territory figure as follows:

Mount St. Elias.....	FEET.	15,860
Mount Fairweather.....		14,789

But these are estimates, rather than the result of exact measurements. St. Elias, if the measurement does not shrink hereafter, is taller than Mount Whitney.

Mount Whitney, California.....	FEET.	15,000
Mount Shasta.....		14,442
Mount Tyndall.....		14,386
Mount Elmore.....		13,858
Mount Dana.....		13,227
Mount Lyell.....		13,217
Mount Silliman.....		11,623
San Bernardino.....		11,600
Lassen Butte.....		10,577

This is the best assortment of mountains to be found in any State in the Union. There are any number of mountain peaks ranging from 7,900 to 5,000 feet. But these make no figure among the giants. Colorado makes the following showing:

Mount Harvard, Colorado.....	FEET.	14,270
Pike's Peak.....		14,216
Irwin's Peak.....		14,192
Gray's Peak.....		14,145
Mount Lincoln.....		14,124
Mount Yale.....		14,081
Long's Peak.....		14,050
Mount of the Holy Cross.....		13,500
Horse Shoe Mountain.....		13,406
Silver Peak.....		13,350
Veile's Peak.....		13,455
Mount Anahuac.....		13,402
Mount Guyot.....		13,223
Parry's Peak.....		13,133
Mount Flora.....		12,878
Spanish Peaks.....		12,000
Mount Englemann.....		11,000
Mount Wright.....		11,800

In Oregon the following mountains are most prominent:

Mount Hood.....	FEET.	11,225
Mount Pitt.....		11,000
Mount Baker.....		10,719
Cascade Range.....		9,000

Besides Mount Ranier in Washington Territory, set down as 14,434 feet high, Mount St. Helen's, in the same Territory, although only 9,769 feet high, is put down as a volcano. In fact, there is not an active volcano within the limits of our whole territory, although the number of craters show that the volcanoes were active at no remote period.

The following tables show the most notable passes over the two great ridges of mountains that have yet been found:

Passes over the Rocky Mountains.

32d Parallel, near El Paso.....	FEET.	5,714
35th Parallel, near Albuquerque.....		7,472
38th Parallel, (Cocheco Pass).....		10,000
41st Parallel (Union Pacific Railroad).....		8,241
42d Parallel (South Pass).....		7,083
47th and 48th Parallels (Cade's Pass).....		6,044
47th and 48th Parallels (Deer Lodge Pass).....		6,200
47th and 48th Parallels (Lewis & Clark's).....		5,323
Flathead Pass (Northern Montana).....		5,459
Kutanie Pass (British America).....		5,000

Passes over the Sierra Nevadas.

Tejon Pass.....	FEET.	5,250
Walker's Pass.....		5,300
New Pass, to Owen's river.....		3,164
Mono Pass, to Mono Lake.....		10,700
Donner Pass (Central Pacific Railroad).....		7,042
Beckwith's Pass, to Pyramid Lake.....		4,500
Truckee Pass.....		7,200
Madeline Pass.....		5,687

Strange Phenomenon at Gold Hill.

About three minutes' walk, in an easterly direction from Main street, Gold Hill, there is to be seen a most wonderful phenomenon. The ground, either from an earthquake or some other cause, has recently split open for at least a quarter of a mile. The crevice thus created, starting at Fort Homestead, crosses the railroad track, and thence pursues a nearly southerly direction down the west side of the cañon, embraced between Fort Homestead and the hill beyond. It then crosses the cañon, and extends for a considerable distance up the west side of the hill last named. The crevice varies in width from one to twenty inches; and, in places, appears to be bottomless. The most interesting locality to visit first is directly east of Postmaster Chubbuck's residence. In going to the locality indicated, it is necessary for the visitor to cross the cañon named above. The crevice, or chasm, throughout its entire length, is as straight as an arrow, and is of recent origin. It was first discovered by our fellow townsman, Fleming, an old prospector. That it is something more than a land-slide is evident, from the fact that it crosses the cañon in a direction nearly at right angles to the same. Our reporter, who visited the scene of the earth opening, lost all traces of the same at the fort. It is possible, however, that it extends northerly as far as the Imperial works. The ground upon which the town of Gold Hill is built, seems to possess the element of instability; and in many cases, the water-pipes have pulled apart, and boiler beds have gone out of position, owing to this circumstance. The question—"Whether are we drifting?" is a pertinent one. Any person possessed of ordinary curiosity, or having a taste for geological investigations, will be richly rewarded by visiting the scene of the phenomenon referred to above.—*Gold Hill News*.

The Biggest Steamship Afloat—America Leads the World.

The "City of Pekin," a full description of which, and of the launching, is given below, is a steamship belonging to the Pacific Mail Steamship Co., and is next to the Great Eastern, the largest steamship in the world. The "City of Pekin" will carry 7,000 tons dead weight, besides passengers and coal; and if fully loaded with teas, her cargo would be worth two million dollars. The contract price for her was \$1,127,000, about the cost also of our Palace Hotel. The "City of Yeddo," now building, will be as large as the "City of Pekin." The following is the account of the launching, etc., dated Philadelphia, March 18th.

This afternoon, at six minutes past one o'clock, the "City of Pekin," the largest steamship in the world next to the "Great Eastern," was most successfully launched from John Roach's shipyard, Chester, 14 miles from Philadelphia. The launch was witnessed by thousands of persons, and it is looked upon as a great national event. The sea monster is intended for the Pacific Mail Company's line, and will run, together with the "City of Yeddo," of the same size, and nearly ready for launching, between San Francisco and Pekin, China, and Yeddo, Japan.

The launch was witnessed by several United States Senators, members of Congress representing nearly all the States, representatives of different State governments, and thousands of visitors from Philadelphia, New York, Washington, Baltimore, Wilmington and other cities. It was fully expected that President Grant would be present, but he was detained in Washington.

After the launch, a grand banquet was given in a spacious building in Roach's shipyard. Nearly 2,000 persons sat down to the table. Speeches were made by United States Senators Bogy, of Missouri; and Cameron, of Pennsylvania; John Roach, builder of the "City of Pekin" and "City of Yeddo," and others.

The dimensions of this magnificent steamship are as follows: Length of load line, 395 feet 5 inches; length over all, 420 feet; beam, 47 feet 4 inches; depth, 38 feet 5 inches; tonnage, nearly 6,000 tons. She is rigged with four masts, full ship rig, with fore-and-aft jigger-mast; has accommodations for 120 first-class, 250 second-class and 1,000 third-class passengers. Her engines are double compound high-pressure cylinders, 51 inches in diameter; low-pressure cylinders, 88 inches in diameter; stroke of piston, 64 inches, with propeller wheel of Hirsch's patent, 20 feet three inches in diameter, pitch 30 feet. Her hullers are 10 in number, and in length each 10 feet six inches, with a diameter of 13 feet.

The social hall, on deck 41 feet by 19 feet eight inches; the grand saloon, 120 feet by 48 feet. It is most beautifully finished in maple, satinwood and French walnut. It is lighted by 12 side-lights and two skylights. There are in the first cabin 50 state rooms, each with two berths, lounge and wash-stand, and lighted with side oval windows. Each room is six feet three inches by eight feet six inches, and are spacious and most favorable.

To the rear, along the passage-way, is the room of the stewards, bath-room and water-closet, and the ladies' toilet-room, lighted by stern windows.

The second cabin has on the starboard side the pursers' room, bath-rooms and water-closets, mess-room, kitchen, and the rooms of the store-keeper, cook, baker, porter, lamp and oil room, and the quarters of the hostess and carpenter.

On the port side is the gallery, oilers' room, the quarters of the water-tenders, second and third engineer, first assistant engineer, chief steward, chief engineer and surgeon, with three bath-rooms, barber-shop, wine-room, pantry and additional state-rooms, dispensary department, water closets.

The storeroom on the starboard side, has, in addition to the stowage accommodation, the hospital department, with five berths, butcher-shop and cattle pen. Forward, on the port side, are water-rooms, water-closet, and room for baker and cook, with passenger accommodations.

The forecastle has accommodations for 60 of the crew, and is more spacious than usual. Forward, on deck, is the pilot-house and chart-rooms. The quarters of the First, Second and Third officers are on deck, abaft, and fitted up with every convenience, including walnut furniture. The smoking room is also on deck. It is 19 by 15 feet, and handsomely furnished with lounges of walnut. Attached to the "City of Pekin" are the Captain's gig, 10 boats, and six of the largest sized and most improved life-rafts, forming ample means of safety to the passengers and crew in case of accident.

Seven rolling-mills in this State contributed the iron, the weight of which is estimated to be 1,000,000 pounds. The weight of the vessel is calculated at 7,000,000 pounds. When loaded to her full capacity, she will stand about 17 feet above the water line. We already have spoken of her engines, but may add that her horse-power is rated at 4,500. The furnaces will consume about 60 tons of coal per day, and the speed of the vessel, it is estimated, will be 15 knots per hour.

The saloon-cabin will be furnished and upholstered in the most elaborate manner, with plush and velvet carpetings. On the spar-deck we notice the steering apparatus, which can be used either by hand or steam. The masts are of the fore-and-aft type, and the windlass is arranged to be operated by steam or manual power. The anchors are of 5,500 weight separately, and are attached to 27 fathoms of two and a quarter-inch chain. She can avail herself of 3,300 feet of canvas.

On leaving our port she will be taken in charge by Captain J. Maurie, of the Pacific Mail Steamship Company, and conveyed to the Morgan Iron Works, where her hull and engine will be completed. The cost of her full completion. One million dollars in the estimated cost of this magnificent structure.

The workmen engaged in the mining and smelting in Prussia are united in a kind of self-insurance society, the object of which is the supporting of the sick, superannuated, widowed and orphaned members of the craft. In 1871 the union included ninety-one subdivisions, in which were enrolled the workmen from 2,445 mines, 183 smelting works and eighteen salt works, to the number of 101,813 regular, and 106,349 occasional workmen. The property of the union is free from taxation, and counting up all kinds of effects, amounted in 1871, to forty-two thalers four and one-third groschen per member, or about \$62. On January 1, 1873 the union was caring for 9,269 invalids and 277 "half invalids." During the year 1,413 invalids were received, and 1,501 were removed from the society's care, and 128 half invalids were received and eighty-four removed. The invalid age has before varied from the fifty-fifth year in 1861 to the 48-8th in 1868; but in 1871 it went just one step lower. It stood at the 48-7th year.

NINETY per cent. of the good lever watches sold in the United States are of American make, but there are large quantities of cheap watches imported from Switzerland and France.—*American Manufacturer*.

Placer Mining in Colorado.

UNION DISTRICT, SUMMIT COUNTY.—Summit county is pre-eminently the placer mining county in this Territory. A description, therefore, of its prominent placer diggings and their resources will be interesting.

The placer mines are situated in the southeast corner of the county, within an area of twenty square miles. The Alpina streams, whose sources are above timber line and which have a perennial supply of water that accommodate this area, are the Blue, Ten-mile, and Swan rivers, and French, Illinois, Indiana and Pennsylvania gulches. There is also a network of small streams, affording water during a portion of the season.

There is in the aggregate one hundred miles in length of good ditches fed by these rivers and streams. The more prominent of the ditches are the Gold Run, ten miles long, independent ditch, eight and one-half miles long, Blue river and Buffalo Flats ditch, six miles long, and the Green-leaf ditch, four miles long. These ditches have cost about \$1,000 a mile. In the flush days of '60-'62 the Georgia and Galena gulches, Hughes' Flat and Jeff Davis' Patch were the heavy producers of bullion, but they have since fallen into comparative neglect and disuse. But on the completion of the Swan river, Georgia ditch, and the construction of new ditches (in contemplation) higher up for the former two diggings, they will probably be worked again with good results.

Gold Run, which comprises what is now called Union district, was discovered in February, 1860. It has always been noted for its rich and extensive placer mines. But it was only partially worked until the completion of the ditches, in 1863. Since then it has yielded \$550,000 in gold, as follows: Buffalo Flats, \$300,000; Gold Run Ditch company, \$250,000; and the district remains comparatively unworked.

Mining is carried on in this district by bed-rock flumes, hydraulics, and the "booming" system.

We learn that the minimum yield to one hundred square feet is \$1,600, and the maximum \$16,000. There are several hundred acres in the diggings. The bed rock is slate, very soft, making it easy to clean and shovel up. The grade is from six to nine inches in twelve feet. There are comparatively few boulders to handle. With proper appliances and the water of the Gold Run ditch in one consolidated mining operation, over two acres of the diggings can be mined in a season. The mining season generally lasts six months, from the first of May to the last of October.

The diggings will be extensively worked the coming season.—*Colorado Ex.*

DECEPTIVE SPECIMENS.—Minerals are sometimes picked up hundreds or thousands of miles from their real home. Everybody has heard of cunning miners "salting" barren ground with specimens from mines at a distance. It is a common and often successful trick. Petroleum has been poured into natural springs, and the lands sold at a high figure. Holes have been dug on mountain sides and filled with wet coal-slack in winter, covered over, and afterwards cut down as coal-bed outcrops, to get a premium for the discovery. California nuggets have been dropped into Greene county oil borings, etc. But the same thing happens without fraudulent intention. A. W. Franks, Esq., exhibited at a meeting of the Society of Antiquaries, in London, November 28, 1872, a bronze pricket candlestick, four and a half inches high, "the stem of which issues from the body of a stag," apparently of the 14th century. It was found on the wharf at Calcutta, in ballast thrown from a ship from Erith, in Great Britain. Had this been a stone implement, or a piece of tin-ore, it would have escaped immediate observation, and being afterwards found by some curious observer, would have led to some archaeological or mineralogical mistake. No doubt, many such mistakes have occurred in all ages; for in all ages commerce has thrown the stones of one shore upon others far away.—*Railway and Mining Register.*

INTO COUNTY MINES.—A letter from Cerro Gordo, Inyo county, to the *Call*, gives some interesting information about that region of country. Cerro Gordo is nearly 28 miles due east of Mount Whitney, 260 east and about 100 south of San Francisco, and 27 miles east of Visalia. The writer was Sheriff of the county at one time, and frequently had to ride 150 miles on horseback to summon a juror. On the 17th of March, six years ago, he, in company with M. E. Belshaw and E. Jordan, started at Cerro Gordo, the first successful lead-smelting works on the Pacific Coast, which have been in constant operation ever since. Some 10,000 tons of lead and silver have been shipped from this place to Selby's works in this city, and two fourteen-mile teams are being loaded daily for Los Angeles, each team taking 340 bars, of 85 pounds each, at a trip. Although a hundred teams are employed, they are three months behind with the transportation, as the works have now 23,000 bars on hand.

The correspondent, who is no longer interested in the smelting works, says 300 tons of lead ore can be tumbled out at a single blast, and the ledge in some places is 200 feet of solid ore. The company is not incorporated, but the mine is owned and worked by individuals.

Cerro Gordo is 8,250 feet above the sea level. The winter has been very severe, not having thawed for eighty days. Shocks of earthquake are very frequent, but do little or no damage.

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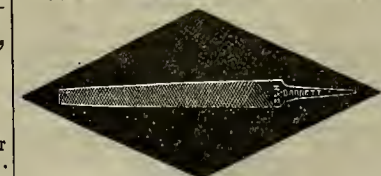
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W. H. FARWELL. [mr71m] JNO. O. HANSOOM

SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

All kinds of Machinery made and repaired.

24v22-3m JOSEPH MOORE, Superintendent.

Consolidated Refractory Lead and Silver Mining Company.

Location of Mines, Mulaga District, Lower California OFFICE, ROOM 10, No. 605 CLAY STREET.

Correct information from the Mines of the Company can always be obtained by application at the office.

LAST ASSAY, \$263 PER TON IN SILVER.

JACOB SCHREIBER, President.

A. D. CARPENTER, Secretary. 7v28-3m

OUR SPECIALTY: "BEYOND THE MISSISSIPPI!"

GO WEST, YOUNG MAN! GO WEST!

Gold by the Bushel! Silver by the Ton!

Capital required: Nerve and Honest Industry.

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CROFT'S WESTERN WORLD,

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"AMERICAN PROGRESS,"

free to each subscriber.

The Agassiz Memorial.

In removing Louis Agassiz, death has deprived us of one, who, for the last quarter of a century, has done more than any other person to stimulate in this country the study of Nature and a spirit of scientific investigation. Twenty-eight years ago he left Switzerland, his native land, for the United States, and became an American citizen. Those twenty-eight years he gave to unremitting labor in behalf of that higher education, which, by the public at large, was little understood. His interest was confined to no town or State, to no individual or class. He journeyed much; and, wherever he went, there his pupils were. He might have rested on the reputation he brought from Europe, and by lecturing and writing have made a fortune. Such a life, however, he would not, or perhaps could not live. At the age of 67 his brain gave way, and he died, leaving no wealth but his name, his example, and his works. It would not be grateful for the country, nor would it be for the country's interest, that Agassiz should pass away without a fitting memorial. Such a memorial can be made out of the great museum which he began and partially built, and for the completion of which he has left full directions. Completed, it would be a perpetual fountain of knowledge and a monument quick with his spirit. "Museum," a word that commonly suggests little more than a collection of curious objects, is scarcely an appropriate name for the memorial Agassiz ought to have. The museum he labored for is a presentation of the animal kingdom—fossil and living—arranged so as to picture the creative thought. The study of such a subject is the highest to which the human mind can aspire.

The Museum of Comparative Zoölogy at Cambridge is an independent establishment, governed by a faculty of its own. It was founded fifteen years ago by Agassiz, and has grown to its present large proportions under his hand. In connection with it is the newly established School of Experimental Zoölogy on the island of Penikese, endowed by Mr. Anderson, of New York. The system of instruction has the broadest character, and includes elementary teaching, as well as the highest investigations. The exhibition rooms are free to the public. Large sums have already been expended in bringing this National museum to its present condition. Its collections in several branches are superior to the British Museum or the Garden of Plants. To make such an establishment useful, it must have a large building and a considerable annual income for the payment of professors and assistants. To perfect the grand plans conceived by Agassiz will require at least \$300,000, of which about one third would be used in enlarging the building, and two-thirds would be funded.

It is proposed to raise the money to complete this work, and a committee composed of scientific men has taken the matter in hand, with this view. The friends of Agassiz—the friends of education—propose to raise a memorial to him, by placing upon a strong and enduring basis the museum, which is at once a collection of natural objects, rivaling the most celebrated collections of the Old World, and a school open to all the teachers and pupils in the land. It is to be hoped that the people of America, among whom Agassiz unselfishly labored and among whom he spent the last portion of his life, will not hesitate to carry on the work he has begun. His example and his teaching have benefited every section of the country, even to our out-of-the-way California. The museum he planned and founded will, if suitably endowed, become an ever increasing source of scientific and practical usefulness to the nation and the world. We cannot doubt, therefore, that the appeal made by the committee will be answered by the public in the same generous spirit in which Agassiz devoted his genius to the furtherance of science and the advancement of education among us. Subscriptions may be sent to Sebastian B. Schlesinger, Esq., Treasurer of the Agassiz Memorial Committee, 5 Oliver street, Boston. Teachers and pupils desiring to subscribe to the "Teachers and Pupils Fund" of the "Agassiz Memorial" can address J. M. Barnard, No. 13 Exchange street, Boston.

A BLACK ROCK VEIN.—The Burnt Flat Co. have been sinking for a valuable quartz vein, on the bank of the North Fork of the American river, under the shadow of Cape Horn, on the C. P. R. R., since 1866. Two or three tunnels and as many shafts were sunk without discovering the main auriferous vein. Recently the owners concluded to test a ledge of black rock, whereby they stumbled, as it were, upon very rich pay. The company are now confident of rich rewards for their perseverance. Upon receiving samples, we shall have further to say about the ore.

TOPS OF MOUNTAINS.—Secretary Delano has decided that the applications to purchase the tops of Mount Broes and Mount Lincoln, in Colorado, as placer mining land, where quartz has been discovered on the surface, are contrary to law. Whenever minerals are found in rock in a placer, they must be applied for as lodes, for which \$5 per acre is demanded.

The tallest chimney in the world is being constructed in Lawrence, Mass. The work is resting at 100 feet in height, in order to settle and season before putting on the entire immense weight.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., April 7, 1874.

FOR WEEK ENDING MAR. 24, 1874.

CAR FOR SINGLE-TRACK RAILWAYS.—Thos. M. Rankin, Modesto, Cal.

FENDER FOR VESSELS.—John B. Treadwell, S. F., Cal.

SLIDE VALVE.—Charles O. Farciot, S. F., Cal.

—The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest time possible.

RAILROAD WORK.—Advicee from Olympia, W. T., state that work was commenced on the Olympia and Tenino R. R. on the 7th inst. The citizens turned out en masse, closing up every place of business and devoting the day to hard work on the grade.

The Bellingham Bay Coal Company is having a new shaft sunk about a half mile northeast of the present site, where it is expected a very superior article of coal will be obtained.

BUSINESS in the Tintic district, Utah, is looking up, and indications are that the district with its many advantages will attract a fair share of attention.

A VALUABLE coal mine was lately discovered back of Carmelo bay, Monterey county.

PAIN-KILLER.

1840.

1874.

Time Tests the Merits of All Things.

THIRTY YEARS is certainly long enough time to prove the efficacy of any medicine, and that the Pain-Killer is deserving of all its propitiators claim for it, is amply proved by the unparalleled popularity it has attained. It is a sure and effective remedy. It is sold in almost every country in the world, and it needs only to be known to be prized, and its reputation as a Medicine of Great Virtue, is fully and permanently established. It is the great Family Medicine of the age. Taken internally, it cures Dysentery, Cholera, Diarrhoea, Cramp and Pain in the Stomach, Bowel Complaint, Painters' Colic, Liver Complaint, Dyspepsia, or Indigestion, Sudden Colds, Sore Throat and Coughs. Taken externally, it cures Bruises, Boils, Felons, Cuts, Burns, Scalds, Old Sores and Sprains, Swellings of the Joints, Toothache, Pain in the Face, Neuralgia and Rheumatism, Chapped Hands, Frost Bitten Feet, etc.

Pain is supposed to be the lot of us poor mortals, as inevitable as death, and liable at any time to come upon us. Therefore, it is important that remedial agents should be at hand to be used on emergency, when we are made to feel the excruciating agony of pain, or the depressing influences of disease. Such a remedial exists in Perry Davis' "Pain-Killer," the fame of which has extended over all the earth. Amid the eternal ices of the Polar regions, or beneath the intolerable and burning sun of the tropics, its virtues are known and appreciated. And by it suffering humanity has found relief from many of its ills. The effect of the Pain-Killer upon the patient, when taken internally in cases of Cough, Cold, Bowel Complaint, Cholera, Dysentery, and other affections of the system, has been truly wonderful, and has won for it a name among medical preparations that can never be forgotten. Its success in removing pain, as an external remedy, in cases of Burns, Bruises, Sores and Sprains, Cuts, Stings of Insects, etc., and other causes of suffering, has secured for it the most prominent position among the medicines of the day. Beware of counterfeits and worthless imitations. Call for Perry Davis' Vegetable Pain-Killer, and take no other.

Sold by Druggists and Grocers.

The Pacific Rural Press,

NOW IN ITS FOURTH YEAR.

Is a Large, Handsome, Illustrated, Home Journal. Every Farmer, Gardener, Country Gentleman and Rural Homestead Owner should take it. Every Miner, Mechanic, Manufacturer and Professional man and woman who contemplates agriculture, should read it.

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Of real merit, if brought plainly before the public when fresh, are most likely to become profitable to the patentee. For this reason, patentees (of worthy devices) should have the best of Engravings Made, and published in the PRESS. Superior Engravings Made, at reasonable rates, by artists in this office, bp-tf

SAN FRANCISCO METAL MARKET.

WEDNESDAY M., April 8, 1874.

Quicksilver is reported very strong in New York, at \$1.37 1/2. There has been no further advance here. Metals generally are quiet.

Scotch Pig Iron, 30 ton	52 00	@	—
White Pig, 30 ton	32 00	@	—
Refined Bar, 48 assortment, 30 lb.	—	@	—
Refined Bar, good assortment, 30 lb.	—	@	—
Refined Bar, 10 to 12 lb.	—	@	—
Plate, No. 5 to 9	—	@	—
Sheet, No. 10 to 13	—	@	—
Sheet, No. 14 to 20	—	@	—
Sheet, No. 24 to 27	—	@	—
Horse Shoes, per keg	1 50	@	8 00
Nail Rod	—	@	—
Norway Iron	—	@	—
Roller Iron	—	@	—
Other Irons for Blacksmiths, Miners, etc.	—	@	—
COPPER—			
Copper Tinned	—	@	—
O. N. I. Pat.	—	@	—
Sheeting, 30 lb.	—	@	—
Sheeting, Yellow	—	@	—
Sheeting, Old Yellow	—	@	—
Composition Nails	—	@	—
Composition Bolts	—	@	—

TRIP PLATES—			
Plates, Charcoal, 10 lb.	—	@	16 00
Plates, 10 Charcoal	12 00	@	14 00
Roofing Plates	13 00	@	—
Beams, 10 lb.	—	@	—
STEEL—English Cast, 30 lb.	—	@	—
Drill	—	@	—
Flat Bar	—	@	—
Flange, 10 lb.	—	@	—
ZINC—			
Sheet	—	@	—
NAILS—Assorted sizes	—	@	—
LEAD—			
Pig, 30 lb.	—	@	6 00
Sheet	—	@	9 00
Pipe	—	@	8 1/2
QUICKSILVER, per lb.	—	@	1 25

LEATHER.

WEDNESDAY M., April 8, 1874.

There is yet no change for the better in the Leather market. Prices are stationary and business slow. A slight advance in imported goods, especially Jodot's, has been noted in New York, but no similar movement is felt here.

City Tanned Leather, 30 lb.	—	@	—
Santa Cruz Leather, 30 lb.	—	@	—
Country Leather, 30 lb.	—	@	—
Stockton Leather, 30 lb.	—	@	—
Jodot, 11 to 13 Kil, per doz.	66 00	@	85
Jodot, second choice, 11 to 16 Kil, 30 doz.	55 00	@	70 00
Cornellian, 12 to 16 Kil, 30 doz.	57 00	@	67 00
Cornellian Females, 12 to 16 Kil, 30 doz.	50 00	@	64 00
Cornellian Females, 12 to 16 Kil, 30 doz.	66 00	@	74 00
Beaumontville, 15 Kil, 30 doz.	60 00	@	—
Simon, 15 Kil, 30 doz.	61 00	@	63 00
Simon, 20 Kil, 30 doz.	63 00	@	—
Simon, 24 Kil, 30 doz.	72 00	@	74 00
Robert, 7 and 9 Kil, 30 doz.	25 00	@	40 00
French Kips, 30 lb.	1 00	@	1 15
California Kip, 30 lb.	40 00	@	—
French Sheep, all colors, 30 lb.	8 00	@	15 00
Eastern Calf for Boots, 30 lb.	1 00	@	1 25
Sheep Roams for Topping, 30 lb.	8 00	@	—
Sheep Roams for Linings, 30 lb.	5 50	@	10 50
California Russet Sheep Linings, 30 lb.	1 50	@	4 50
Best Jodot Calf Boot Legs, 30 pair	5 00	@	5 25
Good French Calf Boot Legs, 30 pair	4 00	@	4 75
French Calf Boot Legs, 30 pair	4 00	@	—
Harnessed Leather, 30 lb.	30 00	@	37 1/2
Briddle Leather, 30 lb.	48 00	@	72 00
Skirting Leather, 30 lb.	34 00	@	37 1/2
Well Leather, 30 lb.	30 00	@	50 00
Buff Leather, 30 lb.	19 00	@	22 00
Wet Leather, 30 lb.	17 00	@	19 00
Eastern Wax Leather	—	@	—

Scientific and Practical Books on Mining, Metallurgy, Etc.

Published or revised, wholesale and Retail, by DEWEY & CO., MINING AND SCIENTIFIC PRESS OFFICE, S. F.

BY GUIDO KUSTEL,

MINING ENGINEER AND METALLURIST.

Roasting of Gold and Silver Ores, and the Extraction of their Respective Metals without Quicksilver. 1870.

This rare book on the treatment of gold and silver ores without quicksilver, is liberally illustrated and crammed full of facts. It gives short and concise descriptions of various processes, by any other published, embracing the subjects treated. Its authority is highly esteemed and regarded by its readers; containing, as it does, much essential information to the Miner, Mill man, Metallurgist, and other professional workers in ores and minerals, which cannot be found elsewhere in print. It also abounds throughout with facts and instructions rendered valuable by being clearly rendered together and in simple order. It contains 120 diagrams, illustrating machinery, etc., which alone are of the greatest value. PRICE REDUCED TO \$5.

It contains 142 pages, embracing illustrations of furnaces, implements and working apparatus. It is a work of great merit, by an author whose reputation is unsurpassed in his speciality. Price \$2.50 cloth, or \$3 currency, postage free.

Concentration of Ores (of all kinds), including the Chlorination Process for Gold-bearing Sulphurets, Arseniurets, and Gold and Silver Ores generally, with 120 Lithographic Diagrams. 1867.

This work is illustrated by any other published, embracing the subjects treated. Its authority is highly esteemed and regarded by its readers; containing, as it does, much essential information to the Miner, Mill man, Metallurgist, and other professional workers in ores and minerals, which cannot be found elsewhere in print. It also abounds throughout with facts and instructions rendered valuable by being clearly rendered together and in simple order. It contains 120 diagrams, illustrating machinery, etc., which alone are of the greatest value. PRICE REDUCED TO \$5.

Nevada and California Processes of Silver and Gold Extraction, for general use, and especially for the Mining Public of California and Nevada, with full explanations and directions for all metallurgical operations connected with silver and gold from a preliminary examination of the ore to the final casting of the ingot. Also, a description of the general metallurgy of silver ores. 1864.

As its title indicates, this work gives a wide range of information applicable to all vein miners and workers in precious metals, affording hints and assistance of exceeding value to both the moderately informed and the most expert operator. Price, \$5 in cloth; \$6 in leather—coin.

BY OTHER AUTHORS.

The Quartz Operator's Hand-Book; by P. M. Randall. 1871. Revised and Enlarged Edition. Cloth bound, 175 pages. Price, \$2.

Sulphurets: What They Are, How Concentrated, How Assayed, and How Worked; with a Chapter on the Blow-Pipe Assay of Minerals. By Wm. M. Barstow, M. D.; 1867; cloth bound, 114 pages. Printed and sold by Dewey & Co. Price, \$1; postage free. The best written work, and most complete work on the subject treated.

ANY OTHER BOOKS DESIRED will be furnished at the most reasonable rates by Dewey & Co., Mining and Scientific Press Office, S. F.

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The best, speediest, and surest method for you to obtain patents, file caveats, or transact any other important business with the Patent Office at Washington, or with foreign countries, is through the agency of DEWEY & CO., PUBLISHERS OF THE MINING AND SCIENTIFIC PRESS, SAN FRANCISCO, an able, responsible, and long-established firm, and the principal agents on this side of the continent. They refer to the thousands of inventors who have patronized them, and to all prominent business men of the Pacific Coast, who are more or less familiar with their reputation as straightforward journalists and patent solicitors and counselors. We not only more readily apprehend the points and secure much more fully and quickly the patents for our home inventors, but with the influence of our carefully read and extensively circulated journals, we are enabled to illustrate the intrinsic merits of their patents, and secure a due reward to the inventor, besides serving the public who are more ready to give a fair trial, and adopt a good thing, upon the recommendation of honest and intelligent publishers.

To Obtain a Patent,

A well-constructed model is generally first needed, if the invention can well be thus illustrated. It must not exceed 12 inches in length or height. When practicable, a smaller model is even more desirable. Paint or engrave the name of the article, and the name of the inventor, and his address upon it.

Send the model (by express or other reliable conveyance), plainly addressed, to "DEWEY & CO., MINING AND SCIENTIFIC PRESS OFFICE, SAN FRANCISCO." At the same time, send a full description, embodying all the ideas and claims of the inventor respecting the improvement describing the various parts and their operations.

Also send \$15 currency, amount of first fee of the Government. The case will be placed on our regular file, the drawings executed, and the documents made up, and soon sent to the inventor for signing.

As soon as signed and returned to us with the fees then due us, it will be sent straightway to the Patent Office at Washington.

When the invention consists of a new article of manufacture, a medicine, or a new composition, samples of the separated ingredients, sufficient to make the experiment (unless they are of a common and well-known character), and also of the manufactured article itself, must be furnished, with full description of the entire preparation.

For Processes, frequently no model or drawings are necessary. In such case, the applicant has only to send us an exact description, and what is desirable to claim.

For designs no models are necessary. Duplicate drawings are required, and the specifications and other papers should be made up with care and accuracy. In some instances for design patents two photographs, with the negative, answer well instead of drawings.

For further information, send a stamp for our illustrated circular, containing a digest of PATENT LAWS, 112 illustrated mechanical movements, and HINTS AND INSTRUCTIONS regarding the RIGHTS AND PRIVILEGES of inventors and patentees, which will be furnished post paid. Also a copy of NEW PATENT LAW of 1870.

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Is Light, Noiseless, Elastic and Durable.

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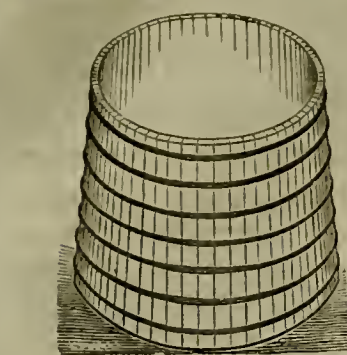
No Vermin can harbor about it. So constructed that the pressure is equally distributed. Does not sag or hag. Can be rolled up in a small compass for transportation. Manufactured by

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The New Wilson SEWING MACHINE

Has points of superiority over all others. A reliable warranty is given with each machine for **FIVE YEARS.** It is unequalled for light and heavy work. Examine and compare it with the highest priced machine in the market. O. A. NORTON, Gen. Agt for the Pacific Coast, 337 Kearny St., S. F.

PRICE, \$50.



WATER TANKS of any capacity, made entirely by machinery. Material the best in use; construction not excelled. Attention, dispatch, satisfaction. Cost less than elsewhere.

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MILLMEN.

Boss's Quicksilver Pump saves labor and waste of metal. Address, M. P. BOSS, 15v7-3m Bullionville, Nev.

Mining and Other Companies.

Owing to the time necessary to mail the present large edition of the M. & S. Press, we are obliged to go to press on Thursday evening—which is the very latest hour we can receive advertisements.

Benjamin Mill and Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Devil's Gate District, Lyon County, Nevada. Notice is hereby given, that at a meeting of the Board of Directors, held on the seventh day of March, 1874, an assessment (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, room 7, No. 401 California street, San Francisco, Cal. Any stock upon which this assessment shall remain unpaid on Saturday, the twenty-fifth day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the fifteenth day of May, 1874, to pay the delinquent assessment together with costs of advertising and expenses of sale. By order of the Board of Directors, LEANDER LEAVITT, Secretary. Office—Room 7, No. 401 California street, San Francisco, Cal. de28

Black Mountain Coal Mining Company.—Principal place of business, City and County of San Francisco, Cal. Location of works, Santa Cruz County, California. Notice is hereby given, that at a meeting of the Board of Directors, held on the 25th day of February, 1874, an assessment of three (3) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at his office, No. 402 Montgomery street, Room No. 23, San Francisco, California. Any stock upon which this assessment shall remain unpaid on the 6th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expense of sale. By order of the Board of Directors, F. N. WELLS, Secretary. Office—No. 402 Montgomery street, Room No. 23, San Francisco, Cal. mrl4-4w

Commercial Coal Mining Company of San Francisco.—Principal place of business, City and County of San Francisco, California. Location of works, Santa Cruz County, Cal. Notice is hereby given, that at a meeting of the Board of Directors, held on the 25th day of February, 1874, an assessment of 3 1/2 cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at his office, No. 402 Montgomery street, Room No. 23, San Francisco, California. Any stock upon which this assessment shall remain unpaid on the 6th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expense of sale. By order of the Board of Directors, S. B. HANSON, Secretary. Office, No. 402 Montgomery street, Room No. 23, San Francisco, California. mrl4-4w

Geneva Consolidated Silver Mining Company. Location of principal place of business, City and County of San Francisco, State of California.

Location of works, Cherry Creek Mining District, White Pine County, State of Nevada. Notice.—There are delinquent upon the following described stock, on account of assessment levied on the tenth (10th) day of February, 1874, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
G. W. Robbins.....	not issued	4,750	\$1,187 50
I. T. Milliken, Trustee, not issued		2,000	500 00
I. T. Milliken, Trustee, not issued		110	27 50
I. T. Milliken, Trustee, not issued		5,100	1,275 00
I. T. Milliken, Trustee, not issued		5,000	1,250 00
I. T. Milliken, Trustee, not issued		3,145	786 25
I. T. Milliken, Trustee, not issued		2,800	700 00

And in accordance with law, and an order of the Board of Directors, made on the 10th day of February, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the office of the company, Room 14, 302 Montgomery street, San Francisco, California, on Tuesday, the seventh (7th) day of April, 1874, at the hour of 12 o'clock p. m., of said day, to pay delinquent assessments thereon, together with costs of advertising and expenses of sale. I. T. MILLIKEN, Secretary. Office—Room 14, 302 Montgomery street, San Francisco, Cal. mrl2

POSTPONEMENT.—The above sale is hereby postponed till Saturday, the eighteenth (18th) day of April, 1874, at same hour and place above mentioned. April-28 I. T. MILLIKEN, Secretary.

CAUTION.—Germania Mining Company.

The following described stock was sold to pay amount due on assessment No. 1:

Names.	No. Certificate.	No. Shares.
Wm Lapham, Trustee.....	10	25
Wm Lapham, Trustee.....	185	100
Wm Lapham, Trustee.....	194	100
Wm Lapham, Trustee.....	209	30
Wm Lapham, Trustee.....	223	50
Wm Lapham, Trustee.....	187	100
H H Savage.....	36	20
Maud Tavidge.....	38	15
Joseph Chamberlain.....	39	1000
Joseph Chamberlain.....	40	500
Joseph Chamberlain.....	41	100
Joseph Chamberlain.....	42	100
Joseph Chamberlain.....	43	100
Joseph Chamberlain.....	44	100
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J W Chamberlain.....	80	100
J W Chamberlain.....	81	100
J W Chamberlain.....	82	100
J W Chamberlain.....	83	100
J W Chamberlain.....	84	100
J W Chamberlain.....	85	100
J W Chamberlain.....	86	100
J W Chamberlain.....	87	100
J W Chamberlain.....	88	100
Wm H Chamberlain.....	89	100
Wm H Chamberlain.....	90	100
Wm H Chamberlain.....	91	100
Wm H Chamberlain.....	92	100
Wm H Chamberlain.....	93	100
Wm H Chamberlain.....	94	100
Wm H Chamberlain.....	95	100
Wm H Chamberlain.....	96	100
Wm H Chamberlain.....	97	100
Wm H Chamberlain.....	98	100
Wm H Chamberlain.....	99	100
Wm H Chamberlain.....	100	100
Wm H Chamberlain.....	101	100
Wm H Chamberlain.....	102	100
Wm H Chamberlain.....	103	100
Wm H Chamberlain.....	104	100
Wm H Chamberlain.....	105	100
Fred K Winkelman.....	247	20
Samuel Purdy, Trustee.....	2	500
Edward Dieren.....	196	10
L A Terry.....	224	25
T J Brown.....	107	100
T J Brown.....	108	100
T J Brown.....	109	100
T J Brown.....	110	100
T J Brown.....	111	100
T J Brown.....	112	100
T J Brown.....	113	100
T J Brown.....	114	100
T J Brown.....	115	100
T J Brown.....	116	100
T J Brown.....	117	100
T J Brown.....	118	100
T J Brown.....	119	100
T J Brown.....	120	100
T J Brown.....	121	100
T J Brown.....	122	100
H B Congdon, Trustee.....	23	100
H B Congdon, Trustee.....	24	100
H B Congdon, Trustee.....	25	100
H B Congdon, Trustee.....	26	100
H B Congdon, Trustee.....	27	100
H B Congdon, Trustee.....	28	100
H B Congdon, Trustee.....	29	100
H B Congdon, Trustee.....	30	100
H B Congdon, Trustee.....	31	100
H B Congdon, Trustee.....	32	100
H B Congdon, Trustee.....	33	100
H B Congdon, Trustee.....	34	100
H B Congdon, Trustee.....	35	100
H B Congdon, Trustee.....	36	100
H B Congdon, Trustee.....	37	100
H B Congdon, Trustee.....	38	100
H B Congdon, Trustee.....	39	100
H B Congdon, Trustee.....	40	100
H B Congdon, Trustee.....	41	100
H B Congdon, Trustee.....	42	100
H B Congdon, Trustee.....	43	100
H B Congdon, Trustee.....	44	100
H B Congdon, Trustee.....	45	100
H B Congdon, Trustee.....	46	100
H B Congdon, Trustee.....	47	100
H B Congdon, Trustee.....	48	100
H B Congdon, Trustee.....	49	100
H B Congdon, Trustee.....	50	100
Geo Helm, Trustee.....	3	500
Geo Helm, Trustee.....	259	100
Geo Helm, Trustee.....	260	100
Geo Helm, Trustee.....	261	100
Geo Helm, Trustee.....	262	250
Charles Rietler.....	225	100

The public is cautioned against negotiating said certificates. J. W. TRIPP, San Francisco, April 6th, 1874. apl1

Grand Central Quicksilver Mining Company.—Principal place of business, San Francisco, Cal. Location of works, Chinabur Mining District, Sonoma County, California. Notice to Stockholders.—A meeting of the stockholders of the above named company will be held at the office of the company in San Francisco, on Wednesday, the 13th day of April, 1874, at 12 o'clock p. m., for the purpose of adopting By-Laws for the company, and such other business as may be brought before the company. By order of Board of Directors, W. M. A. STUART, Sec'y. Office of the company, 204 Front street, San Francisco, ap4

Hudson Gold Mining Company.—Location of principal place of business, San Francisco, Cal. Location of works, Cherokees Mining District, Plumas county, Cal. Notice.—There are delinquent upon the following described stock, on account of assessment levied on the 24th day of February, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Geo O Burnett.....	83	100	\$ 25 00
J P Curtiss.....	43	500	125 00
H H Collins.....	3	1700	425 00
H H Fancett.....	3	100	25 00
Oeo Hansen.....	3	100	25 00
O G Hallett.....	3	50	12 50
G I Ives.....	7	100	25 00
Chas A Kenney.....	82	2275	568 75
H H McClelland.....	79	3300	825 00
H H McClelland.....	32	100	25 00
C O Palmer.....	64	50	12 50
Robt Rowe.....	35	250	62 50
J Oregory Boleleffen.....	38	250	62 50
O H Warner.....	34	250	62 50
J H H Williams.....	65	50	12 50
Chas D Zieles.....	84	100	25 00

And in accordance with law, and an order of the Board of Directors, made on the 24th day of February, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the Company's office, 113 Leidesdorff street, San Francisco, Cal., on the 20th day of April, 1874, at the hour of 1 o'clock p. m., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. O. W. FISHER, Secretary. Office—113 Leidesdorff street, San Francisco, California. ap4

Jefferson Gold and Silver Mining Company. Location of principal place of business, San Francisco, Cal. Location of works, Brown's Valley, Yuba county, California. Notice is hereby given that at a meeting of the Board of Directors, held on the 26th day of March, 1874, an assessment of fifty cents per share was levied upon the capital stock of the Corporation, payable immediately in United States gold coin, to the Treasurer at the office of the Company, Nos 214 and 216 Pine street, San Francisco, Cal. Any stock upon which this assessment shall remain unpaid on the First day of May, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the First day of June, 1874, to pay the delinquent assessment, together with costs of advertising and expense of sale. C. V. D. HUBBARD, Secretary. Office—214 and 216 Pine street, San Francisco, Cal. mrl2

Lady Franklin Gold and Silver Mining Company.—Principal place of business, City and County of San Francisco, State of California. Location of works, Silver Mountain Mining District, State of California. Notice is hereby given, that at a meeting of the Board of Directors, held on the ninth day of March, 1874, an assessment of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at his office, 507 Montgomery street, San Francisco, California. Any stock upon which this assessment shall remain unpaid on the 17th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 1st day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expense of sale. J. S. TITTY, Secretary. Office, 507 Montgomery street, San Francisco, Cal. mrl4

Land Purchasers' Association.—Office, No. 425 Kearney street, San Francisco, Cal. There are delinquent upon the following described stock, on account of assessment (installment No. 39), levied on the 17th day of February, A. D. 1874, the several sums set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Beyea J. L.....	72	1	\$10 00
Day, Thos. H.....	32, 33	2	20 00
Dond Philo.....	37	1	10 00
King C. J.....	37	1	10 00
Lord T. A.....	68, 59, 77	3	30 00
Morse I. H.....	1, 2	2	20 00
Robinson H. O.....	153	1	10 00

And in accordance with the law and an order of the Board of Directors, made on the 17th day of February, A. D. 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Secretary, 425 Kearney street, (up stairs), San Francisco, Cal., on Tuesday, the 14th day of April, 1874, at the hour of 12 o'clock p. m., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. O. S. WRIGHT, Secretary. Office—No. 425 Kearney street, (up stairs), San Francisco, Cal. mrl2

Mount Saint Helena Gold and Silver Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Oalistoga Mining District, Napa County, California. Notice is hereby given, that at a meeting of the Directors of said company, held on the 17th day of March, 1874, an assessment (No. 1) of ten cents per share was levied upon the capital stock of said corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, No. 418 Montgomery street, in the City and County of San Francisco, State of California. Any stock upon which this assessment shall remain unpaid on the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 12th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expense of sale. A. BADLAM, Secretary. Office—No. 418 Montgomery street, San Francisco, California. mrl1

Missouri Quicksilver Mining Company.—Principal place of business, San Francisco, Cal. Location of works, Chinabur Mining District, Sonoma county, California. Notice to Stockholders.—A meeting of the stockholders of the above named company will be held at the office of the company in San Francisco, on Wednesday, the 25th day of April, 1874, at 12 o'clock p. m., for the purpose of adopting By-Laws for the company, and such other business as may be brought before the company. By order of the Board of Directors, A. C. WAITT, Secretary. Office of the Company, 201 Front street, San Francisco, Cal. ap4

Mansfield Gold Mining Company.—Location of principal place of business, San Francisco, California. Location of works, El Dorado county, California. Notice is hereby given that at a meeting of the Board of Directors, held on the 21st day of March, 1874, an assessment of two (2) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, No. 334 Kearny street, San Francisco, California. Any stock upon which this assessment shall remain unpaid on the 27th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 18th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expense of sale. J. W. TRIPP, Secretary. Office—Room 14, No. 331 Kearny street, San Francisco, California. ap4

Public Notice is hereby given by order of Board of Trustees, that the annual meeting of the stockholders of the Linden Grevel Mining Company will be held on Saturday, the 18th day of April, at 2 o'clock p. m., for the purpose of electing a Board of Trustees for the ensuing year and to transact such other business as may come before the meeting, at the office of the company, No. 331 Montgomery street, room 17, San Francisco, April 2d, 1874. CHAS. J. COLLINS, President

Silver Cord Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Owyhee Mining District, Owyhee county, Idaho Territory. Notice.—There are delinquent upon the following described stock, on account of assessment (No. 3) levied on the Fourteenth (14th) day of February, A. N. 1874, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Boyle, John T, Trustee.....	183	400	\$300 00
Boyle, John T, Trustee.....	251	25	18 75
Boyle, John T, Trustee.....	252	25	18 75
Boyle, John T, Trustee.....	253	25	18 75
Boyle, John T, Trustee.....	254	25	18 75
Galloway, W T, Trustee.....	187	100	75 00
Galloway, W T, Trustee.....	220	50	37 50
Galloway, W T, Trustee.....	221	50	37 50
Galloway, W T, Trustee.....	222	100	75 00
Galloway, W T, Trustee.....	223	100	75 00
Galloway, W T, Trustee.....	224	100	75 00
Galloway, W T, Trustee.....	225	100	75 00
Galloway, W T, Trustee.....	227	100	75 00
Galloway, W T, Trustee.....	233	100	75 00
Galloway, W T, Trustee.....	236	100	75 00
Galloway, W T, Trustee.....	237	200	150 00
Galloway, W T, Trustee.....	238	100	75 00
Galloway, W T, Trustee.....	239	200	150 00
Galloway, W T, Trustee.....	240	200	150 00
Galloway, W T, Trustee.....	241	200	150 00
Galloway, W T, Trustee.....	242	500	375 00

Jones, Martin.....196 25 18 75
Jones Martin, Trustee.....197 50 37 50
Jones Martin, Trustee.....198 50 37 50
Jones Martin, Trustee.....199 50 37 50
Jones Martin, Trustee.....200 50 37 50
Jones Martin, Trustee.....201 50 37 50
Jones Martin, Trustee.....202 50 37 50
Jones Martin, Trustee.....203 50 37 50
Jones Martin, Trustee.....204 50 37 50
Jones Martin, Trustee.....205 50 37 50
Jones Martin, Trustee.....206 50 37 50
Jones Martin, Trustee.....207 50 37 50
Jones Martin, Trustee.....208 50 37 50
Jones Martin, Trustee.....257 500 375 00
Jones Martin, Trustee.....258 100 75 00
Jones Martin, Trustee.....259 100 75 00
Jones Martin, Trustee.....260 100 75 00
Jones Martin, Trustee.....261 100 75 00
Jones Martin, Trustee.....262 100 75 00
Jones Martin, Trustee.....263 100 75 00
Jones Martin, Trustee.....264 100 75 00
Jones Martin, Trustee.....265 100 75 00
Jones Martin, Trustee.....266 100 75 00
Jones Martin, Trustee.....267 100 75 00
Jones Martin, Trustee.....268 100 75 00
Jones Martin, Trustee.....270 50 37 50

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Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
24717-ay

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Rolling Mill Company,

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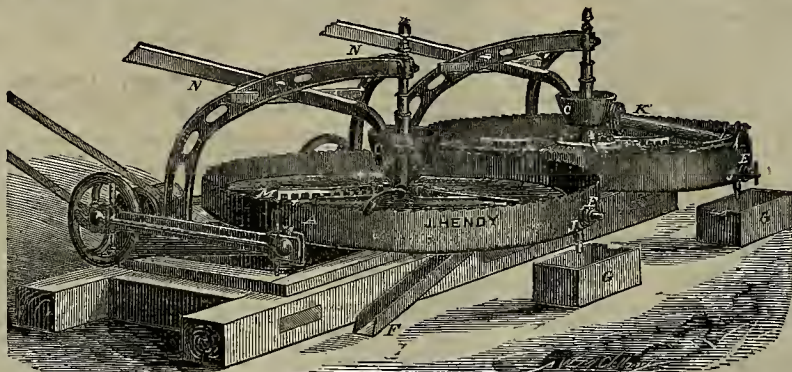
Miners' Foundry and Machine Works,

CO-OPERATIVE,

First Street, bet. Howard and Folsom, SAN FRANCISCO

Machinery and Castings of all kinds.

OVER \$3,500 PER MONTH SAVED BY THE USE OF HENDY'S IMPROVED CONCENTRATOR



Can be seen at the Manufactory, 32 Fremont Street, San Francisco.

JOSHUA HENDY, Esq.—Dear Sir:—As a practical miner and millman, I take pleasure in recommending the use of your Concentrators in all mills where gold or silver ores are reduced. No mills should be without them for the following reasons:

1st. They are good sizers (no perfect concentration in pulverized ores can be effected without first sizing).
2d. The best Concentrator I have ever known—(the concentrated stuff only containing 5 per cent. of sand).
3d. They are good amalgamators, light (feather) particles of amalgam and particles of coated gold, by attrition are brightened, and from their specific gravity and the action of the pan, fall to the bottom and adhere.

4th. They require but little power and attention to run them, and with ordinary care will last for years.
I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oaks and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,

Yours respectfully,
JAS. H. CROSSMAN, M. E.
409 California street, or Cosmopolitan Hotel.

SAN FRANCISCO, February 10, 1874.

OFFICE SUPERINTENDENT OF KEYSTONE CON. M. CO., AMADOR, AMADOR COUNTY.

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O. C. HEWITT, Supt.

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NORTH STAR M. & M. CO. (8 Concentrators).....	Grass Valley, Nevada County.
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ST. LAWRENCE MILL. (2 Concentrators).....	Georgetown, El Dorado Co.
ST. PATRICK MILL.....	Newcastle, Placer Co.
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For full description send for Circular. Orders or letters of enquiry, address,

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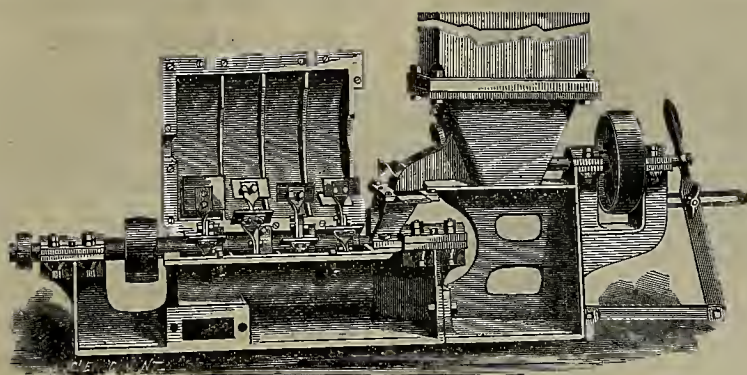
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DAVID STODDART, Agent, 114 BEALE ST., SAN FRANCISCO.												
NUMBERS.												
	0	1	2	2½	3	3½	4	4½	5	6	7	8
Diameter of Steam Cylinders, in inches.....	4	4	6	7	8	9	10	10	12	14	16	18
Diameter of Pump Cylinders, in inches.....	2	2½	3	3½	4	4½	5	6	7	9	10	12
Stroke of Piston, in inches.....	6	6	7	7	10	10	10	12	14	15	15	18
Capacity per Double Stroke, in gallons.....	1-6	1-6	2½	7-10	9-10	1-1-6	2-1-0	3	4½	9	12	13
Capacity at ordinary Speed, per minute.....	10	12	25	35	45	60	80	110	140	270	325	400
Maximum Capacity.....	30	45	60	130	135	160	240	300	500	900	1200	1500
Boilers in horses power they will supply.....	25	30	60	120	150	225	350	425	500	.....	.....	.....
Size of Steam Pipe, in inches.....	¾	¾	1	1¼	1½	1¾	2	2½	3	3½	4	4½
Size of Exhaust Pipe, in inches.....	1	1	1¼	1½	2	2½	3	4	5	6	7	8
Size of Discharge Pipe, in inches.....	1	1	1¼	1½	2	2½	3	4	5	6	8	10
Weight of Pump, in pounds.....	136	235	450	425	510	675	1150	1500	1612	2150	3375	4500
Length over all, in feet and inches.....	3-4	4-4	3-10	3-10	4-11	4-11	5-4	5-4	6-10	7-7	8	8
Height over all, in feet and inches.....	1-6	1-9	1-1	2-3	2-3	3-1	3-7	4-3	4-8	5-7	6-7	7
Width over all, in feet and inches.....	9	10	1-1	1-1	1-3	1-4	1-6	1-10	1-10	2-1	2-9	2-10
PUMPS.												
The above data apply to the Regular sizes only. All these pumps have <i>Brass Valve Seats and Brass Water Pistons</i> . Pumps when fitted with brass cost extra. We have many supplementary sizes.												
<i>LONG STROKE PUMPS.</i> No. 4 24-in. Stroke, \$ No. 6, 30-in. Stroke, \$ No. 7, 36-in. Stroke, \$ No. 8, 30-in. Stroke, \$												
These Long Stroke Pumps have large free openings, and are highly esteemed <i>for draining mines</i> .												

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PLASTER, COAL, BONE, MINERAL PHOSPHATES, PAINT STUFFS, DRUGS, PLUMBAGO, CLAY, DYE WOODS, ETC., TO A FINE POWDER.

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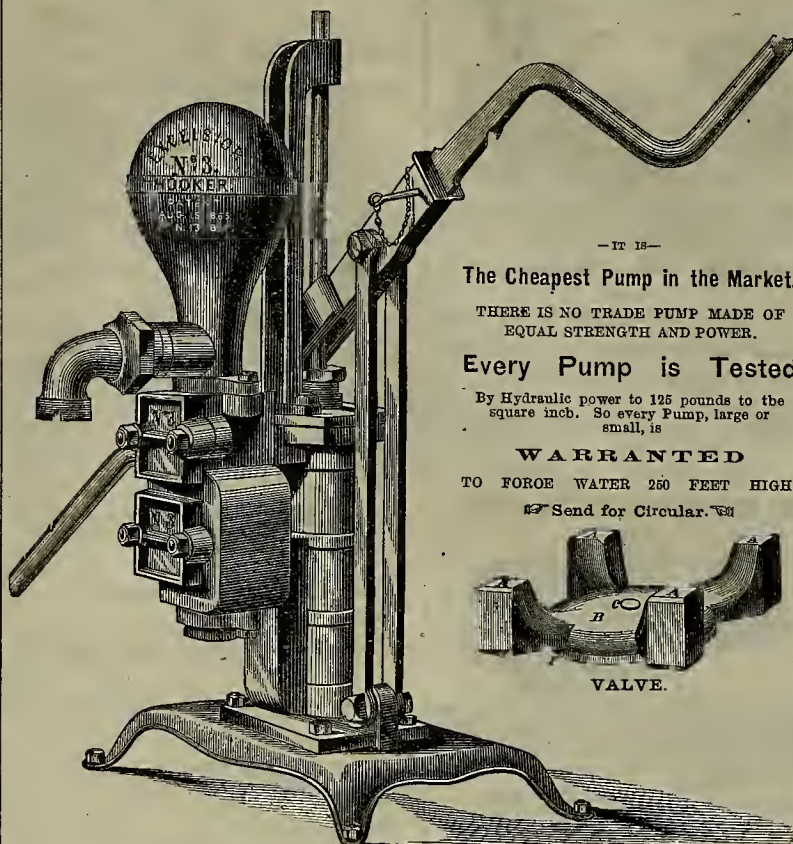
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THERE IS NO TRADE PUMP MADE OF
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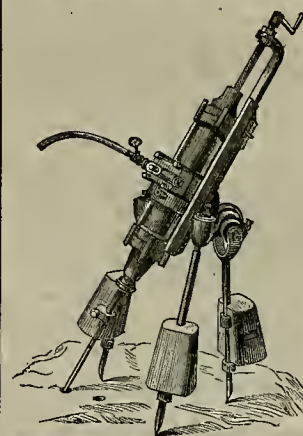
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GOLD SULPHURETS, ETC., AT THE HIGHEST RATES.

OR WORK THE SAME FOR OWNERS' ACCOUNT.

The works will commence operations on or about the 1st of April. Sampling, Assaying of all kinds of Ore,
and working of small lots of ore in any desired way, will be promptly attended to and reliable results returned.
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The Stickeen River Country.

Considerable interest has been manifested for the past six months, by the mining community, with reference to the Stickeen mines. Contradictory reports come from these, from time to time; but the unfavorable ones have not deterred great numbers of miners from going to the new diggings. We have published all the reliable information attainable concerning these mines for the benefit of our readers, and are now enabled to give them, in the accompanying map, some idea of the lay of the country. Mr. Peter Cargotich, who was one of the early discoverers of these mines, and who returned thither, last fall, has written us a letter and enclosed a slight sketch of the route to the mines, from which we have compiled the map shown on this page. It is chiefly valuable as giving the distances from point to point; so that miners who intend making the trip will have an idea of the distances to be traveled from day to day.

The route from San Francisco is as follows: From here to Portland, Oregon, 733 miles by steamer; fare, \$30. From Portland to Victoria, 308 miles; from Victoria to Nanaimo, 74 miles; from Nanaimo to Fort Wrangel, 768 miles, all by steamer. The fare by the steamer from Portland to Fort Wrangel, near the mouth of the Stickeen river, is \$50 in the cabin and \$35 in the steerage. At Fort Wrangel, the Stickeen river is ascended in small boats to Buck's Bar, 162 miles. From Buck's Bar to Dease's Lake the route is overland, the dotted line on the map showing the trail. The drawing made by Mr. Cargotich gives the distances continuously from Fort Wrangel, Alaska Territory. The Hudson Bay Company's Post marks the boundaries between American and English possessions. The map may not be made on a correct scale, but the distances, as given by Mr. Cargotich, correspond with those given in the Government Survey.

The letter of Mr. Cargotich accompanying the map has been a long time on the road, as it was written in January, unless he had lost run of the months on his trip. He writes from Buck's Bar. He says he arrived there on the 20th of September, and was some days building winter quarters. While doing so several miners returned from the diggings and greatly discouraged his party as to the possibility of getting to the diggings that fall. They went, however, to see for themselves, arriving at Dease creek on the 4th of November, staked off claims and returned to Buck's Bar, making the round trip in ten days, notwithstanding the fearful cold they encountered. At the time of writing he was to leave for Dease Lake in a few days, drawing the provisions in sleds. It was impossible to employ Indians, as they wanted from \$15 to \$20 per day. The coldest weather experienced by Mr. C. during the winter at Buck's Bar was 30 degrees below zero. At the time of writing, flour was selling at 24 cents per pound; bacon, 50 cents; sugar, 50 cents; beans, 30 cents, and other things in proportion. He says he thinks flour will be worth 75 cents at the mines. As far as he prospected he thinks the mines will be very rich; at least they have great expectations. He says of 50 men wintering at Buck's Bar not a single case of sickness occurred. He says they took up a subscription to have an Indian take their furs to Fort Wrangel, which probably accounts for the lateness of its arrival here, if the Indians there are like other Indians.

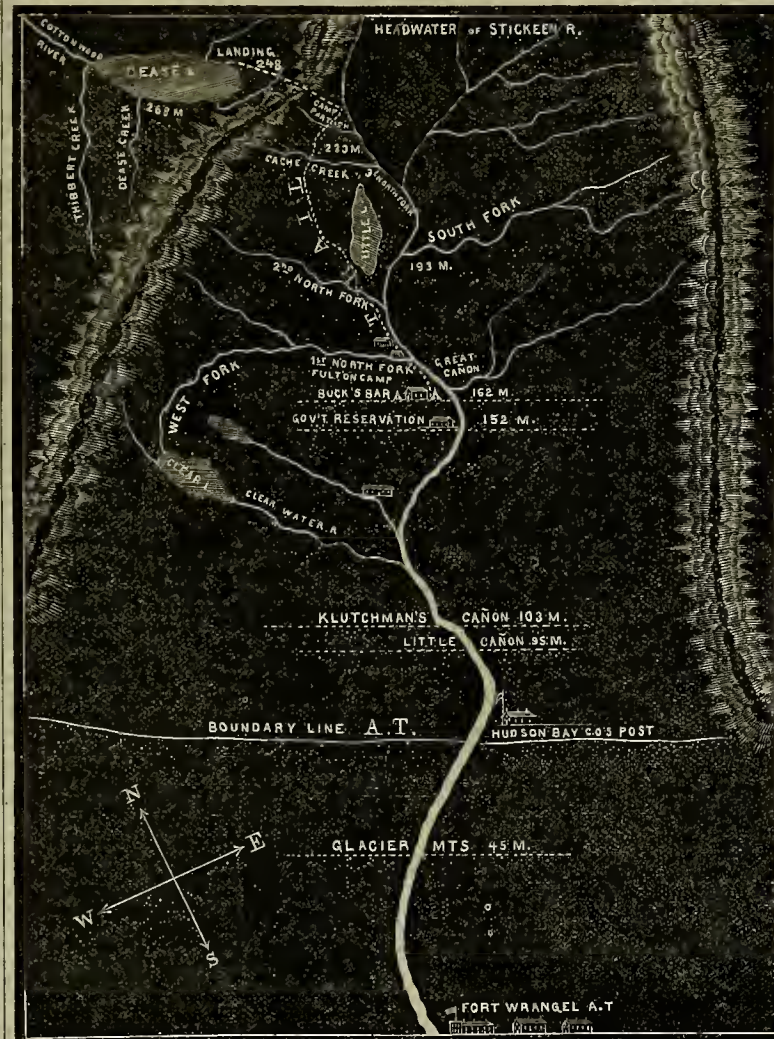
Mr. Cargotich is now at Dease creek, as an item in the *Victoria Colonist* shows. It says: Peter Cargotich writes to Mr. Grancini, under date of March 16th, from Dease creek. He says he has secured a claim that prospected from ten cents to \$1.50 to the pan, and thinks mining operations will commence about the 1st of May. Allen Grant, of Glengerry, Canada, died in Cargotich's cabin. His complaint was heart disease. He had just returned from a prospecting tour, and was telling about a rich claim he had discovered, when he fell over dead. There were some 400 men in the diggings.

The *Portland Bulletin*, of April 6th, gives the following additional information from those mines, which shows that it is yet too early to do much work there:

It will be remembered that the dispatches received from Victoria on Friday last gave an

inkling of good news from the gold regions of the North, and the arrival of the steamer California from that section of the country has been anxiously looked for. The steamer arrived yesterday morning, and Purser Vanderbilt called on us last evening and furnished us with the annexed intelligence. He says Mr. Sylvester (Barnard's Express messenger) arrived at Fort Wrangel on the evening of the 26th ultimo, direct from Dease lake and Buck's bar, having been eleven days from the former and three days and a half from the latter place, traveling the entire distance on foot,

staked off, and promise well. Rich diggings are reported on the third fork of the north branch of the Stickeen river. All work is being done by building large fires and thawing out the ground, and even with these drawbacks miners are making all the way from \$10 to \$30 per day. Allen Grant, a Canadian, well known in the mines, recently struck a rich ledge after almost superhuman exertions, and the excitement is said to have brought on the heart disease, killing him almost instantly. Fortunately, however, good luck does not often affect miners in this way; they, as a general thing, surviving



MAP OF STICKEEN RIVER AND CASSAIR MINES.

and most of the time on the ice. He was twenty-one days making the round trip from Fort Wrangel and return. He reports large quantities of provisions scattered along the route on the ice, it having been thrown away by overburdened miners, they finding they had started away with more than they could carry. There are about 40 men in the mines, while probably there are as many more encamped along the Stickeen river, awaiting the breaking up of the ice in order to get through.

It is expected the ice in the river will break up very soon, probably by May 1st, as the upper country ice was loosened in many places. Sylvester brought down a large quantity of duet, and from all reports, there was untold wealth left behind. A rich claim has just been struck immediately adjoining the one located by the Ruth brothers, and a gentleman at Fort Wrangel received a letter informing him that his interest in a claim just prospected was worth at least \$2,000. Most of the claims on Thibit's Lake (six miles in length) have been

such circumstances with amazing good grace. There appears to be no scarcity of provisions, although they are necessarily high-priced, owing to the difficulties of transportation. The opening of the river, however, will in a great measure obviate this evil, and a rush will undoubtedly be the result. About eighty miners are expected to go up on the next steamer; and as news like the above is apt to travel like wild-fire, we may expect to see very many en route for there during the ensuing month.

ANOTHER QUICKSILVER MINE.—A correspondent of the *Alta*, writing from San José, states that a San Francisco company has leased for five years, with the privilege of buying, the mineral lands known as the Pearce Place, or "North Almaden Mine." Four experienced miners, Theo. Indenethro, R. B. Harper, John M. Harper, and George A. Koch, have been sent out to prospect. They took teams, tools, gunpowder for blasting, lumber for cabins, etc. It is believed a hundred men will be at work on these mines within a few months.

Pacific Rolling Mill Improvements.

A visit to the Pacific Rolling Mills, on the Potrero, will surprise any one who has not been there for the past few months, as the improvements that have taken place have materially changed and enlarged the establishment. Their works are the largest of the kind on this side of the Rocky Mountains, and it is gratifying to note that their business has increased so much during the past year that they have been compelled to add new and enlarged machinery, buildings, etc., to meet the requirements of trade. Late improvements at the mills have caused an expenditure of about \$200,000.

We were shown through the works one day this week, by Messrs. Keency and Noble, who obligingly pointed out what had been added since our last visit, and gave us an opportunity of seeing the manner in which work was conducted. The new blacksmith shop is twice as large as any in the city, and is distinct from the other buildings. It has been arranged with a view to facilitate work as much as possible, and is light, airy and well ventilated. A new, upright 50 horse-power engine, built in this city by the Risdon Iron and Locomotive Works, has been placed in this shop. There are six furnaces for ship-spikes, rivets, etc., and one steam and two belt-hammers. Car work, locomotive and steamboat forgings, etc., are done in this shop. They are now busy on girder-work for the new Palace Hotel.

In the main building or rolling mill, a number of improvements have been made. A handsome, large new upright engine—30x32—built by the Pacific Iron Works, in this city, and of 450 horse-power, has lately been placed in position. This engine cost about \$20,000, and is a beautiful piece of machinery, working smoothly and steadily, and doing a large amount of work. This engine is used for furnishing power to the new three-high rail-mill, the puddle-mill and coffee-mill squeezers, which, with a new 12-inch mill, have recently been put in. They now have an 8-inch mill, a 12-inch mill, an 18-inch rail-mill and puddle-mill; they have five trains in all. The rail-mill will turn out 60 tons of rail per day, and the large piles of rails in the yard, for the Central Pacific Railroad, show that the mill has of late been kept pretty busy.

During the past year, 20 new boilers have been added to the establishment, making 30 in all. Six new furnaces have been put up, making 15 in all. The works are turning out large quantities of railroad iron, principally for the Central Pacific Road, and are making merchant iron of all classes. They now supply most of the merchant iron to the large business firms in this city. The works consume about 900 tons of coal per month, all of which is brought from Australia. They are running night and day, and are at present employing 250 men. The addition of the new three-high rail mill enables the works to turn out railroad iron in much larger quantities than heretofore, and at the same time with much less trouble and great saving of time.

RISING SUN MINE.—The mill on this mine, one mile from Colfax, has been running on very rich rock. Owing to extended prospecting on the ledge, dividends are likely to be suspended for a while. Some ten or more have been paid the past year. The main shaft is 360 feet deep. The longest drift has been carried 450 feet west. The ledge for 250 feet in the west drift averages some 18 to 20 inches in thickness of rich ore, but is found comparatively shut off in places. A new shaft is being sunk several hundred feet west of the present hoisting shaft to another level, which it is expected will open a good supply of ore. The machinery will be moved to it. The west drift on the 360-foot level is also being pushed ahead in expectation of realizing a favorable deposit of ore.

The works comprise 5-steps, amalgamator, 2 pans for settling and grinding sulphurets, Cornish pumping apparatus, blacksmith shop, etc. Thirty to forty hands are employed, in shifts. Jacob H. Neff is President of the company; W. A. Hines, Sec'y; S. Manuel, foreman; Wm. Crovan, Engineer.

Victoria Mines.

A work published by an English firm, entitled "Australia and New Zealand," contains the following concerning the mines of Victoria: At the close of 1851, Victoria took the foremost rank of all the colonies for mineral wealth and prospects. Notwithstanding many efforts since to develop other treasures of the earth—silver, copper, tin, and coal—gold continues to be the one main mineral product there. This colony is inferior to New South Wales in the variety of its mineral resources, although this export of gold in Victoria is more important. The yield has fallen off of late years, as will be seen by the following: In 1851 there were 145,146 ozs.; in 1852, 2,218,782 ozs.; in 1853, 2,676,345 ozs.; in 1854, 2,150,730 ozs.; in 1855, 2,751,535 ozs.; in 1856, 2,985,991 ozs.; in 1860, 2,156,660 ozs.; in 1862, 1,658,207 ozs.; in 1866, 1,443,687 ozs.; in 1870, 1,222,598 ozs.; in 1871, 1,345,477 ozs.; in 1872, 1,331,377 ozs. Victoria is now divided into seven mining districts, viz.: Ballarat, Beechworth, Sandhurst, Maryborough, Castlemaine, Ararat, and Gipps Land. Wardens, mining surveyors, and registrars are placed over subdivisions of these. One-third of the colony is pronounced to be auriferous. At the close of 1871 there were 404 steam-engines employed on alluvial mining ground, of which 219 were at Ballarat. There were 705 on quartz reefs, of which 168 were in the Sandhurst district, 143 Castlemaine, and 132 Ballarat. There were 1,465 horse puddling machines, 326 steam puddling machines, and 18,430 sluices, toms, and sluice-boxes. Not less than 6,590 stamp heads were at work on quartz and cement. The mining plant was valued at £2,060,855, and the land was estimated at £2,475,046. Silver at one time seemed very promising at St. Arnaud, near the western edge of the dividing range. After 11,348 tons of ore were raised, valued at £5,047, a pause followed. Lead is seen in various places. In 1871 there were raised 45 tons of ore valued at £870. The Murrindal mine of Gipps Land is being worked. Antimony is more promising.

The chief mines are at Heathcote, Woods Point and Castlemaine. In 1871 only £869 worth were exported, but the total value of that raised altogether has reached to £67,795. Heathcote exported 4,268 tons of ore in the first half-year of 1873. No copper was raised that year, though 7 tons, 4 cwt., valued at £928, were exported. Much expectation was excited about a mine on the Thompson river of Gipps Land. Castlemaine, St. Arnaud, Crooked river and Maldon, have yielded specimens. Bismuth is collected at Tarragower, Clunns and Omeo. Manganese is found from Clunns and the Loden. Cobalt, in paying quantities, is expected from Gipps Land and the Gonibouru. Plumbago is known at Cresswick, and zinc at St. Arnaud. Iron has never been wrought, as in New South Wales, though pretty rich ore exists; as hematite, near Melbourne; arseniate, at Malson; micaceous specular, at Lake Tyers; phosphate, at Sarsfield of Gipps Land; titaniferous, at Beechworth, Dandenong, and along the Yarra; and magnetic at the Sandhurst diggings. From sixty to seventy per cent. has been estimated to be pure iron in some of these samples. The meteoric iron block that fell near Cranbourne weighed 30 cwt. Tin has already become an important object of search. Altogether the export has been £255,891. Up to 1865, 2,380 tons were raised. The black oxides is the form assumed in the ore. At Beechworth fifty-four per cent. pure metal has been smelted. Tin is also found at Walhalla, Daylesford, Lolac, Cape Otway, Chiltern, and the Tarwin. Coal has often raised the hopes of the Victorians. The known carboniferous area is 4,000 square miles. Hardly any seam of a fair quantity has been got at.

PALISADE DISTRICT.—A good deal of excitement was occasioned a few days ago, by Jerry Cope coming up from Golconda with ore from a new strike in Credit Mobilier mine in Palisades district. This ore, being burned and crushed, assayed above all expectations. Here are the figures: One piece inferior, \$28.11 in gold, \$3.44 silver, per ton. A piece of the best showed \$641.31 in gold, \$401.34 silver. This piece of quartz was taken from the shaft, at a depth of only 14 feet from the surface. At this point the ledge is 3½ feet wide, the stratum showing gold being eight inches. The yield was astonishing; but the wonder vanishes when one closely examines the rock, for it is studded with points of pure gold cropping out through the pores of the quartz. The mine is situated 16 miles north from Golconda. We congratulate Cope and our ancient friend A. M. Sadors, on this well-deserved streak of good fortune. Immediately the news got abroad over town, horses were mounted and trains boarded, by persons in pursuit of owners in neighboring mines, who might not be aware of the big find. Several purchases of this nature were made.

MORE HYDRAULIC DIGGINGS.—A tunnel is now being run into the side of Mount Davidson, under the town, for the purpose of washing out the surface ground about the old Gould & Curry croppings. The tunnel starts in this vicinity of the old lower tunnel of the Gould & Curry company, and is already in a distance of 250 feet. To run the tunnel will cost from \$12,000 to \$15,000. The surface dirt below and about the croppings is rich in free gold, while mingled with the decomposed matter is a vast quantity of float rock, rich in both gold and silver. The free gold found in the dirt will probably pay all expenses, thus leaving as clear gain all this float ore that will be extracted.—Enterprise.

Sierra County Mines.

Below Hardscrabble, in going further south, we pass the Iowa Mine. This Iowa Company has been working hard for many years to reach bedrock in the deep channel, at an expense of \$40,000; and in order to do so a very deep shaft was sunk by water power. After reaching a great depth, the flow of water caused a cessation of operations. So a drain tunnel was started, without a survey, however, until the same had been prospected to a considerable distance, when it was found that this tunnel was running to the left and would miss this shaft 150 feet, striking about twelve above its bottom. After a connection had been made between the drain and air tunnel and the shaft a powerful steam engine was purchased and sinking was continued on this shaft until bedrock was struck at a depth of over 200 feet, and further down until this hard stratum was reached, when a tunnel was commenced toward the center of this hill, pumping the water up to the drain tunnel. In running this lower tunnel the company lost bedrock again in a distance of some 40 feet, pitching away from them very fast into the hill. After running a tunnel about 100 feet, this company commenced sinking; but on account of the immense quantity of water coming in all around them, and having necessarily lost connections of the machinery, the water had to be raised by hand power, and, in consequence, it was impossible to free the mine from water lower than 20 feet below the bottom of the tunnel. The owners of the mine, not being flush with money, disagreed amongst themselves, and, consequently, this mine, although proved by the shaft to be valuable hydraulic diggings, has ever since lain dormant.

Adjoining the Iowa mine, on the south, we go over the Washington Co.'s ground, located immediately on the beautifully situated mountain paradise, generally known as the Mt. Pleasant ranch. About \$20,000 has been here expended to no purpose. As in the cases recited above, water stopped work.

Next we pass over the Mt. Pleasant, Ladies, and Lincoln Co.'s claims, all undoubtedly containing rich hydraulic gravel, in which untold millions of gold are sleeping, only awaiting the sound of the miner's pick, assisted by Capital and Giant Powder, to resurrect the same and bring it to light, after the powerful streams of water, driven through the great Monitors and Little Giants, have washed away these gravel banks down into Big Cañon creek, flowing past those mines 1,000 feet beneath, in its rocky bed, toward the well-known Yuba river, through a tunnel, nearing 2,500 in length, which would reach the lowest point of these mines, at almost any depth, and become the outlet of at least 1,000 acres of good paying quartz gravel banks, from 50 to 300 feet deep, containing plenty of free gold from the surface or pins leaves on the same to bedrock, as some old miners used to say. Near these mines, the so-called western channel, of Slate creek basin, united with the eastern, flows hence as a great unit to Scales, described in one of our previous articles on the mineral resources of Sierra county.

Across Rock and Cañon creeks, west of the afore mentioned last three mines, we find what may be called a branch channel, on which are prominent the Aris ground, owned principally by Boyes & Brother, who have made some developments on the same, by running a cut; but, on account of having, under an old contract, rented a great part of their water franchise, until recently, to a Chinese company, they were not able to develop their mine at this place, having used the balance of the water at their mine at Fair Play.

Since writing the above, we have been credibly informed that Col. B. F. Baker, of Gardner's Point, has located all the water of Cañon and Nelson creeks, to be conveyed in a large ditch to Gardner's Point, Grass Flat, and other places where the same will be used with the water of other companies, so as to melt away the immensely productive hydraulic banks in all these localities of which we have spoken heretofore.

The next easterly channel from Slate creek basin channels, we find on the dividing ridge of Big and Little Cañon creeks, after having apparently taken a great curving sweep from Pilot Peak, and wherever operated has paid large returns, as at Deadwood, where this channel has been so far mostly drifted until recently, when hydraulic proves a perfect success. Next below, further south, this channel has been extensively worked by hydraulic process, by the American company, at Morrinstown, who own several hundred acres of the richest kind of mining lands; and, as far as worked, have yielded three-quarters of a million of dollars. This company make use of all late improvements in mining, have plenty of water, and a good discharge of their tailings.

Adjoining that company's ground we find Messrs. Perkins & Co. working their claim with perfect success, having also a good supply of water. About one mile further south we find that this channel was worked many years ago with grand results, by numerous companies at Craig's Flat, from which several million dollars have been taken out. The American company, of Morrinstown, having wisely bought up all the water ditches on that ridge, except Perkins & Co.'s, were enabled to secure all the ground at that place; which, we believe, gives them now some five or six hundred acres of rich hydraulic ground, to be worked by them and their successors in the future ages to come.

Cherry Creek.

From a correspondent at Cherry Creek the White Pine News learns that the prospects of this camp are very flattering. The Geneva Consolidated company, comprising the Geneva and Tea-cup mines, is working a large force of men and crushing ore at the Egan mill. The property of the San Joss company is under lease with favorable results, we believe, but are unable to give any figures. The condition of the roads will render it necessary for them to shut down soon for want of ore. The mines of this company are looking very well, and at the expiration of the bonds in August, will pass to the hands of those who have so zealously prospected them. Mr. Murphy, at the head of the company, will not lose a point in his endeavors to make the work a success. The Chance mine, now under bond to Frank Halliwell, or rather to the owner of "Thad Stevens," is improving at every step. The south shaft or incline in down about 100 feet in ore, that, as far as prospected, shows a pulp value of \$124. Under the able management of Mr. Halliwell this mine has become, as it were, the key to the district. Thousands of dollars have been expended in its development, and ore enough is now upon the dump and in sight to run 20 stamps for at least eight months. The Chance has been incorporated; the bond will expire May 1st, when the stock will in all probability be floated and work vigorously prosecuted. We understand that orders have been given to put on a large force of men for the purpose of thoroughly testing the mine before the bond is paid. The company has secured a mill-site, and it is asserted that a mill will soon be erected upon it.

North of this last named mine is situated the property of the Cherry Creek Consolidation. Under the able management of our old friend, E. B. Dickinson, work is being prosecuted on the mines as vigorously as the rough weather will permit, and good ore is being shown. It is a splendid prospect for a heavy and profitable mining venture. The Baltic is under bond to Geo. Treat, and work is pushed whenever the weather permits. There are several properties now under bond to responsible parties, upon which work will be commenced the present month, and a brisk summer must follow. This camp, as a whole, presents one of the best fields for prospecting in East Nevada; the veins are generally large, strong fissures, carrying excellent free ore. The town rather went ahead of itself in the little "spurt" it had last fall, but is now settling down to a legitimate business. It is asserted that if miners were called for immediately, a dozen could not be found; this augurs well, showing that all are at work who desire it. The extreme cold weather has retarded travel greatly, but we learn that it is on the increase.

Mines of New South Wales.

The mountainous part of New South Wales is one of the richest mineral regions in the world. Gold, silver, tin, copper, lead, iron and coal abound there. In 1871 the colony boasted of 250 puddling machines, twenty-two hydraulic hoses, and eighty crushing machines. In twenty years the yield of gold in New South Wales has been about forty millions. Up to the end of 1872 the Sydney mint had coined £32,354,000. The eighty gold-fields extend over an area of 14,000 square miles. The chief localities of the western mines are Solihale, Bathurst, Tambaroora, Mules, Gulgong, Greenfell, Carcoar, Trunkay, and Orange. Those of the southern are Gonibouru, Braidwood, Adelong, Tmmt, Wagga-Wagga, Araluen, Bur-rangong, Kiandra, and Gindagla. In the northern are Rocky River, Armidale, Tamworth, and Nundle. The fields of Timbora, Ironbark, Peel, and Boorook are in the north; Kiandra, Dalsegate, Shoalhaven, Jongoing, Emu Creek, and Jembaumbene are in the south; Lachlan, Turon, Ophir, Meroo, Cudegong, Tenna, Mitchell's, and Apple-Tree Flat are in the west. The copper of Orange district extends over twenty miles square, and Monaro wealth cannot be ascertained from the inaccessibility of the country. Silver lead is obtained at Wolgarlo, on the Yass river, at Moruya, at Modbury, at Scone, in the basin of the upper Murrumbidgee, and at the Isis river. Cinnabar has been raised near the Cudegong river. Iron, though often of high percentage, and found near both coal and limestone, is worked with difficulty, owing to the rate of wages and cost of carriage. This useful metal abounds near Combing, Warranbungle, Port Macquarie, Monaro, Berrima, Modbury, Shoalhaven, Murry county, Araluen, etc. Tin, during the past and present years, has been produced in New England, near the Queensland border. Of that rich tin ground, New South Wales possesses two-thirds of the area. Tenterfield and Inverell are the centers of this wonderful region; though the metal has been found near Albury, in the Tmmt river, and in several parts of the Alps. But coal is, after all, the most valuable of the natural wealth of New South Wales. Though the neighborhood of Newcastle, at the mouth of the Hunter, is the principal source of this mineral, profitable workings exist at Berrima, Maitland, Hatley, Patrick's Plains, Clarence river, and Wollongong of Illawarra. The coal area of the colony, though officially rated at 10,000,000 acres, may prove to be several times greater.—English Hand Book.

SEVERAL coal mines near DuQuoin, Illinois, have been closed, the veins being exhausted.

Our Naval Efficiency.

To any one who has labored under the conviction that our navy, though small, is nevertheless, taking into consideration the class of vessels of which it is composed, of the highest possible efficiency, the reports of the late fleet drill in Florida bay are especially discouraging.

A larger number of first-class ships than ever before has been collected under a single commander sailed around for several days; and as a result, we are informed that they, practically the cream of the navy, cannot maintain a speed of six knots per hour in company. In other words, if attacked by a squadron of fast foreign iron clads, they could not, if worsted, run away; or if falling in with swift sailing merchantmen, they could not catch them. In letters from officers of high rank, we find it stated, in brief, that our crack wooden ships are practically valueless, that they are loaded down with a mass of rigging which would hamper their efficiency in combat, and that, so far as the experience of the writer extends, the war vessels of the future should be swift steam rams, devoid of sail except such as a necessity for their safety in stormy weather.

Another fact, equally unpalatable, is that in connection with the torpedo practice. During the course of this drill, the vessels were required to attack a floating target at a speed of four miles per hour and to explode torpedoes from the ends of booms rigged out for the purpose. Some ships fired their charges at the right time and smashed pieces off the target; more did not, and only succeeded in blowing up huge columns of water.

About the only fact evidenced was the absurdity of supposing that an enemy's ship would stand still or slow down, to let a vessel stick out a long boom with a lot of rigging and a torpedo on the end, slide up at the rate of a mile in 15 minutes, poke the torpedo carefully under her water line and fire it, when a single charge of grape at short range would smash boom, rigging, torpedo and operators into fragments. Our ships were strictly limited to four knots speed, and the operations were supposed to be as closely as possible a reproduction of what would be done in action.

We spent millions, not long ago, for vessels which were to steam 16 knots per hour, and carry powerful batteries. Their hulls may now be seen slowly rotting in the navy yards, or else altered into slow cruisers. "Islerwood's costly failures" is their generic name. We are maintaining a torpedo school, sending boards of officers to Europe to report, and trying new inventions of submarine warfare, and yet the first really practical trial of the efficiency of an important branch of the system amounts to nothing, and proves nothing except that an inventor is needed who will devise a new way of adapting the torpedo as an offensive arm to vessels of war.—Sci. Am.

A MINERAL EXCHANGE IN ST. LOUIS.—The proprietors of the St. Louis Railway Register have lately opened a mineral exchange and reading room at No. 509 Walnut street, in that city. The chief attraction of this exchange is an extensive and interesting classified collection of ores, clays, coals, building stones and valuable minerals of all kinds gathered along the lines of Western railroads. Over ten thousand specimens are already in the cases, including iron, lead, zinc, coal, gypsum, fire clays, hone-stone, marble, granite, limestone, sandstone, paints, ochres, baryta, copper, rock salt, uranium tellurium, nickel, cobalt, kaolin, stearite, mica, manganese, gold, silver, and other minerals too numerous to mention. There are also on file in the reading room all the journals which those interested in mining, metallurgy, manufacture or railroads have occasion to consult. It is open to all who may choose to avail themselves of its facilities and conveniences.

A NEW textile fiber, resembling ramie, covers a large area of the State of Guatemala. Mr. Comstock brings specimens eight feet long, gathered after being overried by ripening. It is the worst weed known there. It is only used for ropes and twine. The Indians make it up. For paper stock it is evidently superior to any vegetable now in use; and, if gathered in season, it is presumed that it would make good like ramie cloth.

DISCOVERIES of copper ore of a superior quality are reported in the neighborhood of Cañon City, Colorado. Silver ore, said to be very rich, has been found just west of Cedar Park, northeast of Estes Park, in the same Territory.

MR. BAKER, an Englishman, has invested largely in smelting works in Warren county, Virginia. He realized one hundred per cent. upon his ventures in 1873.

Rich deposits of lead are being discovered in various counties of Missouri. Cass county especially is developing great wealth in lead mining.

OVER \$14,000 has already been taken out this season in the vicinity of Douglas City, Trinity county, all from three or four claims.

LARGE shipments of borax are being made from the Desert Spring's deposits, in Los Angeles county.

A SILVER mine has been discovered in Stone county, Missouri.

BIRMINGHAM makes about 1,000,000,000 steel pens annually.

SCIENTIFIC PROGRESS.

Storms, Fogs, Cyclones.

The systematic observations in regard to the state of the weather made at the present day at numerous meteorological stations in Europe and the United States, and reported by telegraph to a central station, are bearing fruit. The predictions deduced from laws founded on the experience gained are fulfilled in the great majority of cases, while the number of erroneous predictions is growing smaller and smaller, giving strong hopes that ultimately they will entirely disappear, in which case meteorological prophecies will belong to a class of predictions as reliable as are those of eclipses and other astronomical phenomena.

Storms.

To the old observations that generally wind and rain are predicted by a low barometer, which means a diminished atmospheric pressure, has been added the knowledge that there are definite areas of low barometer which travel as a wave in certain predetermined directions, so that now we can not only predict a storm from the observation of a low barometer, but we can predict where the low barometer may be expected, and in what regions the subsequent storm is to travel, and often, even the direction and force of the wind during its progress. The saving of human life and property in consequence of the timely warnings made at the signal stations of our weather bureaus in our marine and lake ports, has already been immense; and encouraged by these results, other signal stations are being erected at prominent points on our sea-coast, so as to be as much as possible within sight of vessels outside, which then can take their course according to the indications given of the weather to be expected.

Fogs.

The latest observations have also shown that even a storm is preceded by a low barometer, a fog is preceded by a high barometer; so that the late English weather reports prove that the dreadful fogs under which London suffered on the 11th, 12th and 13th of December last, were preceded by an aerial wave of high pressure; and as the condition of the atmosphere in a fog is in some respects the opposite of that during a storm, (namely, no wind or too much wind,) it is rational to suppose that they proceed from opposite previous conditions—excess or deficiency of atmospheric pressure. Considering the results of the latter closely, and knowing that the capacity of the air for moisture increases with the pressure, we find that a high barometer or dense atmosphere is favorable for causing the air to absorb much moisture, which, as soon as this pressure is relieved, becomes visible as a cloud; and if wind be totally absent, a fog—more dense in proportion to the moisture present. To this must be added that when a gentle current of cool air passes over a warm, moist layer of air below, or over a surface of water, warmer than this air, vapor will be condensed and a layer of fog formed. Considering that the capacity of air for moisture diminishes with the pressure, it is a natural consequence that a precipitation—moisture—a rain—must generally follow a low barometer.

Cyclones.

The knowledge of the nature of the so-called cyclones, or gigantic whirlwinds, which are the terror of navigators, has also become more correct in consequence of the late observations. It is found that they do not move in circles, but in ellipses, of which the longest diameter is parallel to the equator. As the center of these cyclones is the most dangerous portion, and to be avoided by navigators, this knowledge is of the utmost importance, as by means of it ship commanders will be less exposed to the danger of sailing in the elongated axis, by avoiding to sail east or west, and rather to sail north or south.

Highest Observatory.

Not content with an observatory on top of Mount Washington, more than 6,000 feet high, our weather bureau is establishing one on the top of Pike's Peak, in Colorado, more than double that height, namely, 14,216 feet. The observations on Mount Washington have shown that all great storms come from the southwest, and quickly disappear eastward over the Atlantic ocean. Great expectations are therefore indulged in about the results to be achieved by an observatory in the regions where the storms originate, large mountain masses and peaks being especially considered as storm brewers. Our Rocky Mountains form such formidable barriers to the interchange of atmospheric masses around them, and covered as they are with perpetual ice and snow, they influence the condition of the vapor-laden currents to such a degree that some consider them as the laboratories where all our weather is manufactured. In any case, the establishment of a meteorological observatory in the most central and highest part of our continent, in the real Switzerland of America, amid and above the cloud regions, is of the utmost importance, and promises the grandest results in this line of investigation.—*Manufacturer and Builder.*

SCHNEIDER found in barley straw an average of .78 per cent. of nitrogen; in rye straw an average of 1.65 per cent., smaller quantities than have usually been supposed. The cause of this he ascribes to the removal of parasites.

Scientific Notes from the French Academy.

From the reports of recent sessions of the French Academy of Sciences we glean the following interesting morsels of scientific intelligence.

France, it seems, has experienced an unusually mild winter. M. Tastes has investigated the matter and thinks that he has found a great atmospheric current crossing the country, which bears about the same relation to the atmosphere as the Gulf Stream does to the ocean. This current becomes displaced in longitude; and according as a given region is in the center or on the borders of the aerial flood, the winter is calm and mild or else visited with cold and storms.

Good results are communicated to the Academy from experiments in using acid tannate of protoxide of iron as a preservative of wood. The tissue on injection becomes thoroughly impregnated with a veritable ink, which prevents the destroying action of the weather. M. Moussier sends some curious specimens which, though seeming to be very hard graphite, capable of scratching glass and even silver, are composed of sugar—the residuum after evaporating, probably—heated, away from the air, to a white red temperature. MM. Jelly and Barbier suggest that the wires used for electric bells and similar purposes in buildings may be converted into fire detectors if they are simply coated with rubber as an insulator. The idea is that, where the wires of a circuit touch, on the heat melting the rubber covering, the exposed copper will come in contact, establishing the circuit, and so sounding the alarms. M. Spinelli has constructed a balloon and proposes to ascend higher than 24,000 feet. He believes that pure oxygen, in a compressible state and mixed with the rare atmosphere at great elevations, will enable him to breathe without difficulty. In spite of the numberless preventives suggested, the phylloxera continues its ravages in the vineyards of France. The Minister of Agriculture and Commerce has recently appointed a commission to examine plans, and has offered a prize of \$4,000 for a means of exterminating the nuisance. M. Ballard announces that he has completed a long series of experiments of the action of water on lead, and concludes that water containing sulphates and carbonates, attacks the metal very slightly, while the effect of water charged with chlorides and nitrates is very plainly marked.

VEGETABLE PHYSIOLOGY.—Professor Joseph Behn has communicated to the Academy of Sciences of Vienna some curious and interesting observations on vegetable physiology. He has found that young plants produced from seed germinating in pure oxygen gas of ordinary density speedily die, although they continue to consume oxygen to as great an extent as when they are growing in atmospheric air. The young plants thrive, however, in pure oxygen when the density of the latter is reduced so as to represent only a pressure of about six inches of mercury, or when pure oxygen of ordinary density is mixed with four-fifths of its volume of hydrogen. Professor Behn has also investigated the action of carbon upon the growth and greenness of plants, and found that an intermixture of only 2 per cent. of carbonic acid in the air in which plants are growing suffices to retard the formation of green coloring matter (chlorophyll), and that the process is almost or entirely suppressed in an atmosphere containing 20 per cent. of this gas. No germination of seeds took place in an atmosphere consisting of one-half carbonic acid.

ON THE MANUFACTURE OF ALLOYS OF IRON.—A patent has been taken in France for obtaining alloys of iron with magnesia, titanium, tungsten, silicon, etc. Scrap-iron and iron turnings and filings, or iron sponge coarsely pulverized, are mixed with minerals containing the manganese, tungsten, titanium, or silicon, also pulverized, in suitable proportions, and moistened uniformly and completely with an ammoniacal or an acid solution, after which the mass is compressed in molds. Great evolution of heat takes place, and in a few hours a hard compact mass results which is broken into fragments with a sledge. These fragments do not disintegrate at the temperature of melting iron. They are used in a peculiarly constructed high furnace, and when reduced yield excellent alloys. The ferro-manganese contains at pleasure from 20 to 75 per cent. manganese, and the same way ferro-silicon containing 22 per cent. of silicon has been obtained. Alloys of titanium and tungsten, or of all combined, are readily procurable. The temperature required is very high.—*American Chemist.*

A CURIOUS ILLUSTRATION OF CAPILLARITY.—The following experiment was described at a recent meeting of the French Academy of Sciences: Put into a flask a small quantity of carbonic disulphide (bisulphide of carbon), and let a small tight roll of filtering paper pass through a hole in the cork and dip into the liquid, which will ascend through the pores of the paper and evaporate rapidly on coming in contact with the air outside. The temperature is thus reduced to about zero of the Fahrenheit scale, and the moisture of the air is condensed and precipitated in the state of hoar-frost, forming with the disulphide a peculiar white hydrate. As the evaporation goes on, this gradually accumulates until it rises in mushroom shape to the height of an inch or so above the cork.

MECHANICAL PROGRESS.

Marvels of Mechanical Skill in Metal Working.

The *World of Wonder* records the following: In the twentieth year of Queen Elizabeth, a blacksmith, named Mark Scalliot, made a lock consisting of eleven pieces of iron, steel and brass, all of which, together with a key, weighed but one grain of gold. He also made a chain of gold, consisting of forty-three links, and having fastened to this the beforementioned lock and key, he put the chain about the neck of a flea, which drew them all with ease. All these together—lock and key, chain and flea—weighed only one grain and a half. Oswaldus Nethergerus, who was more famous than Scalliot for his minute contrivances, is said to have made 1,600 dishes of turned ivory, all perfect and complete in every part, yet so small, thin and slender, that all of them were included at once in a cup turned out of a pepper corn of the common size. Johannes Shad, of Meitehand, carried this wonderful work with him to Rome, and showed it to Pope Paul V., who saw and counted them all by the help of a pair of spectacles. They were so small as to be almost invisible to the eye.

The smallest steam engine on record was made by a Scotchman named Crawford. It is perfect in every part, and so small that it can be covered by a lady's thumb. It can be worked by steam, for which Mr. Crawford has a small apparatus prepared, but he usually works it by atmospheric pressure through a flexible tube, with rubber air receiver. Mr. Crawford is an engine manufacturer, and made the engines on the Cunard line of steamships. The pet engine was made as an amusement, and to show what could be done. It is undoubtedly the smallest working machine ever made. Mr. Crawford keeps it carefully enclosed in a glass case, and has refused several offers for it from persons who wished it as a curiosity.

Among the marvels of ingenious mechanism, the great clock of Strasburg Cathedral stands pre-eminent. It is said to have found a rival, however, in the handiwork of a German mechanic, of Cincinnati, who has made a clock which is thus described: We see in a glass case, a three-story, steeple-shaped clock, four feet wide at the first story and three feet high. The movement is placed in the first story, on four delicate columns, within which swings the pendulum. The second story consists of two tower-like pieces, on the doors of which there are two pictures that represent boyhood and early manhood. A tower crowns, as third story, the ingenious structure. A cock, as a symbol of watchfulness, stands upon the top, directly over the portal.

When the clock makes the first quarter, the door of the left piece of the second story opens, and a child issues from the background, comes forward to a little bell, gives it one blow and then disappears. At the second quarter a youth appears, strikes the bell twice, and disappears; at the third there comes a man in his prime; at the fourth we have a tottering old man, leaning on a staff, who strikes the bell four times. Each time the door closes of itself. When the hours are full, the door of the right piece of the second story opens, and death, as a skeleton, scythe in hand, appears, and marks the hour by striking a bell. But it is at the twelfth hour that we have the grand spectacle in the representation of the day of judgment. Then, when Death has struck three blows on the little bell, the cock on the top of the tower suddenly flaps his wings, and crows in a shrill tone; and, after Death has marked the twelfth hour with his hammer, he crows again twice. Immediately three angels, who stand as guardians in a central position, raise their trumpets with their right hands (in the left they hold swords), and blow a blast toward each of the four quarters of the earth.

At the last blast the door of the tower opens, and the resurrected children of earth appear, while the destroying angel sinks out of sight. Then, suddenly, Christ descends, surrounded by angels. On his left there is an angel who holds the scales of justice; on his right another carries the alpha and omega—the beginning and the end. Christ waves his hand, and instantly the good among the resurrected are separated from the wicked, the former going to the right, the latter to the left. The archangel Michael salutes the good, while on the other side stands the devil, radiant with fiendish delight—he can hardly wait for the final sentence of those who fall to him, but, in obedience to the command of the central figure, he withdraws. The figure of Christ raises its hand with a threatening mien, and the accursed sink down to the realms of the satanic majesty. Then Christ blesses the chosen few, who draw near him. Finally we hear a cheerful chime of bells, during which Christ rises, surrounded by his angels, until he disappears and the portal closes.

IMPROVED MACHINE FOR SCOUTING OR SCRAPING HOGS AND SEALING FISH.—This invention relates to a new machine for dressing hogs after the same have been slaughtered, and more particularly for removing the bristles from their skins, and it may also be used for removing scales from fishes. The invention consists in the use of a rotary endless chain containing a series of projecting or scaling tools or plates, and also in the combination of a cleaning brush, by which the plates are kept in condition.

WIRE ROPE.—The uses of wire rope, at first almost entirely confined in its practical application to the standing rigging of ships, are now almost innumerable. Among the most prominent of these uses, in addition to the standing and running rigging of ships, may be mentioned submarine cables for telegraphing; suspension bridges; guide, incline and flat ropes, for mining purposes; special forms of rope, for engineering uses; pneumatic telegraphs; traction ropes for tramways; steel plow ropes; ropes for the transport of sugar canes; tent stay ropes; endless driving lands; bullock traces; telegraphic running and stay strand; fencing strand; ropes for stabling; railway single cords; clock lines; clothes lines; sash lines; lightning conductors; gilt and silver cords for hanging pictures, etc. Many other applications might also be enumerated; while for all these purposes they are believed to be stronger, lighter, cheaper and more durable than any other article thus employed. These ropes are manufactured from cast, homogenous and Bessemer steel; also from charcoal and common brands of iron, bright or annealed, and from copper and brass.—*Iron Age.*

It sometimes happens that by centering, etc., the interior diameter of a tire becomes so much too large that it will not fit the wheel. Such defects have been corrected for a long time by J. Fiedler, a German machinist, by heating the tire red hot, and holding in that condition half immersed in cold water until cold, then heating again red hot and immersing the other half in the same way. In the first operation the unimmersed hot portion must contract with the portion rapidly cooled, with a corresponding condensation of material, and consequent permanent diminution of diameter, and in the second operation a similar effect is produced on the other half. By these two operations an interior diameter of 34 inches can be reduced $\frac{1}{4}$ inch, and by four operations $\frac{1}{2}$ inch. The method given is not confined to tires, an instance being given where a ring of Bessemer steel, to be used as a flange ring, had been entirely misshaped by an inexperienced workman, and was drawn into shape by heating 15 times, and cooling different portions.

COMPRESSING CAST METALS.—Mr. Horace W. Mann, of Omaha, Nebraska, has invented a portable apparatus for solidifying cast metals in their liquid state by compressed air, which is forced directly on top of the gate in the flask after the metal is poured. This invention consists of a portable reservoir for compressed air, with a pump attached, which latter is connected by rubber hose with a cylindrical cap that is fitted and clamped to a cylinder fastened to the top of flask. Both cylinders are coupled together by projecting flanges and clamps. The flask cylinder is provided with a clay wash, and, previous to the pouring of the liquid metal, with a ring or cap piece, set on top to prevent the hot metal from coming in contact with the clay wash. The ring is removed as soon as the metal is poured, the cap is then clamped on the cylinder and a stop cock opened, so that the compressed air is let directly on top of metal through the gate of the flask, compressing the metals in the molds.

WHILE America leads the world in the boldness of her suspension and arched bridges, it is, strange to say, in conservative Holland that we must look for the largest span of girder-bridge yet constructed, namely, the Meerdyck bridge, of 493 feet span, while the largest English span, the Britannia, is 460 feet, and the largest American, that at Cincinnati, is 420 feet. Even in swing bridges there appears to be nothing in this country that equals the span of the bridge at Brest, in France, of 388 feet opening, or 191½ feet from the center of turn table to the outer end. It is not unlikely that in a few years these several comparisons will all be reversed in favor of America, for in no other country at present are greater engineering structures of this description in progress or projected.—*Ex.*

AN IMPROVEMENT IN INSIDE WINDOW BLINDS was suggested to us the other day by one of our subscribers. He proposes to place the slats in a vertical rather than in a horizontal position. The effect in large halls, churches, etc., is to effectually screen the eyes from the direct glare of the external light, at the same time that the light may be freely admitted to the room. If the slats are made sufficiently wide and adjusted to stand at right angles with the sash, the room may be well lighted without any disagreeable effect either to the speaker or the audience. The gentleman referred to states that this experiment has been tried in the church at which he is an attendant, and that the result is entirely satisfactory. We regard the suggestion as a good one.—*Artisan.*

THE national inventive faculty has taken a queer twist in the direction of cigar boxes. The patent office is said to be overrun with models. We are at a loss to guess whether this is the effect of a freak like that which flooded the land with straw-cutters and washing machines, or a suggestion of the oxide on cigars which makes a new box necessary for every hundred sold, as an addition—wholly unnecessary, and unproductive of any revenue to the government—of eight per cent. to the cost of them. If it is the latter, probably a repeal of the onerous and needless exaction of a new box for every new stamp would relieve the disorder.—*Iron World.*

ALUMINUM is now being used quite extensively for gas burners.

Weekly Variations in Stocks.

(Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.) For 6 days ending Wednesday, Apr. 15, 1874.

NAME OF COMPANY.	IN MIN.	SHARES	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.						
Alamo	350	6000	15 3/4	14 1/2	1/2	
Alpine	3500	30000	6 1/4	6 1/4		
Arizona	1500	18000	10 1/2	10 1/2		
Bacon M. & M.	65	5000	7 1/2	7 1/2		
Baltimore	1010	10400	8 1/2	8 1/2		
Belcher	224	2400	32 1/2	32 1/2		
Best & Belcher	224	2400	32 1/2	32 1/2		
Bowers	1600	16000	10 1/2	10 1/2		
Buckeye	2500	25000	8 1/2	8 1/2		
Bullion	5000	50000	15 1/2	15 1/2		
Caledonia	5000	50000	15 1/2	15 1/2		
California	2800	28000	10 1/2	10 1/2		
Chollar-Potosi	130	21500	9 1/2	9 1/2		
Cinderella	34 1/2	3000	10 1/2	10 1/2		
Con. Gold Hill Quartz	1160	10500	9 1/2	9 1/2		
Con. Virginia	1600	24000	5 1/2	5 1/2		
Cook & Geyer	600	10000	5 1/2	5 1/2		
Crown Point	3200	24000	5 1/2	5 1/2		
Danley	1200	24000	5 1/2	5 1/2		
Deer Creek	1200	24000	5 1/2	5 1/2		
Empire	70	25000	5 1/2	5 1/2		
Eschschuer	400	8000	4 1/2	4 1/2		
Fairmount	3000	12000	11 1/2	11 1/2		
Flower	1200	24000	5 1/2	5 1/2		
Franklin	1200	24000	5 1/2	5 1/2		
Globe	1200	24000	5 1/2	5 1/2		
Gould & Curry	400	16000	5 1/2	5 1/2		
Hale & Norcross	180	10000	6 1/2	6 1/2		
Imperial	180	10000	6 1/2	6 1/2		
Indus	2000	30000	10 1/2	10 1/2		
Insurance	2000	30000	10 1/2	10 1/2		
Jacob Little	3000	30000	10 1/2	10 1/2		
Julia	3000	30000	10 1/2	10 1/2		
Kentuck	95	3000	22 1/2	18 1/2	4	
Kentuckhooker	1200	24000	5 1/2	5 1/2		
Kossuth	1200	24000	5 1/2	5 1/2		
Lady Bryan	3500	35000	10 1/2	10 1/2		
McMeans	3500	35000	10 1/2	10 1/2		
Mint	1600	50000	3 1/2	3 1/2		
Nevada	3000	30000	10 1/2	10 1/2		
New York Con.	3000	30000	10 1/2	10 1/2		
Occidental	800	10000	5 1/2	5 1/2		
Ophir	1400	18000	10 1/2	10 1/2		
German	1200	24000	5 1/2	5 1/2		
Phil. Sheridan	1200	24000	5 1/2	5 1/2		
Pioton	2000	30000	10 1/2	10 1/2		
Rock Island	2000	30000	10 1/2	10 1/2		
Savage	1600	50000	3 1/2	3 1/2		
Seg. Belcher	160	6000	9 1/2	9 1/2		
Seg. Caledonia	160	6000	9 1/2	9 1/2		
Seg. Rock Island	160	6000	9 1/2	9 1/2		
Senator	2400	24000	5 1/2	5 1/2		
Sierra Nevada	2000	30000	10 1/2	10 1/2		
Silver Hill	5400	54000	15 1/2	15 1/2		
South Comstock	2400	24000	5 1/2	5 1/2		
South Overman	2400	24000	5 1/2	5 1/2		
Succor M. & M.	7500	22500	24 1/2	24 1/2		
Sutro	2400	24000	5 1/2	5 1/2		
Tyler	2200	30000	11 1/2	11 1/2		
Union Con.	803	20000	19 1/2	17 1/2	2	
Utah	1400	20000	10 1/2	10 1/2		
Woodville	1200	24000	5 1/2	5 1/2		
Yellow Jacket	1200	24000	5 1/2	5 1/2		
NEVADA.						
Adams Hill	5000	50000	15 1/2	15 1/2		
Alps	800	30000	10 1/2	10 1/2		
Amador Tunnel	3000	30000	10 1/2	10 1/2		
American Flag M. & M.	3000	30000	10 1/2	10 1/2		
Arkansas	300	3000	2 1/2	2 1/2		
Belmont	3000	30000	10 1/2	10 1/2		
Bowers	3000	30000	10 1/2	10 1/2		
Chapman M. & M.	3000	30000	10 1/2	10 1/2		
Charter Oak	1000	30000	10 1/2	10 1/2		
Chief of the Hill	3000	30000	10 1/2	10 1/2		
Chief East Extension	3000	30000	10 1/2	10 1/2		
Columbus M. & M.	10000	50000	15 1/2	15 1/2		
Condon	2300	23000	9 1/2	9 1/2		
El Dorado South	5000	50000	15 1/2	15 1/2		
Eureka Con.	5000	50000	15 1/2	15 1/2		
Excelsior	1200	12000	5 1/2	5 1/2		
Harper	3000	30000	10 1/2	10 1/2		
Hays	3000	30000	10 1/2	10 1/2		
Hermes	1000	30000	10 1/2	10 1/2		
Horne Picket	3500	30000	11 1/2	11 1/2		
Huhn & Hunt	3000	30000	10 1/2	10 1/2		
Ingram	1000	40000	11 1/2	11 1/2		
Ivanhoe	3000	30000	10 1/2	10 1/2		
Jackson	5000	50000	15 1/2	15 1/2		
Josephine	3000	30000	10 1/2	10 1/2		
Junata Con.	5000	50000	15 1/2	15 1/2		
K. K. Con.	1000	30000	10 1/2	10 1/2		
Kentucky	1000	30000	10 1/2	10 1/2		
Klinton	3000	30000	10 1/2	10 1/2		
Lehigh	1000	30000	10 1/2	10 1/2		
Lillian Hall	1000	15000	5 1/2	5 1/2		
Louise	2400	30000	10 1/2	10 1/2		
McMahon	1000	30000	10 1/2	10 1/2		
Marion	3000	30000	10 1/2	10 1/2		
Meadow Valley	2400	24000	5 1/2	5 1/2		
Mocking Bird	1200	24000	5 1/2	5 1/2		
Monitor-Belmont	1200	24000	5 1/2	5 1/2		
Murphy	2000	60000	12 1/2	12 1/2		
Nevada	800	32000	2 1/2	2 1/2		
Pacific Tunnel	2400	40000	12 1/2	12 1/2		
Page & Panaca	1000	30000	10 1/2	10 1/2		
Peavine	1000	30000	10 1/2	10 1/2		
Phoenix	1000	30000	10 1/2	10 1/2		
Pioche	1000	30000	10 1/2	10 1/2		
Pioche West Ex.	1000	30000	10 1/2	10 1/2		
Pioche-Phoenix	1000	30000	10 1/2	10 1/2		
Portland	5000	50000	15 1/2	15 1/2		
Raymond & Ely	5000	50000	15 1/2	15 1/2		
Rye Patch	3000	30000	10 1/2	10 1/2		
Silver Peak	3000	30000	10 1/2	10 1/2		
Silver West Con.	3000	30000	10 1/2	10 1/2		
Standard M. & M.	18000	50000	15 1/2	15 1/2		
Star Con.	6900	25000	24 1/2	24 1/2		
Starlight	3000	30000	10 1/2	10 1/2		
Starling	3000	30000	10 1/2	10 1/2		
Spring Mount	3000	30000	10 1/2	10 1/2		
Spring Mt. Tunnel	2000	20000	5 1/2	5 1/2		
Ward Beecher	200	30000	2 1/2	2 1/2		
Washington & Oreole	200	30000	2 1/2	2 1/2		
Watson	200	30000	2 1/2	2 1/2		
Yellowstone	200	30000	2 1/2	2 1/2		
CALIFORNIA.						
Alpine	1200	12000	5 1/2	5 1/2		
Bellevue	8000	20000	2 1/2	2 1/2		
Caledonia	3200	20000	5 1/2	5 1/2		
Cedarberg	2400	24000	5 1/2	5 1/2		
Chariot Mill	1000	20000	5 1/2	5 1/2		
Con. Amador	1000	20000	5 1/2	5 1/2		
Ontonagon Creek	1000	20000	5 1/2	5 1/2		
Panderberg M. & M.	1000	20000	5 1/2	5 1/2		
El Dorado	1600	20000	5 1/2	5 1/2		
Eureka	1600	20000	5 1/2	5 1/2		
Gillette	1600	20000	5 1/2	5 1/2		
Independent	1600	20000	5 1/2	5 1/2		
Keystone	1600	20000	5 1/2	5 1/2		
Mc. Jefferson	1500	20000	5 1/2	5 1/2		
Oakville	1500	20000	5 1/2	5 1/2		
St. Lawrence	1500	20000	5 1/2	5 1/2		
St. Patrick	1500	20000	5 1/2	5 1/2		
Tecumseh	3000	30000	10 1/2	10 1/2		
Yule Gravel	400	10000	2 1/2	2 1/2		
IDAHO.						
Golden Chariot	750	30000	15 1/2	13 1/2	2	
Ida Elmore	1300	10000	3 1/2	2 1/2	1	
Mahogany	750	10000	3 1/2	2 1/2	1	
Red Jacket	650	20000	11 1/2	11 1/2		
South Chariot	650	20000	11 1/2	11 1/2		
War Eagle	1000	10000	2 1/2	2 1/2		
WHITE PINE.						
General Lee	1000	20000	5 1/2	5 1/2		
Mammoth	1800	30000	10 1/2	10 1/2		
Oregon	1000	20000	5 1/2	5 1/2		
Orig. Hidden Treas.	300	21000	11 1/2	11 1/2		
Silver Wave	2000	20000	5 1/2	5 1/2		
Ward Beecher	2000	20000	5 1/2	5 1/2		
UTAH.						
Deseret Con.	2400	30000	10 1/2	10 1/2		
Wellington	3000	30000	10 1/2	10 1/2		
OREGON.						
Virtue	2200	20000	5 1/2	5 1/2		

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt.	Levied.	Deinq'd.	Sale.	Secretary.	Place of Business
Alpha Gold M. & Co.	Amador Co. Cal.	6	1 10	Mar 10	April 14	May 7	J. F. Lightner
Alpine Gold M. & Co.	Cal.	6	1 10	Mar 10	April 14	May 7	J. F. Lightner
Andes S. M. Co.	Cal.	1	50	Mar 10	April 14	May 7	J. F. Lightner
Arizona and Utah M. Co.	Gold Hill	8	75	Mar 11	April 16	May 1	J. Maguire
Chief of the Hill	Ely District	4	50	Mar 9	April 15	May 1	O. S. Neal
Danley G. & S. M. Co.	Washoe	9	50	Mar 31	April 15	May 26	G. R. Spiney
El Dorado	South Comstock	3	1 00	Feb 26	April 16	May 1	J. Maguire
Globe M. Co.	Gold Hill	6	75	Mar 11	April 16	May 1	J. Maguire
Gould & Curry S. M. Co.	Washoe	22	2 00	Mar 26	April 16	May 20	A. K. Durbrow
Huhn & Hunt S. M. Co.	Ely District	9	30	Mar 5	April 16	May 11	David Wilder
Indus G. & S. M. Co.	Nevada	2	50	Mar 31	April 16	May 11	D. T. Bagley
Lady Bryan M. Co.	Nev.	2	50	Mar 31	April 16	May 11	D. T. Bagley
Mahogany G. & S. M. Co.	Idaho	1	1 00	Feb 25	April 17	May 1	T. J. Owens
Mammoth S. M. Co.	White Pine	6	1 00	Feb 13	April 17	May 1	T. J. Owens
Packer	Ely District	6	1 00	Feb 13	April 17	May 1	T. J. Owens
North Belmont M. Co.	Nevada	1	10	Mar 17	April 18	May 5	D. T. Bagley
Original Gold Hill G. & S. M. Co.	Washoe	1	50	Mar 24	April 18	May 5	D. T. Bagley
Pioche West Ex. M. Co.	Ely District	6	25	Feb 27	April 18	May 5	D. T. Bagley
Quintero M. Co.	Nevada	1	10	Mar 7	April 18	May 5	D. T. Bagley
Rock Island G. & S. M. Co.	Nevada	2	1 00	Feb 28	April 18	May 5	D. T. Bagley
Rye Patch Cons. M. & S. Co.	Nevada	2	1 00	Feb 25	April 18	May 5	D. T. Bagley
Silver Cloud G. & S. M. Co.	Nevada	1	50	Mar 19	April 18	May 5	D. T. Bagley
South Chariot M. Co.	Idaho	9	2 00	Feb 24	April 18	May 5	D. T. Bagley
South Overman S. M. Co.	Washoe	5	50	Feb 24	April 18	May 5	D. T. Bagley
St. Lawrence M. & S. M. Co.	Placer Co. Cal.	5	50	Feb 25	April 18	May 5	D. T. Bagley
Tyler M. Co.	Washoe	4	39	Mar 6	April 18	May 5	D. T. Bagley
Union Cons. S. M. Co.	Washoe	6	1 00	Mar 9	April 18	May 5	D. T. Bagley</

Mr. P. Murphy, next week. He has 100 tons of high grade ore from his mine "Venus."

Courier, April 11: We learn that operations have re-commenced at the Long Tom.

SOUTHERN MINES.—Havilah Union, March 28: Kern county can represent some 20 different localities in which rich, extensive quartz mines have been discovered, during the past few months, and the miners are only waiting for the melting of the snow before they commence "the rush" to the new mines. Considerable prospecting is now being done on the mountain below the present snow-line. A \$300 prospect from one of the newly-discovered districts was shown to us yesterday, with the remark that there are "many more ledges that produce thousands of tons like it." Everything considered, the Southern mines are bound to be the field of attraction this year.

NAPA COUNTY.

ITEMS.—*Register*, April 10: Germain & Co. have discovered a very rich ledge on Chamelion Hill, near Unionville. E. D. Kelly has stopped work for the present on the Peru on account of water.

Jurian Lott and Peter Sprey are working the Lone Star, on the Black Hawk ledge, Indian District.

Lewis & James Dunn are pushing their work in the Eureka mine, Black Hawk ledge.

NEVADA COUNTY.

IRON AND COPPER.—*Union*, April 9: A large iron find has been made in this county, ten miles southwest from Grass Valley, on Newell Reed's ranch. The lode is from 20 to 100 ft. thick and the ore is very rich in metal. The ore is to be assayed and thoroughly tested to ascertain if it can be smelted. If the test is satisfactory a company will be formed at once to open the mine, and smelting works will be erected and operated. This iron is in a very accessible spot.

PLACER COUNTY.

QUARTZ MINES.—*Herald*, April 11: At the Crater mine, notwithstanding the very sad accident which happened there in the early part of the week, work is progressing finely. At the Bellevue a large force is employed daily hoisting, with their new machinery, rock, which in richness is thought will yield as well as that taken from the Crater. The Orleans is not so fully developed yet as either of the above named mines, but so far as they have gone, it rather eclipses any mine yet opened in this part of the country.

HYDRAULIC MINING is now being prosecuted with the greatest energy in the large gravel mines in the upper part of the county. They have abundance of water, and are working on the principle of making hay while the sun shines.

PLUMAS COUNTY.

EUREKA MILLS.—*Nevada Transcript*, April 11: Mr. Bigelow arrived last evening from Eureka mills, Plumas county. He reports that the mine at Eureka mills is being actively worked; 140 men are employed in the mill and mine. The mill has 40 stamps, which are being run night and day. From 80 to 100 tons of ore are being crushed daily. The snow at the mine is nine feet deep at present, and it has been fourteen feet on a level. Mr. Bigelow had to come five miles on snow-shoes before he could take the stage. During the heavy storm in February and March, there were no mail communications with Eureka mills for three weeks. Mr. Bigelow made the trip to Truckee in two days. The time between Randolph and Truckee was 14 hours; distance 26 miles.

SAN LUIS OBISPO COUNTY.

QUICKSILVER MINES AT CAMBRIA.—*Cor. San Luis Obispo Tribune*: The first mine of any note is the Keystone, owned by Cross & Co., of San Francisco. This mine has been worked for over two years, and they have taken out a very large amount of good ore. Probably 6,000 tons are now on the dumps, with a large deposit in the mine in sight, which they are now breaking out. There is no telling the value of this mine now; it cost their present owners \$22,000, and they made a good investment when they bought it. The company have got in their tunnel about 700 ft. They intend putting up smelting-works immediately, and when erected they will conduce largely to the speedy development of the mine.

The next mine I visited was the Quien Sabe—rather a curious name for a good mine, which this undoubtedly is. There has been a good deal of work done in this mine, about 500 ft. of tunnels having been run. They have found good ore throughout, and they have got out about 10 or 15 tons of ore that will assay from 5 to 20 per cent., with a large bed of very rich rock in sight.

The Pine Mountain mine has also a good prospect. It has lately been incorporated and will speak for itself in a very short time. The owners are men of means and are about to erect a furnace, which will be completed by next fall.

The Gibson & Phillips mine, on the same ledge as the Pine Mountain, was the next place I visited. Here they have run about 300 ft. of drifts in the ledge, and all the ore they have taken out will pay well to furnace. This mine is for sale for \$70,000, a good investment, better than sheep farming.

I have also to report a rich strike on the Santa Rosa Creek, but am not yet in possession of the particulars. I will doubtless be able to furnish you with some information in regard to it in my next.

SIERRA COUNTY.

FOREST CITY.—*Messenger*, April 11: The

Bald Mountain is still taking out the usual large amounts of gold.

OVER NORTH.—The water is slow in coming for the miners, at latest accounts.

LITTLE GRIZZLY.—Messrs. McFarlane and McIntyre report that the mines over there will yield well this year. Snow at this point is fourteen feet deep and hard packed.

DITCH.—Shafer & Garibaldi are bringing in a small ditch to work mining ground above the Catholic Church.

CLEAN UP.—McChessney, Evans & Boyce, of Seales, recently took out \$1,800. They have just completed a new derrick.

SOLANO COUNTY.

ST. JOHN'S MINE.—*Chronicle*, April 11: The work at St. John's mine is being pushed forward satisfactorily. New tunnels and drifts are being run, making most favorable developments of the extent and richness of the mine. There are now seventy men employed, a greater number than over before. The work of building an additional furnace at the mine was commenced this week, which when completed will double the smelting capacity. The St. John's is now turning out 200 fassks regularly each month.

Nevada.

ELY DISTRICT.

MEADOW VALLEY.—*Record*, April 5: No. 3 incline is now down 1,223 feet. The country rock is quartzite and seems to indicate the close proximity of the vein. In No. 5 the incline is 1,000 feet in depth; little is going on but the prosecution of this shaft, which is the main working opening of the Meadow Valley; is intended to supercede all others. The dumps are full, but the roads being so terribly bad, has prevented the shipment of ore. The mill, on the other hand, keeps steadily at work. When ore is not obtainable the blank is filled by tailings, and in either case a profitable result is had.

PORTLAND.—The present workings show much good ore in sight, but no more has been taken out than was necessary to pass through the several strata of ore-carrying veins. This course has demonstrated the extent and value of the lead, and now shows beyond a peradventure that the time of dividend paying is not far off.

WASHINGTON AND CAROLE.—Since our last report this mine has not disappointed our expectations, and has produced some of the richest ore that has been seen in our camp. This ore is not limited, but is very extensive and promises a rich return. Already some two hundred tons of first-class ore has been taken out and is being sent to mill, but there is plenty more of the same kind that awaits the efforts of the miner.

RAYMOND & ELY.—During the past week little has been done in this mine, save to reduce expenses and outlay in every direction.

PROCHE.—The main shaft of this mine has attained a depth of 701 feet. In the old works some ore is being taken out on shares, with profit both to the company and those engaged in the work.

BOWERY.—The drift on the 250-foot level is in 140 feet southwest. So far no particular developments have been obtained.

PAGE AND PANACA.—Little change from last week.

CHIEF OF THE HILL.—Prospecting is being continued with considerable activity, and it is thought ere long will be rewarded by some very substantial returns.

PACIFIC TUNNEL.—We learn from Mr. Nichols that operations in this undertaking are shortly to be resumed.

SILVER PEAK AND OONDOO.—In these mines but little new matter has transpired during the week. In the former, it is said a large body of rich ore has been found, but on inquiry the superintendent does not seem to be communicative.

WASHOE DISTRICT.

OPHIA.—*Enterprise*, April 11: The principal working force of the mine is still engaged in raising and sinking winzes to connect the 1,700 and the 1,300-ft. levels for securing a better circulation of air. In the drift now being run through the California ground, to connect with the Consolidated Virginia mine, good headway is being made. The connection between the mines will be made in about two weeks, when perfect circulation will be secured on the 1,300-ft. level, and the ventilation in the levels below will be very materially improved. The drifts north on the 1,300 and 1,700-ft. levels are making good progress and are meeting with favorable indications.

SIERRA NEVADA.—The new shaft was yesterday down 334 ft. The rock in the bottom continues to blast freely. The blasting out of a site for the foundation of the new hoisting-works will be completed in about six days. The sluice tunnel that is being run to tap the gravel deposit, which is to be worked by means of the bydraulic, has encountered a species of conglomerate rock which is very hard, therefore is at present advancing slowly. The mill is running day and night, and the ore-producing sections are looking and yielding about as heretofore.

BALTIMORE CONSOLIDATED.—Another heavy body of water has been struck in the bottom of the main shaft, causing a suspension of the work of sinking. At the distance of about every 25 ft. they have of late had a fresh rush of water. It will probably be a week or more before the present body of water is pumped out, as it seems to come in with considerable force. The foundation for the new hoisting engine will be completed in about 15 days. This engine is first-class in size, the cylinder

being 20 inches in diameter and the stroke 36 inches.

OVERMAN.—Good headway is being made at sinking the winz on the 1,000-ft. level, though a considerable amount of water is still encountered, which must be hoisted up the incline in a tank. Yesterday some water made its appearance in the end of the south drift from this winze. This south drift is in a distance of about 100 ft. On the 900-ft. level the main west drift is being driven ahead at the rate of about 30 ft. per week.

HALE & NORCROSS.—In the south and cross-cut there are now some quartz encountered, and in the south drift it has also increased in quantity. The north cross-cut likewise shows some quartz as it progresses. They are now putting in the pump tanks below the 1,900-ft. level, in the incline, and will resume sinking within two or three days from this date.

CHOLLAR POTOL.—Extracting 100 tons of ore per day. The average assay of car samples is \$32 per ton. The ore-producing sections present quite a promising appearance, both as regards quantity and quality.

CONSOLIDATED VIRGINIA.—The drift south from the shaft on the 1,400-ft level is now 140 ft. in length. The drift running north from the winz on this level, to connect with the first mentioned drift, is advanced 45 ft. through ore of a very fine grade. Very rapid progress is made with both of these drifts. The drift running east across the ore body at this depth is making slow headway on account of the great heat.

SAVAGE.—The connection on the 1,900 with the Hale & Norcross mine has been completed and the ventilation is now perfect. Although the quartz encountered thus far is barren, it is considered that the fact of its being present in a strong body is favorable to the finding of ore in drifting upon it.

SILVER HILL.—There having been some delay in replacing the machinery broken a few days since, little at present can be done in this mine. Being obliged to use their hoisting works in order to keep the water down in the shaft, they are unable to raise ore. A new spur-wheel for the works, weighing 8,000 pounds, was cast at Fulton Foundry day before yesterday.

UTAH.—On the 400-ft. level the south drift from the main west drift is making fair headway. The face of the drift shows an improvement. No work can be done in the ore body on the 280-ft. level until the raise is connected with that level.

EUROPA.—The winze which is being sunk at the end of the tunnel, on the west side of the lead, is now down 48 feet in rock that is working well. They have a large vein and their prospects for finding paying ore are good, very fair assays having been obtained above in the tunnel.

CALIFORNIA.—The drifts advancing into this mine from the northern and southern boundaries on the 1,300-ft. level are making very regular progress.

BUCKEYE.—In a drift on the 450-ft. level some favorable looking quartz has been met with, and it is hoped that paying ore may be encountered ere long.

CROWN POINT.—The north winze on the 1,400-ft. level has attained a vertical depth of over 70 ft. and still continues in good ore. The middle winze has encountered the west wall and is now being driven along down it toward the 1,500-ft. level, passing through ore which improves as sinking progresses. On the 1,500-ft. level they are still drifting south along the west wall. The various ore producing sections are looking exceedingly well. There is a great amount of excellent ore in sight in all the breasts on the 1,000, 1,200, 1,300 and 1,400-ft. levels. The daily yield of ore from the mine is 550 tons.

CALIFORNIA.—The new station at the 700-ft. level is nearly completed as is also the tank at this point. Between the 600 and 700-ft. levels the shaft consists of but two compartments, but the work of opening out a third has now been commenced. The new compartment is being raised from the bottom. The drain tunnel takes 225 ft. of lift off the pump and saves to the company about a cord of wood per day.

KNICKERBOCKER.—The pump will be in and ready to start to-day. The rock encountered in the bottom of the shaft remains about the same as last week.

ANNES.—Main west drift now in 163 feet and is still in ledge matter with no material change.

IMPERIAL EMPIRE.—The main east drift on the 1,900-ft. level is now in rock the stratification of which shows a near approach to the ledge.

WOODVILLE.—The work of sinking the incline in the old works has been resumed. Sinking is also resumed in the new shaft, while drifting is still going on in the north drift on the 300-ft. level.

LEO.—The streak of rich ore in the face of the tunnel does not continue as rich as when first encountered, but as it still holds out, other rich deposits are liable to be met with as the work progresses.

BULLION.—The drift which is being run from the 1,700-ft. level of the Imperial to tap this claim, is still in Alpha ground, where a promising formation is being passed through.

JUSTICE.—The only work being done is at sinking the incline.

JULIA.—There is some improvement in the ore met with in the south drift on the 1,000-ft. level.

YELLOW JACKET.—The main shaft will soon be down to the 1,640-ft. level.

SENATOR.—The long looked for reel has at

last arrived and is being put in position. They expect to resume sinking early next week.

KENTUCK.—The drift on the 1,500-ft. level is in a distance of 100 ft.

UNION CONSOLIDATED.—The drift on the 1,300-ft. level is making good progress, and in going north there is observable a very marked improvement in the formation.

KOSBETH.—This company are now drifting north toward the Dayton mine, and are encountering ore which shows a decidedly improved appearance.

NEW YORK CONSOLIDATED.—The new machinery will be started up next week, when sinking will be resumed in the shaft.

AMERICAN FLAT.—Work has not yet been resumed in this mine.

MINT.—It is expected that the new machinery will be in shape for starting up next Monday.

MONTEZUMA.—This company are still drifting along their vein and are finding some promising streaks of ore in places as they advance.

ALPHA.—The indications are more favorable at present for finding a body of ore than they have been in some weeks.

SEORAGETAN ROCK ISLAND.—Still drifting along the lead in the direction of the American Flat, in which direction they expect to find ore.

ROCK ISLAND.—The new shaft is down 48 ft. and preparations for the erection of hoisting works are being made.

ALHAMBRA.—The work of putting up the new hoisting works is being pushed with dispatch.

TYLER.—The sinking of the main shaft is progressing 16 ft. per week.

BELCHER.—The daily yield about 500 tons of fine ore. The ore-breasts throughout the stopes on the various levels continue to look splendidly, and are yielding each its allotted quantity of excellent ore. The incline has reached a depth of 156 feet below the 1,400-foot level. The rock at the bottom still remains very hard, and requires constant blasting. Everything in and about the mine is in perfect running order, and all the machinery is giving good satisfaction.

GOULN & CURRY.—The water continues to flow in great volume from the east drift on the 1,500-ft. level, and there is no change in the material passed through since the last weekly examination of the mine. There is no very important improvement to report from any portion of the mine for the current week.

DAXTON.—Began during the past week to mine ore on the third station, south of the main west drift. This is the first work that has been done in that section of the mine. The stopes are looking well. Between the second and third levels (north) they are now getting some rich ore, which considerably raises the general average. They are at present running Briggs' and the Woodworth mill. They have been running the Devil's Gate mill, but it is now shut down on account of the breaking of a cam shaft.

Colorado.

Register, April 8: The *Miner* reports that the Stevens, at West Argentine, is in good pay. Work will soon be resumed on the Comstock lode, Downieville District. The Whale mill is running to its full capacity. The Whale mine, Spanish Bar District, is being worked by a small force. The Boston & Colorado Smelting Company's new crushing and sampling works here, have been leased by Mr. Church, and are now in operation. The Fairmount, in Hukill gulch, is being worked by lessees, and we learn good pay is being obtained. The Stewart Silver Reducing Company have a large amount of ore on hand, and the amount daily taken to the mill is in excess of its capacity. The Hukill lode, Spanish Bar District, is being actively worked. Last year it produced some 2,000 tons of ore.

Oregon.

FAILING.—*Sentinel*, April 4: Miners are beginning to feel the failing of the water in the creeks and ditches, and many of them will soon be compelled to lay down the shovel for another season.

The Baker City *Democrat* learns that a large body of ore has been struck in the south level of the Summit mine, owned by Messrs. Packwood & Stewart, which mills \$30 per ton.

A GOLD-NEARING quartz ledge has lately been discovered in Jackson county, near Jewett's ledge, on Rogue river, by W. A. Johnson. This mine is undoubtedly rich in the precious metal.

Utah.

ALTA CITY.—*Cor. Tribune*, April 11: Most of the mines have paid off their men for March. The Savage is working a small force. It is the only one of the Windsor Group that is being worked at present.

THE REEN & BENSON.—Is working about 40 men, and has been shipping ore all winter.

THE M'KAY.—Is still working in a large body of ore, and is making daily shipments. The mine looks well.

THE TOLENO.—Is still looking well. It is the intention of its owners to put on a large force in a short time.

THE OLIVE.—Has been worked all the past winter, and has an incline down 112 ft., with a good foot wall and encouraging prospects.

THE FLAG STAFF NO. 2.—Is located on Peruvian hill, about one mile from Alta. It is developed by a level of 50 ft. and an incline of 60 ft. from the end of the level. The ore is soft, with large pieces of nearly pure galena—the same character of ore is found in the upper works.

THE HEUMANN TUNNEL.—Was started up again, a few days ago.

Gold at the Vienna Exposition.

In the review of the exhibits of metals at the Vienna Exposition, *Engineering* says: Before passing on to review the gold exhibits, we may say a few words respecting the relative value of that metal and silver. When, since the gold discoveries in California, about 1848, and in Australia in 1852, the quantity of that metal, which was annually produced, began to increase enormously, it was feared that the price of gold, as compared with that of silver, must fall. This, however, has not been the case in any remarkable degree. While in 1848 the value of one pound of gold was equal to 15.81 lbs. of silver, it certainly declined in 1853 to 15.20 lbs., but since then it has kept up steadily to over 15.40 lbs., and it is now over 15.50 lbs. of fine silver. In former times the difference was very much greater. In the year 1500 the value of gold was equivalent to 10.50, in 1600 to 11.60, in 1650 to 11.13, in 1700 to 14.90, in 1750 to 14.93, and in 1800 to 15.42 lbs. of silver, thus showing a constant increase, while the value of silver was successively reduced. In beginning our review with

Great Britain,

We could of course look for gold only amongst the exhibits of our colonies. In the Indian Department we noticed examples of alluvial gold from Maunbhoom and Chabassa, in Bengal, from Upper Assam, and aniferous quartz from Malabar; while from the Cape Colony there were similar samples produced by N. Adler, of Port Elizabeth, and Sir John Swinburne, of Capetown, Newcastle-on-Tyne, who also exhibited gold quartz and gold in bars. In Cape Colony the newly discovered gold fields of the Transvaal Republic and of Natal, contain lodes of rich gold quartz, which yield 70 ozs. to the ton. From our Australian colonies, we found in the department of Queensland a large nugget of gold, weighing 104 ozs., which still showed the traces of the lucky digger's pick. The value of the Queensland gold fields is, of course, variable, as in the districts of Etheridge, the gold quartz yields on an average 0.0076, in Gilbert 0.0073, in Gympie 0.00816, in Ravenswood 0.00917, and in Cherton Towers and Broughton district 0.0178 per cent. of gold. In Victoria the average yield of 900,000 tons of quartz was 0.0037 per cent. In that colony the diggings in the alluvium give way more and more to quartz mining. The biggest lumps or nuggets, which were instructively represented by models, exhibited by the Government Mining Department of Melbourne, were found in the former. Thus, the "Welcome," found in 1858, at Bakery Hill, Ballarat, 180 ft. below surface, weighs 2,195 ozs., and the "Viscount Canterbury," raised 1870, at Join's Paddock, Berlin diggings, 15 ft. from surface, is 1,105 ozs. in weight. There were in the first half of 1873, in Victoria, 35,806 alluvial miners, who won 123,643 ozs., and 17,079 quartz miners, who produced 159,605 ozs. of gold, over 14,000 men being Chinese. The quartz lodes or reefs are regularly worked with shafts and pumping and drawing machinery; the deepest mine, worked by a Stawell company, is called the "Magdalen," and has reached a depth of 1,225 ft. from surface. The Victorian exhibits comprised also some samples of gold quartz from the Ajax Gold Company of Castlemaine, and the Golden Fleece and the Hueter Reef Company of Sandhurst.

New Zealand

Made, at Vienna, a good show of her gold production, of which the total yield, up to 1873, amounted to 6,718,248 ozs., worth £25,814,260. About 734,269 ozs. of this quantity were obtained by lode mining in igneous rocks of the tertiary period, on the North Island, while by far the greater mass came from alluvial deposits, connected with metaphoric rocks on the South Island. The principal alluvial gold deposits are in the provinces of Otago, Nelson, and the county of Westland. The gold always contains silver, sometimes one-third, and the metals are separated by dissolving the gold in a solution of chlorine, when chloride of silver is left in the residue, and metallic silver is obtained through reduction with iron, by the use of a galvanic battery and acidulated water. The gold, which is precipitated from the solution and melted into bars weighing as much as 375 ozs., is 99.42 per cent. fine. The quartz reefs or lodes are principally worked in the Inangahua and Lyall districts, province of Nelson, and 85 tons of quartz of the Alpine reef yielded 860 ozs. of fine gold. A bar of unrefined gold from Hokitika contained only 0.037 per cent. of silver and 0.001 of copper, while another from the Thames district, Auckland, was composed of 65.05 gold, 33.90 silver, 0.45 copper.

France

Also showed some gold from her colonies, there being some fine nuggets from Guyana, where the annual produce comes up to about £80,000 per annum, and some from New Caledonia. Spain exhibited gold quartz from Jadenia mines, province of Toledo, containing 13 ozs. to 54 ozs. per ton, and Italy was represented by Ludovico Rocco, who exhibited auriferous ores from the mines Piandello and Alpetto, at Domo-d'Ossola, near Novara.

In Germany,

We found a few gold exhibits from the smelting works of Goslar, which produce 800 lbs. per annum, as well as from Clausthal and Freiberg, which have annual productions of 200 lbs. and 400 lbs. respectively.

The yield of gold in the Austro-Hungarian Empire was in 1871, 2,802 lbs., the greater part of which came from the Royal Hungarian Smelting Works. There are, however, some very old, even ante-Roman gold mines upon quartz lodes in Gneiss in the Duchy of Salzburg; but their yield has very much declined in our times, the Goldberg of Raurie having produced only 14.1 lb. of gold in 1871, and the Kathausberg at Gastein still less. The gold is extracted from the crushed quartz by amalgamation in Hungarian quick mills. From the gold mine of Dollach gold quartz, maps, and samples of galena were exhibited by Baron May de Madys, gold and silver ores by John Rohrer, of Lind, near Sachsenburg in Carinthia, and ores, amalgamated gold, fine gold, and fine silver by the Gastein-Rathausberg company of Oberdorf in Salzburg. The government mines of Transylvania at Verespatak, Offenhanys, Valathna, and Nagybanja are the chief producers of this metal, the mining directors of the last place showing a good collection of gold from Felsőbanja and Abudhanya, and of gold-tellurium from Nagay and Offenhanys. The gold is generally extracted in iron quick mills by amalgamation, only a part being won from regulus, as in the Upper Hungarian works.

Russia,

Though she got in 1871, 78,621 lbs. of gold from her diggings and gold mines in the Ural mountains and Siberia, was only represented by the Jakaterburg mining district, in the Perm government, there being shown samples of gold, gold sand, and drawings and models of the gold-washing machinery, as employed in that district. Russia had in 1870, 1,126 gold diggings and mines, which gave employment to 68,000 workmen. They are mostly situated in Eastern Siberia, in the districts of Slatoust and Nertschinsk, and near Jakaterburg and Nischnei Tagilek, in the Ural, while the gold mines are in the Altai, near Nertschinsk and at Beresow. The gold sand is first riddled with water and then swept over an inclined plane or huddle where the heavy material settles down. This is then re-washed with mercury and the gold freed from the amalgam by distillation. The Siberian wash gold contains 10 per cent. of silver.

Turning lastly to

America,

We found some exhibits of gold quartz by Mohrherdt and Robinson, of Bethany, in Pennsylvania, and in the interesting mineral collection of Professor Guido Kistel, of Utah, were specimens of gold and tellurium-gold from Jefferson Cañon, in Nevada. British Columbia, which in fifteen years, in the gold district of Fraser river and others, has produced gold worth at least 45,000,000 dollars, did not show anything, neither did California. From Venezuela, however, we found rich gold quartz from the mines Upata and Caratal, in Guyana, which produced in 1867, 17,118 ozs.; in 1868, 17,053 ozs.; in 1869, 22,575 ozs.; and in 1870, 35,713 ozs. of gold. Finally Brazil was represented by Dr. Continho, of Rio, with palladium gold from Gongo Soco, in Minas Geraes, and wash gold, in the shape of scales, wire, and little discs, and by the Imperial Museum and Dr. da Silva with gold nuggets, gold dust, and diamonds in their native rock, the itacolumite, which much resembles a brownish, fine-grained kind of mica schist.

DEL NORTE MINES.—The *Crecent City Courier* says: From a long acquaintance with this mining section, which lies about twelve miles northeasterly from town, we have for a number of years been satisfied that an immense ledge of gold-bearing quartz existed somewhere in that hill. My the creek, from a point about three miles above the mouth, has been worked by different parties almost continuously since 1854, and many thousands of dollars have been taken out. From above this point, up the creek, no gold of any consequence has ever been found. We are told that J. J. Connor has at last struck and located this ledge, and we were shown by James Donovan, this week, specimens of rock taken from it, coming immediately from the surface, that shows fine coarse gold in abundance, and is as good-looking rock as the ordinary run of quartz. Mr. Donovan showed us a prospect of about twenty-five cents that he had got out of a piece of the rock not much larger than a hen's egg.

MINING DISCOVERIES IN ARKANSAS.—A dispatch from Little Rock says: A special from Fulton says that Captain Holloway arrived here to-day from the newly-discovered gold mines, near the north fork of the Ouachita, en route to St. Louis, to purchase machinery to commence active operations. The mines are situated in the mountains near the Choctaw line, and are richer than at first supposed. The captain passed through Silver District on his way here, and reports the wildest excitement over the recent discoveries. After an examination of the ore and mines, he pronounces the former very rich and the latter inexhaustible. The Joplin Mining Company will at once commence the erection of several smelters for working antimony, which is found in the most extensive lodes ever discovered in the world. Miners and adventurers are flocking to the scene.

TROTTER & SMILEY, Trinity county, took out \$1,300 last week, after a seven days' run. This makes about \$5,000 taken out of this claim the present season, and much of the time they have been without water, on account of breaks in the ditch and flumes.

HAGER & HAAS, at Junction City, cleaned up \$1,200 from a run of only six days.

Some of the Uses of Leather.

A voluminous and most interesting article might be written on the subject which heads these lines. It is a fallacy to believe that leather is used for hoots and shoes, harnesses, carriage-tops, belting, hose, and the like only—these are only a few of the multifarious duties which leather, in one shape or another, has been made to perform. Let us see. Besides for the uses enumerated, which may properly be called the leading ones, leather is now coming largely into use in the manufacture of jewelry. A late number of the *Bazaar*, published in Boston, has an interesting illustrated article on this subject, and *Die Gartenlaube*, a short time since, gave a detailed account of a new branch of industry which has recently sprung up in Vienna (since the Exhibition), viz., the manufacture of leather jewelry, on a large scale. Leather flowers and imitations of fruits, especially clusters of grapes, have long been popular, and the manufacture of them has long been a favorite and pleasant occupation with many of our ladies, who use their handiwork in the embellishment of picture-frames, brackets, work-boxes, and a hundred other articles of *bijouterie*. In the manufacture of clothing, leather enters to a great extent into the domestic necessities of the populations of Northern Europe, especially Russia and the upper part of Sweden; and how far leather enters into the manufacture of trunks, valises, and other traveling requisites, Newark, in America, and Vienna and Barcelona, in Europe, can furnish suitable examples. In the manufacture of fancy articles, leather of the finer qualities is extensively used, and the Vienna and Paris goods of this class are world-renowned. Leather tapestry, which was, a century ago, very fashionable in Europe, is again coming into vogue. It is, without exception, the most durable tapestry in existence, the famous *Gobelins* not excepted. All who have visited Versailles and St. Cloud (before the latter place was destroyed) must have admired the handsome leather tapestry which covers some of the rooms, although, on account of its age and peculiar graining, and the gilt figures with which it is partly covered, it is often mistaken for wood. For the covering of furniture, leather was formerly much more extensively used than is at present the case. It was both handsome, durable, and did not, as silk and costly velvet covering do, "wear out." In the "thirty" war the soldiers from the Duchy of Hesse wore cuirasses made of leather, lined with a thin steel plate; and there is at least one authentic instance on record of a ship having been "plated" with leather, viz., the French gunboat "Provence," which was used in the Crimean war. But she was not a success, and besides, this mode of plating (it was rubbersheets and leathers placed in layers, alternately), was found to be very expensive. In Greenland, the *catways*, or boats, of the native Esquimaux are made of tanned hides of the seal and walrus, which are stuffed or impervious to water, and there are in the United States Patent Office upward of a dozen patents for "portable boats." Of late years, however, rubber is used almost exclusively for this purpose, and the leather boats are obsolete, the patents, with one or two exceptions, have expired long ago.

But perhaps the most curious use to which leather was ever put is in the manufacture of cannon. How often and with what success it has been employed for this specific purpose, we are not prepared to say, but that it has been so used is an historical fact. There is in the Royal Arsenal in Copenhagen, a leather gun—the only one now left of a battery of twelve, which Charles XII brought over from Sweden, to use in his attack against Copenhagen. The idea is said to have originated with the king himself, who wanted light guns for use in the mountains, and easy of transportation during his numerous campaigns. The gun we refer to has the appearance of an ordinary field-gun or howitzer, and is mounted in the same manner. It consists of a smooth steel tube, closed at the bottom, and tightly wound round, up and down, spirally, with tough leather straps or bands, about two inches in width. This accumulation of bands is covered with a piece of leather which, through use and age, has become black and shiny, and the gun looks at a short distance like an ordinary old-fashioned bronze six-pounder. About midway, slightly nearer the rear end, is placed a stout iron or steel ring, which carries the trunnions. The whole weight of the gun is less than one-third of what an iron cannon of the same calibre would weigh, and it was therefore admirably adapted for the use to which the fighting king of Sweden put his battery of leather guns on the particular occasion when he carried them across on the ice, from the seaport of Malmo, in Sweden, to Copenhagen, a distance of sixteen miles. What has become of the other eleven guns we do not know. But this one remains, at least, as evidence that the manufacture of guns of leather has been attempted far back in history, although with what degree of success history fails to inform us. For all that we know, the other eleven which made up this strange battery of "light artillery" may have, one by one, or all in a heap, exploded!—*St. Crispin*.

Few people are aware of the extent of the work done on the North Pacific Railroad, over in Marin county. The company expect to have the cars running from Sausalito to San Rafael in six weeks. They have enough iron on hand for seventy miles of road, and expect to run their cars to Tomales before the season closes.

What is Jet?

What is jet? This is a question often put, but never satisfactorily answered. Nearly all the jet workers have an opinion on its origin, and most of them, in common with the greater part of the inhabitants of Whitby and its neighborhood, believe it to be of ligneous origin. Some, however, believe it to be of mineral origin, and others think it combines the two. Taking the opinion of Mr. Martin Simpson, the curator of the Whitby Museum, who has studied the geology of this district exceedingly well, and with whom I have talked on this subject, he puts his theory as follows: "Jet is generally considered to have been wood, and in many cases it has undoubtedly been so; for the woody structure often remains, and it is not unlikely that comminuted vegetable matter may have been changed into jet. But it is evident that vegetable matter is not an essential part of jet, for we frequently find that bone and the scales of fishes have also been changed into jet. In the Whitby Museum there is a large mass of bone, which has the exterior converted into jet for about a quarter of an inch in thickness. The jetty matter appears to have entered first into the pores of the bone, and then to have hardened, and during the mineralizing process, the whole bony matter has been gradually displaced, and its place occupied by jet, so as to preserve its original form."

With this latter opinion I am inclined to agree, for jet has the appearance of a substance that has distilled from the rock, and in some cases has impregnated vegetable, and in other cases animal substances, while in others it has simply filled up a fissure in the rock, and solidified. In some specimens I have seen the grain, apparently of wood, distinctly; in others, scales and bones of fishes; and in one of the best specimens that has been found here, the mass in form and structure was that of a tree, with bark, knots, and roots, and in the curled portions of the roots, stones and soil conglomerated were imbedded.

That it has been formed from distillate from what is called the jet rock is supported by these facts. Experiments tried on portions have been successful, and proved that at least ten gallons of oil could be extracted from one ton of the shale, and that this pure oil gave out a clear and brilliant light when burnt. A piece of jet on fire gives out a similar brilliant, clear light. Again, the substance is always found in seams, detached, and in a horizontal position, and spreads itself out in shallow layers, as water or fluid substances always do. The two kinds with which we are acquainted are the hard and soft; these are evidently of different species. The jet rock occurs in the twenty foot formation. This formation, commencing at the peak about eight miles south of Whitby, traverses the whole coast to about fifteen miles north of Whitby, and from the hold and precipitous cliffs that skirt the sea to Tees' mouth. The rock divides into the upper and lower lies, with a marlstone series intervening, in the upper part of which we have the Cleveland ironstone. Then comes the dogger or jet rock, and it is here that our hard jet is found in compressed masses of layers of various lengths and thicknesses, some having been found from an inch or two long and one-eighth thick, to masses thirty inches wide, six feet long, and four inches thick. It appears that the largest piece ever found was six feet four inches in length, four and a half to five and a half inches wide, and one and a half thick, weighing eleven pounds and a half. The net price was ten guineas; for this sum it was offered to the curator of the British Museum; he declined to purchase it, and the specimen was afterwards sold for fifteen guineas, and cut into four inch crosses.—*Artisan*.

THE COAL MINES OF WYOMING.—Rock Springs is a coal mining town, situated about 325 miles west of Cheyenne, on the Union Pacific Railway. Its elevation is 6,280 feet above the sea. Coal was first mined there in November, 1868, but not much was done until the year 1869. Since that time the place has developed unlimited resources, and the Wyoming Coal and Mining Company now work two slope mines and one shaft, and take out an average of 200 tons of coal per day the year round. But some months the average is largely over that amount. In December, 1873, over 6,500 tons were mined, and in January, 1874, over 5,800 tons. This company employs 125 miners at Rock Springs, and about the same number at Carbon, 174 miles east of that point, and at Evanston about 40 or 50, where they also have extensive mines.—*Denver Tribune*.

In a late number of the *Annales des Mines*, M. Rozan has described a process for the desilverising and refining of lead by steam. The process consists in using steam to agitate the lead melted in kettles, both to refine the metal and to hasten the formation of the rich silver-lead. This process obviates the necessity of stirring the molten metal by hand or machinery. The advantage claimed for this method are diminished cost of refining the lead and less oxidation of the same.

Two hundred thousand dollars was the amount realized from the last clean-up in the Union Hill claim, Trinity county.

MINERS everywhere in Trinity county are at work with all the water they can use.

GOOD HEALTH.

Root Filling of Teeth.

Dr. Hirsche says, in the *Dental Cosmos*: Many of the most experienced and able members of the profession still advocate the use of solid gold filling in roots as the best and most reliable method. Admitting the value of such a filling, I think we can, at present, entirely do without it.

One object in filling the pulp canal is to prevent the collection of fluids, and to avoid the deleterious effects resulting therefrom. If we can accomplish this more readily by cheaper processes, it is our duty to do so.

This, however, is not my main reason for objecting to gold fillings. Observation has taught me that many times periostitis, and even the loss of the tooth, ensues, when the operation has been performed in the best manner and by the most experienced dentists. I therefore resolved at the commencement of practice to attempt another method, not being aware at that time that this practice was being used by others.

Considering the relations of dentistry to the public, and those of the latter towards dentistry, it is not surprising that at the present time, in Germany, we have a larger proportion of dead and exposed pulps to treat than have our colleagues in America.

I shall not dwell upon the preparatory steps necessary to be taken in different cases, as these are familiar to the profession; but when the root is in a proper condition for filling, I proceed as follows:

Select a thread of lint, separate or loosen the fibers as much as possible, and then moisten it with chloride of zinc from the cement boxes; then rub oxide of zinc well into it, omitting one extremity of the lint, which is reserved for the application of a small quantity of carbolic acid. The thread is simply the medium for conveying the cement to the extremity of the canal, and is entirely imbedded in it. The end of the lint saturated with carbolic acid is, of course, the first inserted, and is carried directly to the apex. After the root or roots are filled, the cavity in the crown is temporarily closed with cotton and sandarac, and an appointment made with the patient several days subsequently. If, in the meantime, the tooth has been perfectly comfortable, and the patient in a healthy condition, I insert a gold filling in the crown cavity. If, on the other hand, the pulp has been deprived of vitality for a long period, and the tooth easily irritated during preparatory treatment, I fill the cavity with cement and dismiss the patient for the time. By operating in this cautious manner, I am able to assert that I never had periostitis occur in the large number of teeth treated in this manner.

As none of these teeth had given any trouble, I never had an opportunity to satisfy myself in regard to the condition of the root and the filling, until, by an unfortunate accident, a young patient split off the labial surface of a first superior bicuspid, treated in this manner two years previously. The tooth was extracted, at her request. On splitting the root to the apex, I found, as I expected, the filling hard and perfect, and the periosteum in a healthy state.

NOT ENCOURAGING.—In a paper read to the Paris Academy of Medicine, the necessity is argued of preventing perfumers from selling poisonous or dangerous articles, which should be left exclusively to the responsibility of regular chemists, and not sold without a physician's prescription. Arsenic, the nitrate of mercury, tartar emetic, cantharides, colchicum and potassa caustica, are common ingredients in these cosmetics. The so-called lettuce soap does not contain the slightest trace of lettuce; and this and other soaps are colored by the sesquioxide of chromium; or of a rose color by the sulphuret of mercury, known as vermillion. The cheaper soaps contain thirty per cent. of insoluble matter, as lime or plaster; while others contain animal nitrogenous matter, which having escaped the process of saponification, emit a bad odor when its solution is left exposed to the air. The various toilet vinegars are also declared in this paper to be so full of noxious, that being applied to the skin still impregnated with soap and water, they give rise to a decomposition, in consequence of which the fatty acids of soap, being insoluble in water, are not removed by washing, become rancid and cause chronic inflammation of the skin.

A CURE for catarrh is as follows: To an ounce of glycerine add fifteen or twenty drops of carbolic acid, and thoroughly apply with a small sponge, to be found at all drug stores, known as the ear sponge. The stimulating and antiseptic properties of the carbolic acid combined with the soothing qualities of the glycerine, are said to produce the most happy results. This remedy also affords immediate relief to an ordinary cold.

Pure glycerine should not produce, when locally applied, a burning sensation, which it always does when the fatty acids are not extracted. But even absolutely pure glycerine, when undiluted, is a water-extracting body. It should, therefore, when used as a cosmetic, or for medical application, be always diluted with water.

TRUE ECONOMY OF LIFE.—The true economy of human life looks at ends rather than incidents, and adjusts expenditures to a moral scale of values. The real wastes of life are not those men prate about most volubly and condemn in censorious tones. De Quincy pictures a woman sailing over the water, but awaking out of sleep to find her necklaced untied and one end hanging in the stream, while pearl after pearl drops from the string beyond her reach; while she clutches at one just falling another drops beyond recovery. Our days drop one after another from our too careless holding, like pearls from a string, as we sail the sea of life. Prudence requires a wise husbanding of time to see that none of these golden coins struck in the mint of God's own eternity are spent for nothing. The waste of time is a more serious loss than the extravagances against which there is such loud acclaim. Here are thousands who do nothing but lounge and carouse from morning till midnight—the droves in the human hive, who consume and waste the honey honest workers wear themselves out in making, and ineffectually dissipate in making and debauch. Here are thousands idle, frivolous creatures, who do nothing but consume and waste what honest hands accumulate, and notice others to lives as useless and worthless as their own. Were every man and woman honest toilers, all would have an abundance of everything and half of every day for recreation and culture. The expenditure of a few dollars for articles of taste and virtue is a small matter in comparison with the waste of months and years by thousands who have had every advantage society could offer, and exact every privilege it affords as a right.—*Herald of Health.*

RHEUMATISM IN WHALES.—There is, unquestionably, a great deal of unknown and unrelieved suffering in the world. If want of sympathy and difficulty of finding relief add much to physical distress, it is sad to think of the new field of woe on the largest scale, which Dr. Strnthers has discovered in hitherto unexplored regions of pathology. In studying the osteology of whales, he has discovered that they are very liable to rheumatism. He has seen many examples of rheumatic otitis in whales of different kinds. It has been said that animals are not subject to disease until they are brought into connection with man, but this fact contradicts the theory. It is the more remarkable, seeing that whales are less subject than man to variations of temperature. The cold-water treatment does not seem to be efficacious in the cure of the disease.—*Jour. of Chemistry.*

ACTION OF ANTISEPTIC SUBSTANCES UPON VIRUS. M. Davaine has recently examined the following substances, which he classes in regard to their power as antiseptics in the subjoined order: Ammonia, silicate of soda, ordinary vinegar, and carbolic acid; then caustic potash, chloride of oxide of sodium (?), hydrochloric acid, permanganate of potash, chromic acid, sulphuric acid, iodine. The power of ammonia, of vinegar, and of carbolic acid being represented by 1—200, that of iodine would be by 1—12,000. Iodine should therefore be considered as the best antiseptic to be employed in the treatment of maladies, such as malignant pustule, boils, carbuncles, and the like, when, not having become localized under the form of a simple pustule, they have taken up a certain extension. Injections of 1-6000 of iodized water are recommended.

COOLING DRINKS.—A good substitute for lemon-juice is tartaric acid. This is the sour principle in wines, and is made from the deposits in wine barrels, which is tartrate of potash. Cream of tartar or bi-tartrate of potash is also used to acidulate drinks, but objectionable for the reason of the amount of potash it contains. The best substitute of all is the crystallized citric acid itself, as it is extracted by chemical means from the fresh lemon juice. The lemonade made from it is equivalent to that of lemons, especially when flavored with a piece of lemon or orange-peel; and if this cannot be had, a single drop of the oil of lemon. As the crystallized citric acid is very powerful, it takes very little to acidulate a large quantity of eager-water. As the taste differs in different individuals, it is best to mix by trial, gradually adding acid and sugar to the water until suited.—*Ex.*

CONTRADICTIONS.—The life of a physician is a life of contradictions. He is misrepresented, abused and derided; yet he is sought for with avidity, and freely received into the bosom of families. His opinion can blanch the cheek, or enfeeble the eye with tears of joy; and his lips are as closely watched as if from them proceeded the issuance of life and death. He lives by the woes of others; and while he would starve, if confined to the profession, if constant health were the attribute of our race, he is endeavoring to banish sickness from among men. While success in his avocation would ruin him forever, he is always warring against his own interest.—*Boston Journal of Chemistry.*

A REMEDY FOR HYDROPHOBIA.—Professor Mauch recently presented to the Philadelphia College of Pharmacy a sample of *trompatilla*, a new remedy for hydrophobia, from Mexico, where it is said to have been successfully used in the cure of the terrible malady mentioned. It is administered in the form of a decoction. *Trompatilla* is obtained from the stems and branches of *Bouvardia triphylla*.

USEFUL INFORMATION.

Preservation of Wood.

In attempting to protect wood from the action of the weather, or of the moisture of the soil in which it is buried, two points have to be taken into consideration. First, to find a suitable preservative material; and secondly, to invent a simple and practical method of introducing this material into the wood to a sufficient depth. The latter has been accomplished by Boacherie by the weight of a considerable column of liquid, while Breant, Floury, Personnet and others preferred to exert a pressure in closed vessels. But, so far, less success has attended all attempts to find a suitable preserving fluid. Some, who ascribed the decay of wood to the action of animal and vegetable parasites, have sought to impregnate it with poisons, such as the chloride of zinc and sulphate of copper. The latter substance is still used by a few corporations in France; but all such soluble salts can act only for a short time, since rain and the moisture of air and soil necessarily dissolve them out after a while. Others have taken patents for impregnating them with insoluble substances precipitated in the wood by the successive action of two soluble substances. Among the latter are phosphate of iron, sulphate of baryta, silicate of iron and the like. These methods have in general one common disadvantage—that the acids set free by this mutual decomposition and precipitation attack the fiber of the wood, and hence none of these have remained in use. More recently the saturation of wood with creosote was adopted and practiced in England. This does, indeed, prevent decay, but does not harden the wood. The process is expensive, the operation difficult, the apparatus costly, much time is required, and the liquid requires to be analyzed frequently to ascertain whether it is still in good condition; and besides all this there is great danger of fire.

A manufacturer of Nancy, France, named Hatzfeld, had long been considering why it was that oak lasted longer than other wood. In 1830 some oaken piles which had been buried since 1150 were dug up in Rouen; they were not only as black as ebony, but wonderfully hard. Hatzfeld referred this property of oak wood to the large quantity of tannic and gallic acid contained in it, and is of the opinion that the abundance of tannic acid produces an effect upon the fibers of the wood analogous to that of tanning on animal hide, forming a hard, insoluble and impenetrable compound, which can resist, without change, the influence of heat and moisture. Chemistry had long before referred this dark color to a union of the gallic acid of the wood with iron, of which there is more or less present in all soils. This tannate and gallate of iron Hatzfeld considers the best preservative against decay. He therefore proposes to impregnate the wood with tannin, and afterward with acetate of iron, and thus to place the wood in the ground at once, in the same condition, to some extent, as that which had been taken out of the earth after the lapse of three centuries. The method has the advantage of being cheap, while the acid used does not attack the fiber of the wood. At the present time a French telegraphic company are testing the new process on a large scale, on the Nancy-Vezelise line, the poles being prepared at Nancy under the direction of Hatzfeld himself.—*Jour. of Ap. Chem.*

A CAR-LOAD.—What constitutes a car-load? As a general rule, 20,000 lbs. or 70 barrels of salt, 70 of lime, 90 of flour, 60 of whisky, 200 sacks of flour, 6 cords of hard wood, 18 to 20 head of cattle, 50 to 60 head of hogs, 80 to 100 head of sheep, 9,000 feet of solid boards, 17,000 feet of siding, 13,000 feet of flooring, 40,000 shingles, one-half less of hard lumber, one-fourth less of joists, scantling and all other large timber, 340 bushels of wheat, 360 of corn, 680 of oats, 400 of barley, 360 of flax seed, 360 of apples, 430 of Irish potatoes, 360 of sweet potatoes, 1,000 bushels of bran. The foregoing table, which we find in the *St. Louis Times*, may not be exactly correct, for the reason that railroads do not exactly agree in their rules and estimates, but it approximates so closely to the general average that shippers will find it a great convenience as a matter of reference.

GOOD IDEA.—The new army boot, introduced into the English service by Sir William Palliser, a distinguished English soldier, gives general satisfaction after undergoing a severe trial by several regiments, both at home and abroad. One feature of the boot consists in placing two thin slabs of cork, reaching from toe to heel, underneath the inner sole of the boot, which renders the sole quite impervious to wet. The object of employing two slabs is in order that the cork in one slab may cover any flaw which may exist in the other.

VARNISH FOR WOOD CARVINGS.—The following is recommended for this purpose by a foreign authority. One part of gum-shellac is dissolved in three to four parts of alcohol of 92 per cent. mixed with one part of water, filtered, pressed, and the solution distilled until all the alcohol is evaporated. The gum which is precipitated from this solution is dried on a water bath and dissolved in double its weight of alcohol of 96 to 98 per cent.

THERE are eighty-seven students studying practical and theoretical metallurgy at the Missouri School of Mines, Rolla.

Leather Cardboard for Roofing Purposes.

A French writer, discussing the respective advantages of the several varieties of paper roofing lately introduced on the continent, says:

Although the advantages of bitumen cardboard for covering slight or temporary structures are generally known, many inconveniences arise from its use. Its rapid decomposition and want of solidity when the oily parts of the bitumen evaporated, necessitated such frequent recoating that the system became expensive rather than economical. A new substance has, however, been lately discovered, known as leather cardboard, which from its solidity, suppleness and durability, seems likely to supplant the old method of roofing. It is composed of solid and tough materials, cemented together by an oily and dashable plastering, with which they are thoroughly impregnated, thus producing a substance entirely water-proof and far more lasting than bitumen cardboard, which, formed as it is of a spongy, compressible matter, and only covered with a thin layer of pitch, obviously possesses neither of the qualities essential to any material for roofing—that is, absolute impenetrability added to great powers of resistance.

The leather cardboard, on the contrary, is so waterproof and tenuous in its composition that atmospheric changes have no effect upon it; it can bear the most intense heat and cold without injury, and is capable of resisting not only the heaviest rain, but also the effects of continuous snow.

Being of light weight and easily fixed, the leather cardboard has the advantage of being far more economical than ordinary methods of roofing with zinc, tiles or slate.

Employed, as it has been for several years, as much in private structures as for camps and public edifices, its advantages have been proved by experience, and ten medals awarded to the inventor at different exhibitions have justly recompensed the improvements he has effected.

The cardboard should be laid on planks of wood, touching each other, and at an inclination of about five inches. The hands of cardboard should be unrolled lengthwise on the roof, commencing at the gutter, and going gradually up to the top.

Care must be taken to stretch the cardboard well, and to make each sheet lap over the other above two inches, securing them by nails at intervals. The whole is ultimately fixed from the top to the bottom of the roof by little wooden lintels, less than an inch wide, nailed at a distance of about 18 inches from one another. A coating of hot pitch should then be applied.

The sheets of leather cardboard being sanded only on one side, care must be taken to fix the smooth side to the planks. The price varies according to the thickness of the sheets, but is much the same as that of ordinary cardboard.

MAKING FAT PERSONS LEAN.—Drink only water, or for a change, water with a little vinegar; no beer, or any malt liquors; no wine, soup, broth, milk, and especially no sugar or starchy preparations; no fine flour, no fat meat, no butter, no cheese, no sweetmeats. Now we expect you will ask, what is left for them to eat? We answer, plenty of fresh fruit and green vegetables, especially salads, bread and unbolted flour without yeast, and no animal food except lean meat, smoked beef, tongue, etc. As carnivorous animals are never fat, it proves that starchy food is the main enemy to be avoided.

SLUGS AND SNAILS.—A correspondent of the *London Field* suggests an easy and, he says, most effectual way of getting rid of these garden pests, namely: Put small heaps of bran (about two handfuls) close to the plants which they destroy most, and then, about 10 or 11 o'clock at night, go round and put a handful of quicklime on each heap; the number of slugs found killed in the morning will be almost incredible. Slugs prefer bran to any fruit or vegetable, and will congregate on these heaps from all parts of the garden.

BLEACHING BY MEANS OF OZONE.—A French chemical journal states that M. David, in bleaching with ozone, employs for this generation of the gas a mixture of potassium permanganate, manganic dioxide (binoxide of manganese), and sulphuric acid contained in carboys; air is passed over the mixture, and after becoming impregnated with ozone is led into a brick tank containing the substances to be bleached; after several hours' exposure to the air, cotton, flax, rags for paper-making, etc., are sufficiently bleached.

COAL SHAFTS.—The deepest coal shaft in England is the Dunkensfield, 2,060 feet, took ten years time to sink, cost \$500,000, and this to reach a bed of coal only 4 ft. 8½ inches thick. The deepest in America is said to be the Hickory shaft, 666 feet, sunk in 428 working days, cost \$100,000. In Virginia the coal lies 60 feet above water level. It costs but a few thousand to open up, it being merely necessary to remove the debris.—*Coal Trade Jour.*

DETECTION OF ACETIC ACID IN WINES.—M. Kissel says that, in separating acetic acid from wines by distillation, the acid may escape undetected, because it forms acetic ether with the alcohol. This inconvenience may be avoided by saturating the wine with baryta. The alcohol is then distilled off, and phosphoric acid added to the residue. On distilling again, the acetic acid is found in the distillate, and may be determined.

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Large advertisements at favorable rates. Special or reading notices, legal advertisements, notices appearing in extraordinary type or in particular parts of the paper, inserted at special rates.

San Francisco:

Saturday Morning, April 18, 1874

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Beer-Drawing Attachments for Casks.

Samuel Marks, of this city, has recently patented, through the SCIENTIFIC PRESS Patent Agency, an attachment to a cask or other vessel, by means of which beer, ale or porter, under a pressure of gas can be drawn into glasses without the usual excess of foam, but regulated by the operator from brisk sparkling to any extent of foam desired.

A strong glass bottle holding about a quart is attached to a beer faucet, and when turned on, the beer flows into the bottle till full; it is then shut off. The main pressure of gas escapes through a porous plug through which no air enters, thus keeping the bottle hermetically sealed. When a glass of beer is required to be drawn, a small faucet in the bottle is turned on, but it will not run for want of vent. However, by giving the valve of the cask a slight turn, "steam beer" is admitted, forcing out the contents of the bottle into the glass with as much or little cream as desired.

This arrangement obviates the necessity of keeping beer in a pitcher, which rapidly spoils it, as it does when the gas is let off a cask for convenience of drawing. The same bad effect is produced through exposure to the air. Brewers are blamed for bad quality of beer when it is spoiled in process of drawing.

Marks & Armstrong have these attachments in operation, on trial, at their brewery, on the corner of Fourteenth and Folsom streets. One of them is for porter and one for cream ale. The latter can be drawn bright, and as creamy as desired, and the porter just as though bottled in good condition. It is their intention to supply their customers with the use of the attachments without charge, and they expect to have them for distribution during this month. One novel and useful application of the patent attachment is, to fix one on the counter and connect it with the cask by means of hose from under the counter, or cellar, thus supplying the place of the ale pump.

The greatest velocity of wind registered at any time on Pike's Peak, has been eighty miles an hour. This took place during a severe snow storm, and the frost work collected so fast upon the machine that it had to be taken down.

Quicksilver in Hydraulic Mining.

The cost of quicksilver has always been a serious item in the expense of hydraulic mining, and more especially is this the case, now that the price of that article has nearly doubled. It is probable that a much larger quantity of quicksilver is used in hydraulic mining than is necessary to accomplish the object sought to be attained, and that reduction may be made in the quantity and a great saving of expense thus effected, at the same time obtaining an increase of yield of gold from the same amount of auriferous gravel.

Quicksilver is used to arrest and hold fine particles of gold, which, on account of their peculiar shape and the large surface in proportion to their weight, are liable to be carried by the water through the sluices and lost to the miner. In order to effect this object it must be in such a position as to permit the gold to come in contact with it. Every miner is aware that after he has put "quicksilver" in his sluice, in a very short time considerable of it disappears; and more especially is this the case where the gravel is heavy and causes much jar in running through the flume, loosening the riffles sufficiently to allow the "quicksilver" to sink to the bottom, where it becomes worthless for the purpose for which it was used.

The loss of quicksilver in consequence of its tendency to flow is a very serious one, and from this cause also much of that in use fails not only to subserve any useful purpose, but is irrevocably lost to the miner. In mill operations, instead of relying altogether on paddles of quicksilver, copper plates are used, having an amalgamated surface. In hydraulic mining these would be inapplicable on account of the rough usage they would be subjected to and their consequent liability to be rapidly worn out. This would be the case in a main flume and in a primary undercurrent, but in a secondary undercurrent, they might be used to great profit.

This principle of using an amalgamated surface, instead of pure quicksilver, may be carried out in another way in the near future with the result above referred to, viz.: a decrease of expense and increase of profit. Mr. R. Hoskins, of Dutch Flat, suggests a way in which the experiment may be tried cheaply and effectually. He writes us that he has made some experiments in this direction with satisfactory results. His suggestions are as follows:

Take a few pounds of pistol bullets: flatten each a little, making it cheese-shape to prevent rolling. While hot, amalgamate them thoroughly. A small quantity of "quicksilver" will serve for a large number.

Put no "quicksilver" in the lower end of the flume, but instead of it place these amalgamated pieces of lead. Each of these is fully equal to the same area of surface of pure "quicksilver," and there is little danger of their being lost. They will each one serve as a nucleus, around which particles of gold and quicksilver which have passed through the upper boxes, will accumulate. When about to clean up, first crease up the bullets, and, if you find that each one has a shell of dry amalgam, the bullet being the kernel, there can be no question but that the experiment is a successful one.

True, the gold when returned will be somewhat black, but this will detract little or nothing from its value; better have black gold than none at all. If the experiment is satisfactory, the principle may be carried out more fully. If lead is objected to, copper may be used, but lead will do to try the experiment with. The cost of maintaining a certain extent of amalgamating surface as compared with using pure quicksilver, will not be one-tenth. The area will not only be maintained but will increase as amalgam accumulates. The quick which has been floured in the boxes above and is passing off, will be arrested and saved, and serve to keep the surfaces well charged.

An interchange of ideas and experiences on such an important topic can not but ultimately result in a great gain to the mining community. Mr. Hoskins earnestly desires others to experiment and report the results. The columns of the PRESS are always open for the discussion of such subjects, and we hope to hear soon from other miners. While there are plenty of books on quartz mining, and plenty of information concerning it, very little is published concerning hydraulic mining; and if some few miners would give the result of their experience it might induce others to do likewise, to the benefit of all.

SILVER CORD.—A letter from the Silver Cord superintendent, April 5th, 1874, says: Works in 110-foot level are completed, timbered and track laid 112 feet from shaft. Will commence to stope in a few days. Contractors in 200-foot level will finish 100-foot contract in four or five days; track laid, and will commence stoping immediately. Shaft down 115 feet for third level, which will open a large body of high-grade ore; notwithstanding, we have a large quantity of ore in 200-foot level and also in 100-foot level, all of which can be mined for \$3.50 per ton.

COLUSA QUICKSILVER.—The Colusa Sun says that Messrs. Hart, Goad, Ingram, Heath and Brim have purchased a controlling interest in the Abbott mine, and will proceed with work immediately. There are now three rich mines in the vicinity—the Abbott, the Buckeye and the Elgin, with its extension or jump.

Placer County Mines.

Hydraulic mining in this county is now in full operation. The deep diggings at Dutch Flat and Gold Run are being worked with confident hopes of a rich harvest this season by their owners. It is probable that the water season will be a month longer than last year with all ditches, with a prospect that the Yuba river ditch will run the year through. Most of the ground in these mines has been worked from 75 to 150 feet or more in depth without coming to the bed rock. And now in order to wash to the bed rock, and thereby realize the best pay at the bottom, the Cedar Creek Tunnel Company are running a large tunnel from a point in Bear Valley canon low enough to drain all Dutch Flat claims, embracing, perhaps, two miles of auriferous channels. They use two Burleigh air drills, the air compressors being worked by a hurdy-gurdy water wheel under 700 foot fall. The drills here are said to operate well and the work is progressing favorably.

Staples Bros'. Claims

Are now piped with 350 feet pressure of water, and may hereafter have over 500 feet fall. They cleaned up \$5,000 after a thirty days' run last season.

The Gold Run Ditch and M. Company's Tunnel Enters the side of a steep ravine, below the Gold Run diggings. Its projected depth is 2,200 feet; size, 10 feet high by 12 wide. Has already been run 600 feet since its commencement last August. They latterly made 26 feet per week in the main tunnel. A tunnel of 1,000 feet, branching off to the Indiana hill claims, is the work now being pushed. Forty-two feet were recently run in a week. This is accomplished in hard bed-rock by the use of

The Burleigh Drills.

Two being constantly in use. A third affords a change while repairing. For compressing the air, a 15-horse-power engine, manufactured with the drills by the Putnam Machine Works, Fitchburg, Massachusetts, is used. The drills are four-pointed, with cutting edge, x-shaped. The holes are started with 2½ in. drills, followed by two-inch drills, and finished with 1½ inches to the depth of about four feet. In the main tunnel 20 holes are made in a facing—four rows of five holes each. Hercules powder and blasting fuse are used. From 3½ to 4 feet of rock is knocked down at each blasting. Seven hours time is required for drilling a set of holes. Removing the rock knocked down comprises a large part of the labor in working the tunnel. Hard tamping, made of clay and sand, baked in the furnace, is used with the best convenience and effect. Electric fuse was tried, but with too weak explosion. Heavier explosives will be used on another trial, and, we presume, prove successful. The drills used have 8-inch stroke. The company have on hand a fourth drill of less calibre. The drills are turned forward to their work by hand (instead of by automatic feed), it requiring an extra hand. About 12 men, including seven Chinamen, are employed, working two shifts.

Mr. Wm. Judd, superintendent, has met with no serious difficulty in introducing and operating these drills. He considers them a great auxiliary to rapid work, and important in such large enterprises.

Mr. J. B. Brisbie, engineer, runs the stationary machinery, keeps the drills in repair, and does other machine work.

Important Improvements.

This tunnel and its branches will facilitate the working of an immense area of ground down to the bed-rock, a large portion of which, at both Dutch Flat and Gold Run, have already been washed on top to the depth of from 100 to 200 feet, showing that the smaller fraction of mining has but yet been done in this section. On the Iowa hill ridge, across the North of the American, a large ditch is nearly completed, which will give increased vigor to that section of Placer county also.

NEW MINISTER TO CHINA.—Benjamin P. Avery has been called to succeed the Hon. F. F. Low, as U. S. Minister to China. The nomination was secured by Senator Sargent, and the appointment has been duly ratified by the President. The selection is a happy one, as Mr. Avery is favorably known throughout the country, as well as this State, as a gentleman of pronounced ability and refinement. He was formerly connected with the *Bulletin*, and latterly has edited the *Overland Monthly*. Several times before it has happened that men of literary pursuits have been selected as foreign ministers. Mr. Avery follows in the steps of Bancroft, Irving, Bryant, Ticknor, Marsh, Hawthorne and Motley, and will no doubt be quite as successful in diplomatic matters as he has been heretofore in the editorial capacity. The appointment has given universal satisfaction in California. Mr. Avery's life has offered no occasion for hostile criticism from either political or personal opponent—he probably has neither—and the press of the State are unanimous in their hearty support and gratulation.

CARSON MINT.—The following is a statement of business transacted at the Carson Mint during the month of March, 1874:

Deposits.	Ounces.	Value.
Gold.....	13,610 255	\$253,214 10
Silver.....	401,062 15	461,458 54
Total.....	414,672 408	\$714,672 55
Coinage and bars executed.....		\$614,698 85

Trials of California Steam Fire Engines.

During the past week two trials of California built steam fire engines took place in this city. One of these was built by Messrs. Goodwin & West, and the other by the Kimball Manufacturing Co. The

Goodwin Fire Engine

Was the first ever built on this coast, and is fitted with the Goodwin Rotary Pump. The trial of this engine took place on Saturday last at the intersection of Ellis & Powell streets. The test was made under the supervision of the patentees, owners and manufacturers, in conjunction with Chief Scannell and the Board of Fire Commissioners. The weather was most unpropitious, as a strong westerly wind was blowing at the time, which, together with the fact that the nozzles used were, as we are assured, of poor construction, tended greatly to cause the steam thrown to split up and break off in spray.

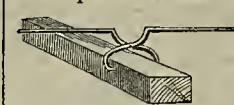
The first trial was made with two lengths of 150 feet each of hose, with 1½ inch nozzles, the dial marking 70 lbs. of steam. The length of this steam was 156 feet, actual tape line measurement. The second trial was an exact counterpart of the first. On the third trial the length of hose was the same as previously, but only one length was brought into requisition; a 1½ inch nozzle was substituted, and the pressure of steam was 95 lbs.; distance thrown, 194 feet. The fourth test was made with 100 feet of hose, a 1½ inch nozzle, 1 stream of water, steam power as before. Distance made, 194 feet 8 inches. The fifth trial was as successful, or in fact more so than any of the preceding, as with 100 feet of hose and 1½ inch nozzle and the same amount of steam, a stream of water measuring 181 feet 9 inches was thrown. Mr. Corbett, the engineer, informed us that the suction was not sufficiently large to supply the pump. An alteration will be made in this and a few minor instances, when another trial of this engine will be made. The engine itself is about the same size as a No. 2 Amoskeag, but the most novel feature in it is the new rotary pump, now used for the first time for this purpose. The engine is very handsomely finished, the whole work having been done in this city. An accident happened to the pump during the trial, and interrupted the experiments.

The Kimball Engine.

Built by the Kimball Manufacturing Company, was tried on Tuesday, at the corner of First and Folsom streets, before a large number of spectators, including members of the Board of Supervisors and the Fire Department. The engine is strongly made and neatly finished. It weighs 6,200 pounds, a little less than a second-class Amoskeag. Working with eighty pounds of steam, the pressure on the water-gauge is 170 pounds. At the trial a stream of water was thrown 225 feet through an 1½ inch nozzle, with 90 pounds of steam. It was tried with two streams, through different sized nozzles. The trial gave perfect satisfaction to all who witnessed it. It is understood that the Kimball Company challenge the Department to bring out its best engine of similar class for trial of quality.

A Useful Implement.

Our esteemed cotemporary, the *American Agriculturist*, suggests that a pair or two of tongs, such as we represent herewith, will be found very serviceable for many uses on the ranch, as well as in country sawmills, where we believe they are already generally introduced. If heavy timbers are to be handled, or fence posts carried, or large stones lifted, there is no implement at once so cheap, simple and convenient. The tongue applied at the base of an old post to be taken out of the ground,



would aid greatly in this frequently tedious work, and there are many other occasions, a self-suggesting, where they would repeatedly pay their cost in one season. They should be made of three-quarter inch iron bar, flattened at the pivotal point; the extremities of the jaws should be steamed and brought to a sharp, flat edge, beveled on the lower side to insure a good grip and prevent slipping. When these tongs are intended to be used exclusively for removing stones, a slight modification in the shape of the jaws might be an improvement; the ends need not be sharpened, but should rather be made as wide and hollow as possible. This plan would give a better hold on the smooth, hard surface or rounded stones. It will be seen that the act of raising the handles, when a log or large stone is to be lifted, creates a powerful lateral pressure of the jaws, proportional to the leverage secured by the construction, thus firmly grasping the object. The many applications of this simple and serviceable device are obvious.

MINING prospects in Idaho are brighter and more promising than would have been hoped for a few months since.

The Inyo Independent says that very fair diggings are reported as having been struck about ten miles westerly from Bishop creek.

THE good weather is giving an impetus to mining matters in the Comstock as well as in other mining localities.

The Woolen Mills of the Pacific Coast and what they did in 1873.

The Capital Invested—Quantity of Wool Used—Value of Buildings and Machinery—Number of Hands Employed—Amount Spent in Wages—Value of Products, Etc.

There is a great future in store for California as a manufacturing country—as great as for any country in the world. We might say, not only for California, but for all the Pacific coast; and one of the greatest branches of that industry, will consist in the manufacture of woolen goods, and of goods compounded of wool, cotton, silk and other textile materials. There are at least two hundred millions of acres that are peculiarly suited to the raising of sheep and the growth of wool, found in the foot-hills of the Sierras, and in the coast valleys of the coast range, extending for hundreds of miles from southeast to northwest, parallel to the great ocean and to the river courses. There is as much country favorable for wool growing on the Pacific slope, as in all the rest of the United States, and the day will come, and that in the near future, when every one of these hills and valleys will be white with millions of sheep. Their wool will not be always exported; it will be manufactured at home amongst us. We have abundance of water power, in the thousands of streams that descend from the mighty Sierras, the Cascades, and the other giant mountains of the Coast, and where water power is not available we have localities adjacent to some of the most productive coal mines in the world, where as busy scenes of industry will be witnessed as are now in the streets of the great manufacturing cities of both New and Old England. In fact, we hazard nothing in predicting that the woolen industry will of itself alone, task the labors of hundreds of thousands of workmen. But we have many things to learn; our farmers have to learn how to produce a fine quality of wool, and how to improve their flocks, and our manufacturers how to produce as fine cloths as are turned out by the looms of France. It does not detract in the least from their enterprise, and from the real merits of the work they have done, to say this; for, considering everything, they have made gigantic progress, and are fast approaching a high state of excellence in the quality of the goods manufactured, equaling, and in many cases excelling, some of the finest productions of the Eastern looms. It is less than a score of years since wool growing first assumed any dimensions in California. Then not more than half a million pounds was produced; but ever since the quantity has been steadily increasing, last year amounting to over thirty million pounds; the Oregon clip amounting to a few million more. Of this there was about ten per cent. used on the Coast. The Oregon wool is generally accounted the finest, although some claim the first place for northern Californian—but Southern California is not so good. Australian, which is used to some extent in our mills, is accounted by many of the millmen better than either. Of all the mills of the Coast,

The Mission and Pacific Mill

Belongs, unquestionably, to the first rank. It was started in 1860, with only two sets of cards, and did not give much promise of the future, which was afterward in store for it. The founder was Donald McLennan, Esq., the present manager, who carried it on successfully in the face of obstacles that would have appalled any ordinary man. The mill is now a twenty-set one, with seven thousand spindles and 87 broad looms. These twenty sets are equal to thirty-six sets, from the manner in which the mill is run. The value of goods manufactured in 1873, was \$1,100,000; this year it will be \$1,300,000, showing an advance of over eight per cent. in one year. There was used altogether 1,800,000 pounds of wool; this year there will be used 2,200,000 pounds. Of the wool used last year, there were 1,400,000 pounds Californian, 300,000 pounds Australian, and 100,000 pounds Oregon. We may say here that Mr. McLennan himself visited Australia a couple of years since in order to select the kind of wool he required for the mill. Besides the wool, there was also 150,000 pounds of cotton used, or about fifteen per cent. of the whole. The department for the manufacture of hosiery, turns out about \$200,000 worth a year, the rest of the manufacture being made up of cassimeres, tweeds, shawls, flannels, blankets, and every variety of woolen goods. Some of the goods appear to be equal in make and finish to any thing imported or foreign, and many of the cassimeres and tweeds are of remarkable beauty. There are here constantly employed 387 white people, and 456 Chinese. Of the white people, 80 are men with families, 85 to 100 boys, and the balance women and girls. The average pay roll is from \$18,000 to \$21,000 per month. Besides the regular employees there is hardly a poor family in the Mission that does not get work that is done at home. Besides this they keep the girls at the Magdalen employed nearly all the time. Including the families of those who get work, there can not be less than from two to three thousand people who are benefited directly or indirectly by the mill. The white men employed earn, on an average, \$2.50 per day; the women from \$3 to \$4.00 per month, and the boys from \$4 to \$7 per week, averaging, perhaps, \$5. This company claim to utilize the labor of boys more extensively than any other establishment in the city,

save, perhaps, those employed in the boot and shoe trade, and the management is disposed to work them in from time to time as fast as opportunity offers. The Chinese employed, earn from ninety cents to one dollar per day. The buildings of the factory on Fifteenth and Folsom streets, are 793 feet long by an average of 50 feet wide, and are two stories in height. The hosiery department by itself is 200 feet long, and two stories in height. Besides these there are a dye house and work-shops and a large stone store-house, 130 feet long by fifty feet wide, two stories high, and capable of receiving two million pounds of wool. On arriving at the factory the wool is first assorted and scoured. Then it is colored, picked, carded, spun, and afterward wove into cloth, blankets, etc. We know of nothing more interesting than witnessing the various processes carried on, and the intricacy and variety of the machinery used. Of the processes just mentioned, the first story is devoted to picking, carding, spinning, and finishing the cloth, and in the second to spinning and weaving. There are about 220,000 yards of cassimeres, tweeds, etc., made annually, which are worth from ninety-five cents to \$1.60 per yard. Every week there is sent from this factory, east over the railroad, a car load of goods, worth from \$25,000 to \$30,000. They work largely for the Government. Their goods go everywhere over the coast, to Japan, China, and British Columbia. The capital of the company, which is a close corporation, is \$650,000. The mill occupies three blocks of land, which were bought at a nominal price, but which are now worth from \$600,000 to \$700,000. The buildings and machinery are worth, at least, \$400,000. The institution is a monument to its founder and a credit to the Coast.

The Pioneer Woolen Mill

Was, as the name imports, the first erected on this coast, and is the great rival of the Mission and Pacific. Located near Black Point, the buildings are altogether four hundred feet long, and are four stories in height. The mill started as a six-set mill; but there are now used in it 19 sets with 7,800 spindles and 67 broad looms. The building and machinery cost \$400,000, and the capital of the company is \$450,000. Last year they used 1,500,000 pounds of wool, worth \$300,000. They made 500,000 yards of cassimeres and 260,000 yards of blankets, etc. The total value of the manufacture was \$750,000. The amount spent in labor was \$30,000, which gave employment to 350 hands, including 100 white men, 25 women, 25 boys, and 200 Chinese. The wool used was principally Californian, with a small amount of cotton mixed. The goods made by this mill are all first class; and they have long had a good trade with New York, it being near three years since they sent the first goods thither. The Pioneer Mills is an industrial establishment that would do credit to any city in the United States.

The San Jose Woolen Mill

Is owned by a corporation organized in 1869, through the labors of Judge R. S. Peckham. The mill was built and put in working order under his supervision, and he is yet President and managing agent of the company. The other officers are James T. Lewis, secretary; A. McLeonard, mill superintendent; and John R. Mason, who acts as agent in this city. The company was organized with a capital of \$100,000 all paid up, but the business enlarging, it has since been increased by subscription to a nominal capital of \$400,000; of which, \$200,000 is paid up. The company has now including money invested in stocks, etc., about \$260,000. The mill, land and machinery cost \$93,000; and is said by all competent judges to be one of the best mills in America. The main building is 52x110 feet and three storeys high, with engine-room attached. They have also a separate building for picking machinery, another for their finishing machinery, besides a store-house, lye-house and several other outbuildings. The mill has six sets of cards, 2,140 spindles, and 24 broad looms. It turns out about 60,000 yards of cassimere, 108,000 yards of flannel, 45,000 yards of tweed, 3,600 pair of white, 3,600 brown and 10,500 pair of grey blankets, per annum. In the manufacture of these goods they use about 350,000 lbs. of the best wool, in the market worth about \$70,000 per annum. The company manufacture about half their cassimeres and flannels into clothing. They give employment to ninety-six persons—77 at the mill and 19 in San Francisco. They expend for labor and commissions on sale of these goods about \$60,000 yearly. Their pay roll at the mill is about \$3,200 per month. Of their employees 25 are white, and 71 Chinese. This company find a ready sale for all their goods in San Francisco. Their blankets are unexcelled; many of their cassimeres are claimed to be equal to those of European importations.

The Marysville Woolen Mill

Was erected in 1868, and will, ere many years have elapsed, make of that city a most important manufacturing center. Its exhibit for the year 1873 was as follows: There were used 330,000 lbs. of wool, worth \$57,000, which were manufactured into cassimeres, flannels and blankets, worth \$187,000. The capital invested is \$127,000, and the cost of buildings and machinery has been \$72,300. There were employed in the mill 47 hands, who are paid \$26,400 a year, or an average of \$56.80 each, per month. The mill, which is built of brick, and one story high, is 160 feet square. The wool used is all Californian.

The Stockton Woolen Mill

Is situated on the south bank of the Mormon Slough, near the city of Stockton; is 50x100 feet, one and a half stories in height, and built of wood. Besides, the proprietors have a store-room and packing-house 60 feet long by 20 feet broad. The mill is the property of Messrs. Lambart, Doughty and Tattersson, and was started in 1870. Last year there was used of wool 300,000 lbs., worth \$75,000, which was manufactured into \$125,000 worth of blankets, flannels, etc. The capital invested is \$50,000, and the mill and machinery are worth \$35,000. The hands number 30, of whom five are white men, three white women, and 22 Chinese. The white men average \$3 per day, the white women, \$1.25, and the Chinese earn \$25 per month. The mill is a two-set one, with 800 spindles and seven broad looms. The wool used is principally Californian, with some Oregon. The proprietors aver that the Oregon wool is of a better quality and has a longer staple. They are able to sell all they can manufacture.

The Capital Woolen Mill

At Sacramento, was incorporated in 1868, with a capital of \$100,000. The mill is located on the corner of C and Sixteenth streets. It is built of brick, and is three stories in height. The main building is 40x30 feet, with an L 60x30. It is a six-set mill, and employs 53 hands. They have a sample-room at 217 J street, which is 160x20 feet.

The Oregon City Woolen Mill

Is, without doubt, the most important manufacturing enterprise in the State of Oregon. It was established in 1865, nine years ago, and ever since has been constantly increasing its production. The factory is a splendid four-story building, with stone basement. The mill started as a three-set one, but is now a seven-set, with 2,300 spindles and 24 broad looms. Last year it used up 500,000 lbs. of wool, which, when manufactured, was represented by 130,000 yards of cassimeres and 420,000 yards of flannels and of blankets. The value of all these is about \$300,000. There are 100 hands employed, of which 70 are boys and girls, and the balance 30 men. The wages paid these in 1873 was fully \$60,000. The buildings and machinery have cost \$100,000. The wool used is principally Oregon. A small quantity of cotton is also used.

The Williamette Woolen Mill,

Is said to be the oldest on the Pacific coast, being established in 1857. It uses 400,000 lbs. of wool yearly, and pays \$8,000 monthly for labor. Of

The Other Woolen Mills,

We can say but little, inasmuch as our circulars to the managers have not as yet been answered. In California, besides those already noticed, there are the Los Gatos and Los Angeles mills, which are both one-set mills. In Oregon there is also a one-set mill at Brownsville.

Synopsis.

The whole number of woolen mills on the Pacific coast is nine, of which six are in California and three in Oregon. They have 20,840 spindles and 232 broad looms. Their aggregate capital is \$2,000,000; the value of buildings and machinery is \$1,525,000; the number of pounds of wool used last year was 5,380,000, of a value of \$1,200,000, and the value of the manufacture was \$3,000,000. Of the wool used, 3,680,000 lbs. was Californian, 1,200,000 lbs. was Oregon and 500,000 lbs. Australian. About 250,000 lbs. of cotton was also used. Of Cassimeres 11,000,000 yards were made, and of blankets, flannels, etc., 1,600,000 yards. The total number of employees was 1,356, of whom 851 were Chinese, 230 white men, 137 white boys, and 138 white women and girls. The wages paid aggregated \$556,400. The value of goods sent East was about \$350,000, and the total exports at least \$400,000. Such an exhibit is highly creditable to the coast, and gives the highest promise of a glorious future for this industry.

NEW MODE OF MARINE PROPULSION.—Mr. J. T. Bowman favors us with sketches and descriptions of an ingeniously and quite novel mode of propelling vessels, which he has lately contrived but does not propose to patent. An opening is made through the center of the ship under the water line, whence, by a snitable conduit, a large stream is allowed to pass to two athwartship revolving blades, which are modeled in form and arrangement after those constructed inside the Root blowers, and which are situated in a suitable enclosure in the forward portion of the hold. From this casing, and leading aft, are three passages, one extending downwards, at an incline, to the keel, and the others leading to each side of the ship. Snitable valves are arranged, whereby the water drawn in by the blower may be diverted into either passage, so that by this means the vessel may be drawn ahead or steered in either direction at will.

STRONG PIPING.—Five hundred feet of the largest wrought iron piping ever brought to this Territory was shipped to the Emma mine on Saturday. It is six inches in the bore, and is intended to be used as a discharge pipe for the new plunger pump. Cast iron is not considered strong enough for the purpose, being liable to break should the mine settle. The new piping cost about \$5 per foot laid down at the mine. The manufacture of that kind of piping requires machinery of extraordinary power. This wrought iron piping is calculated to stand a pressure of 200 pounds to the square inch.—*Deseret News.*

Page & Panaca.

Yesterday, by invitation of D. E. Mitchell, the foreman, we visited the above mine for the purpose of examining the ledge struck within the last few days. We descended the shaft in the cage to a depth of 300 feet, then passed along the main drift a distance of 613 feet, when we came to the head of the winze or incline. Here trouble commenced, for climbing was in order for a depth of 240 feet; however, at it we went, and by dint of looking pretty carefully to our footsteps, and holding tight, reached the bottom in safety. We then went along the drift, which turned in several directions, until we reached our destination, the face of the drift in which the discovery was made. When we reached this point, we were not disappointed, for we found a solid ledge fully five feet wide with well defined quartzite walls. About two feet of it is very rich, assaying, we are told, from \$600 to \$900 per ton. Our courteous and intelligent guide, Mr. Mitchell, told us that the spot on which we were standing was nearly under the summit of the divide west and south from the stone quarry. The presence of so strong and rich a vein in the very bowels of the ridge must leave no doubt in the minds of any that the ledges from which so much bullion has been extracted are true fissure veins, and are as productive at great depths as nearer the surface. In the Page & Panaca ledge there is a stratum of the peculiar reddish, brown ore which is so rich in silver; next to that comes a layer in which streaks, or bunches of galena, are visible, and the remainder shows the ordinary ore of the district.

We must congratulate the company upon at last receiving a return for the long and expensive series of operations they have conducted. We feel sure that the prize they so long sought is within their grasp, and that the Page & Panaca will soon be classed among the heavy bullion producers of Pioche. This discovery will not only be of benefit to the company, but also to Pioche generally; for it leaves no doubt that the great master vein is permanent, that it is to be found at great depths, in the very center of the mountain, and at the same time is very rich. After the exploration of this vein for some distance, we think we shall hear less about "ruined mines" and "Pioche wild-cat," about which the journals at the Bay are so grievously exercised. Besides inspecting the new strike, Mr. Mitchell showed us over the whole works. Everything is progressing in an orderly and workmanlike manner. A drift is being pushed from the upper level directly for the new ledge, and when reached, if it proves rich as it is 240 feet below, the company will not have occasion for any anxiety about pecuniary matters. Arrangements are being made for taking out ore at once. In order to facilitate this, a new shaft will be sunk which will avoid the circuitous route necessary to be pursued through the present workings. We were much pleased with our visit, though it was a laborious task climbing those ladders. We received every attention from Mr. Mitchell and others, and think the company is fortunate in securing the services of so efficient and experienced a miner. In conclusion we must again say that this development will, we think, prove of great importance to Pioche; it will revive drooping hopes and inspire fresh confidence, for it is a convincing and practical demonstration of the permanence and richness of our mines.—*Pioche Record.*

ONE FINE LEDGE.—A very rich strike was made in this mine, located in Sacramento district, about twelve miles south of Unionville, last Saturday. The claim is owned and worked by Messrs. Hope, Bennett, Pollard and Pomeroy, and for the past two years the two first named gentlemen have been steadily engaged in thoroughly prospecting it, during which time considerable rock and ore have been removed, and about three hundred and forty feet of tunnel run. The ledge is situated in the head of the ravine that separates the Montana and Rochester mines, and the course of the ledge is southeast and northwest. Where the vein crosses the ravine, an open cut was run into the ledge, and a tunnel of one hundred and forty feet was run on southeast line of the ledge, showing some very rich mineral, but the vein considerably broken up. Despairing of striking anything in that direction, the owners thought they would try the other end of the claim, and they accordingly commenced in the same open cut and tunneled north about two hundred feet. The ledge on this side also continued broken for about one hundred and fifty feet, when it commenced getting solid, and continued to improve both in appearance and richness until last Saturday morning, at which time the persevering prospectors opened up a four-foot vein of black sulphuretted ore. Many of the pieces broken show considerable free gold. As yet, no tests have been made of the ore, as it was considered unnecessary to assay it, but Mr. Hope tells us that the mine is open for inspection; and he invites any and everybody who desire to see a really magnificent ledge and an immense body of very rich ore to give him a call.—*Silver State.*

GRASS VALLEY MINES.—The Union says: The month of March saw more preparations for work than actual operations, so far as the business of prospecting is concerned. There has been, and is now, too much water in the ground for work in such mines as have not heavy machinery upon them. The water will soon be evaporated by the sun and wind, when prospecting will be unusually active. The opened mines have been working steadily, with fair results.

COAL IN MONTEREY.—A coal mine has been recently discovered within about six miles of this town. During the past month some twenty tons of coal have been taken out, and that with only a small force of workmen. A meeting of those interested in the mine was held at Washington Hall, on Monday last, and a company to be known as the Monterey Coal Mining Company was organized, and the following named officers elected: President, B. F. Sargent; Secretary, A. Mannel; Treasurer, L. Little; Directors, S. B. Gordon, H. Escelle, E. H. Wise, G. G. Harris and B. F. Sargent. The coal is pronounced by experts to be equal to the best Chamberland coal. Our county is greatly excited over the developments made.

A HEAVY LAND-SLIDE.—An extensive landslide occurred on the line of the North Bloomfield Ditch, near Roscoe's ranch, two and a half miles above Relief Hill, in this county, about ten days ago, and did damage to the ditch to the amount of \$2,000. The whole hillside for a width of several hundred feet went down into the cañon below, carrying everything before it. The debris filled the ravine up to a height of sixty feet. Sugar pine trees, eight feet in diameter, were forced along with the soil, and hundreds of cords of wood broken from the trees lie in the ravine below. It will take some time and great expense to repair the damage.—*Nevada Transcript*, April 8th.

A town is to be laid out in the vicinity of the Holcomb valley mines, San Bernardino county.

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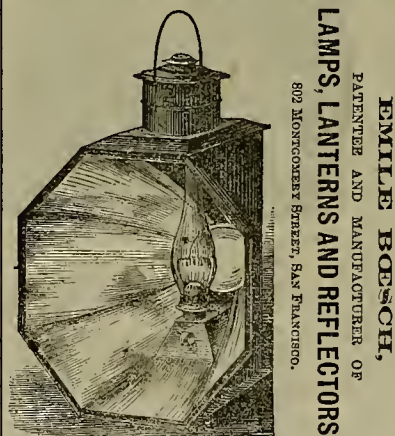
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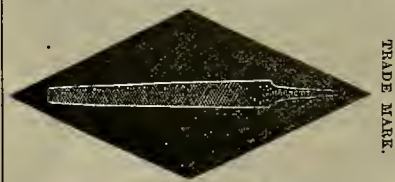
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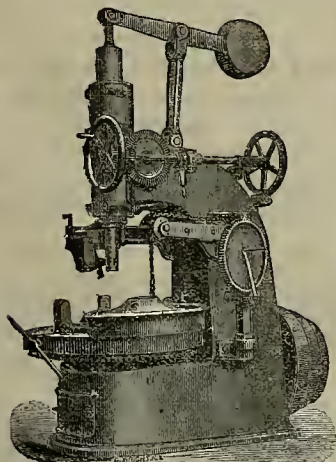
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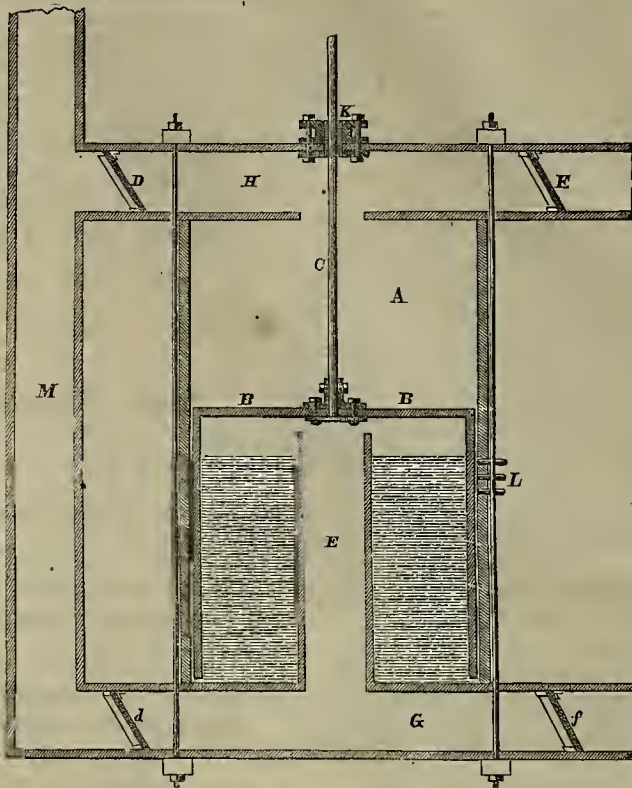
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The Smallest Machine, with a 6-foot stroke, will deliver 3,732,480 cubic inches of cool condensed air in one minute.

In consequence of the swimming of the machine in water, a small amount of power will work it. The inventor is a practical Mining Engineer, and understands the injury to health and strength of miners resulting from hot and impure air, as well as the GREAT ECONOMY of thorough ventilation in mines.

A working model can be seen at No. 13 Drumm street. Mines ventilated, inspected and reported on the most reasonable terms by the undersigned.

Rights to use this machine will be sold on reasonable terms. Address,

WILLIAM WILLIAMS,

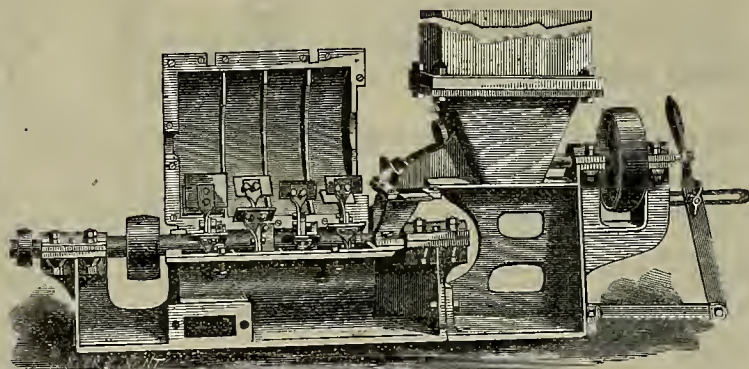
P. O. Box 520, San Francisco.

Caveat filed 17th day of January, 1874.

apl8-tf

WHELPLEY & STORER

CRUSHERS AND PULVERIZERS,



For Crushing and Pulverizing Dry Ores,

PLASTER, COAL, BONE, MINERAL PHOSPHATES, PAINT STUFFS, DRUGS, PLUMBAGO, CLAY, DYE WOODS, ETC., TO A FINE POWDER.

THEY ARE THE MOST

ECONOMICAL and DURABLE MACHINES

In practical operation. They reduce much finer and at less expense per ton, giving better results than can be obtained with any other class of machinery. Miners should make a thorough examination of these machines before purchasing any others.

GEO. D. WYMAN, Agent for Pacific Coast.

OFFICE—215 AND 217 MAIN STREET, BETWEEN HOWARD AND FOLSOM,

SAN FRANCISCO, CAL.

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We have the best and most complete assortment of

Machinists' Tools

In the Country, Comprising all those used in

MACHINE, LOCOMOTIVE,

AND

R. R. REPAIR SHOPS.

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NEW YORK STEAM ENGINE CO., 98 Chambers Street, New York.

15v28-cow-ly

The Mining Bills in Congress.

The mining community is still very much exercised over the proposed amendments to the mining law, now being discussed in Congress. Resolutions have been adopted at several miners' meetings in different sections of the country, deprecating any attempt to change the existing laws, and more especially where the amendments will compel miners to patent their mines whether they want to or not.

During the debate on the Negley amendment in Congress, Mr. Luttrell made the following remarks about our mining patent system: What does it cost to acquire title to land under the present law? In the first instance, a man must place \$500 worth of improvements upon his claim; then he must deposit with the Surveyor-General from thirty-five to one hundred dollars, as I can show to your satisfaction has been done in some three hundred cases; in many instances \$100 were paid, and the average was \$50 to a claim. Then the miner must go and make his contract with the Deputy Surveyor-General, who charges him one hundred dollars for surveying his claim of probably one acre, and making a plot of the same. Then he must advertise in the public prints, which costs him from forty to one hundred dollars more. Then he must deposit with the land officer from twenty-five to fifty dollars in each case. Then he must pay a Notary Public some fifteen dollars. Then his personal expenses amount to from fifty to one hundred dollars. Thus he has paid out on an average, provided he meets with no litigation, eight hundred or a thousand dollars. Of that amount how much does the Government receive? Only two dollars and fifty cents, while the poor miner has been obliged to expend nearly \$1,000, two-thirds of which goes into the hands of officials, and then, if his claim proves a failure, the miner is bankrupt.

How is it with the rich men? In one county in my district, speculators have gobbled up 2,250 acres of the best mining lands in one body, which is now owned by these speculators, and will be worked by coolie labor to the exclusion of the honest miner. How do they manage to acquire so much of this valuable land? I will tell you. They take \$500 worth of hydraulic pipe, and lay it upon twenty acres, and then make affidavit that they have put so much improvement upon the land. The next day another one of the ring hauls that hydraulic pipe upon twenty other acres; then a similar affidavit is made; and so they will go on until they occupy the entire country.

On three hundred claims, within the last year, the requirements of law have forced us to perform \$162,500 worth of labor. As a further requirement, we have paid in cash about \$113,750, making an aggregate of \$276,250 to acquire title to probably three hundred acres of land. Of this expenditure the Government received only \$812.

The Senate Committee on Mines and Mining has referred the Mineral Patent bill, together with the amendments, to the Commissioner of the General Land Office, and Commissioner Drummond has prepared a report, in which he says both the amendments proposed in behalf of Sutor are injudicious and unwise; that the Holman amendment is not needed, because the bill as it passed the Senate does not affect Mr. Sutor's interests at all, and the Negley amendment would be injudicious to the miners, and would effect a total change in the policy of the law governing the mineral lands. It is the policy of the law that miners should not be compelled to apply for patents until they need them to protect their rights. As for as Sutor is concerned, there is no necessity for this amendment to protect him in his rights. He is now secure, whether the miners take out patents or not, being protected by existing laws.

The bill will not come up for consideration in the Committee until the 20th of this month.

PATENTS & INVENTIONS

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., April 14, 1874.

For WEEK ENDING Mar. 31, 1874.

NEEDLE.—Ella N. Gaillard, S. F., Cal.

INSECT-DESTROYING COMPOUND.—Henry Clay Miller, S. F., Cal.

SEWED PIPES.—Henry M. Stow, S. F., Cal.

AMALGAMATOR.—Ezra Hinckley, S. F., Cal.

COMBINED WATCH AND SUN DIAL.—Lawrence Miller, Pioneer, Montana.

LATHES.—Hezekiah Lombard, S. F., Cal.

TRADE-MARK.

AXLE GREASE.—John J. and J. G. Hucks, S. F., Cal.

—The patents are not ready for delivery by the Patent Office until some 14 days after date of issue. NOTE.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rate. All patent business for Pacific coast inventors transacted with perfect security and in the shortest time possible.

SAN FRANCISCO METAL MARKET.

WEDNESDAY M., April 15, 1874.

Quicksilver has again advanced, this time \$5. Report from New York have shown great buoyancy in that market, and the rise here was not unexpected. The price demanded will probably hold. Other metals are quiet.

Scotch Pig Iron, 30 ton	\$2 00	—
White Pig, 30 ton	2 00	—
Refined Bar, good assortment, 30 lb.	—	—
Refined Bar, good assortment, 30 lb.	—	—
Boiler, No. 1 to 4	—	—
Plate, No. 3 to 5	—	—
Sheet, No. 10 to 13	—	—
Sheet, No. 14 to 20	—	—
Sheet, No. 21 to 25	—	—
Horse Shoes, per doz.	7 50	8 00
Nail Rod.	—	—
Norway Iron.	—	—
Roller Iron.	—	—
Other Irons for Blacksmiths, Miners, etc.	—	—
COPPER.	—	—
Brazier.	—	—
Copper Pipe, 10 lb.	—	—
O. K. Pat.	—	—
Sheeting, 10 lb.	—	—
Sheeting, Yellow.	—	—
Sheeting, 10 lb.	—	—
Composition Bolts.	—	—
Composition Bolts.	—	—
TIN PLATES.	—	—
Eastern Sheet, 10 lb.	—	—
Plates, 10 lb.	—	—
Roofing Plates.	—	—
Stocks Tin, 10 lb.	—	—
Sheet, 10 lb.	—	—
Drill.	—	—
Flat Bar.	—	—
Flat Points.	—	—
Zinc.	—	—
Zinc Sheet.	—	—
Nails—Assorted sizes.	—	—
Pig.	—	—
Sheet.	—	—
Pipe.	—	—
QUICKSILVER, per lb.	—	—

LEATHER.

WEDNESDAY M., April 8, 1874.

Country Leathers are said to be looking up a little. Still, trade is very slack, and immediate prospects not promising. Prices do not change.

City Tanned Leather, 30 lb.	25 00	25 00
Santa Cruz Leather, 30 lb.	25 00	25 00
Country Leather, 30 lb.	25 00	25 00
Stocks Leather, 30 lb.	25 00	25 00
Jodot, 8 Kil, per doz.	50 00	54 00
Jodot, 11 to 19 Kil, per doz.	50 00	55 00
Jodot, second choice, 11 to 19 Kil, per doz.	50 00	55 00
Correllian, 12 to 15 Kil, per doz.	50 00	55 00
Correllian, 16 to 18 Kil, per doz.	50 00	55 00
Correllian, 19 to 21 Kil, per doz.	50 00	55 00
Simon, 20 Kil, per doz.	50 00	55 00
Simon, 21 Kil, per doz.	50 00	55 00
Simon, 22 Kil, per doz.	50 00	55 00
French Kips, 30 lb.	1 00	1 15
French Sheep, 30 lb.	1 00	1 15
French Sheep, all colors, 30 lb.	1 00	1 15
Eastern Calf, 30 lb.	1 00	1 15
Shap Roams for Topping, all colors, 30 lb.	1 00	1 15
Shap Roams for Linings, 30 lb.	1 00	1 15
California Russet Sheep Linings, 30 lb.	1 00	1 15
Best Jodot, 30 lb.	1 00	1 15
Good French Calf Boot Legs, 30 lb.	1 00	1 15
French Calf Boot Legs, 30 lb.	1 00	1 15
Fair Bridle Leather, 30 lb.	1 00	1 15
Skirting Leather, 30 lb.	1 00	1 15
Wet Leather, 30 lb.	1 00	1 15
Wax Side Leather, 30 lb.	1 00	1 15
Eastern Wax Leather, 30 lb.	1 00	1 15

A Good Binder for \$1.50.

Subscribers for this journal can obtain our Patent Elastic Newspaper File Holder and Binder for \$1.50—containing full title of the paper on the cover. It preserves the papers completely and in such shape that they may be quickly fastened and retained in book form at the end of the volume, and the binder (which is very durable) used continuously for subsequent volumes. Post paid, 25 cts. extra. It can be used for Harper's Weekly and other papers of similar size. If not entirely pleased, purchasers may return them within 30 days. Just the thing for libraries and reading rooms, and all who wish to file the Presses. 1amhp

THE NEW U. S. MINING LAWS.

The new Laws of 1872, governing the location and purchase of Placer and Quartz Mines and Agricultural Lands in Mining Districts of the U. S., printed in circular sheet, for sale at this office. Single copies, 25 cts.

Mining and Other Companies.

Owing to the time necessary to mail the present large edition of the M. & S. Press, we are obliged to go to press on Thursday evening—which is the very latest hour we can receive advertisements.

Benjamin Mill and Mining Company.

Location of principal place of business, San Francisco, California. Location of works, Devil's Gate District, Lyon county, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 15th day of March, 1874, an assessment (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, room 7, No. 401 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Saturday, the twenty-fifth day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the fifteenth day of May, 1874, to pay the delinquent assessment together with costs of advertising and expenses of sale. By order of the Board of Directors.

Office—Room 7, No. 401 California street, San Francisco, Cal.

Geneva Consolidated Silver Mining Company.

Location of principal place of business, City and County of San Francisco, State of California. Location of works, Cherry Creek Mining District, White Pine County, State of Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 15th day of March, 1874, an assessment (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, room 7, No. 401 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Saturday, the twenty-fifth day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the fifteenth day of May, 1874, to pay the delinquent assessment together with costs of advertising and expenses of sale. By order of the Board of Directors.

Office—Room 7, No. 401 California street, San Francisco, Cal.

Missouri Quicksilver Mining Company.

Principal place of business, San Francisco, Cal. Location of works, Clinchbar Mining District, Sonoma county, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 15th day of March, 1874, an assessment (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, room 7, No. 401 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Saturday, the twenty-fifth day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the fifteenth day of May, 1874, to pay the delinquent assessment together with costs of advertising and expenses of sale. By order of the Board of Directors.

Office—Room 7, No. 401 California street, San Francisco, Cal.

gether with costs of advertising and expenses of the sale. I. T. MILLIKEN, Secretary. Office—Room 14, 302 Montgomery street, San Francisco, Cal.

POSTPONEMENT.—The above sale is hereby postponed till Saturday, the eighteenth (18th) day of April, 1874, at same hour and place above mentioned. I. T. MILLIKEN, Secretary.

Hudson Gold Mining Company—Location

of principal place of business, San Francisco, Cal. Location of works, Cherokee Mining District, Plumas county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 15th day of March, 1874, an assessment (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, room 7, No. 401 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Saturday, the twenty-fifth day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the fifteenth day of May, 1874, to pay the delinquent assessment together with costs of advertising and expenses of sale. By order of the Board of Directors.

Office—Room 7, No. 401 California street, San Francisco, Cal.

Jefferson Gold and Silver Mining Company.

Location of principal place of business, San Francisco, Cal. Location of works, Brown's Valley, Yuba county, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 15th day of March, 1874, an assessment (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, room 7, No. 401 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Saturday, the twenty-fifth day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the fifteenth day of May, 1874, to pay the delinquent assessment together with costs of advertising and expenses of sale. By order of the Board of Directors.

Office—Room 7, No. 401 California street, San Francisco, Cal.

Land Purchasers' Association—Office, No.

425 Kearny street, San Francisco, Cal. Notice is hereby given, that at a meeting of the Directors or Trustees of this corporation, held on the 14th day of April, 1874, an assessment of ten dollars per share (being the 40th monthly installment on the subscription to the stock) was levied upon the capital stock of said corporation, payable immediately in United States gold coin, to the Secretary, at No. 425 Kearny street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 15th day of May, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 9th day of June, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office, No. 425 Kearny street, Room No. 2, San Francisco, California.

Lady Franklin Gold and Silver Mining Company.

Principal place of business, City and County of San Francisco, State of California. Location of works, Silver Mountain Mining District, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 15th day of March, 1874, an assessment (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at his office, 607 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Saturday, the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 15th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office, 607 Montgomery street, San Francisco, Cal.

Mount Saint Helena Gold and Silver Mining Company.

Principal place of business, San Francisco, Cal. Location of works, El Dorado county, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 15th day of March, 1874, an assessment (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at his office, 607 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Saturday, the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 15th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office, 607 Montgomery street, San Francisco, Cal.

Starlight Gold and Silver Mining Company.

Location of works, Humboldt County, Nevada. Notice is hereby given, that at a meeting of the Board of Directors, held on the 15th day of March, 1874, an assessment (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at his office, 607 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Saturday, the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 15th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office, 607 Montgomery street, San Francisco, Cal.

Virginia Consolidated Mining Company.

Location of principal place of business, San Francisco, State of California. Location of works, Kearsage District, Inyo County, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 15th day of March, 1874, an assessment (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at his office, 607 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on Saturday, the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 15th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office—No. 213 California street, San Francisco, California. (Room No. 13.)

Washington Mining Company—Location

of principal place of business, San Francisco, California. Location of works, Mariposa County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 15th day of March, 1874, an assessment (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on Saturday, the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 15th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office—No. 318 California street, San Francisco, California. (Room No. 13.)

Mansfield Gold Mining Company—Location

of principal place of business, San Francisco, California. Location of works, El Dorado county, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 15th day of March, 1874, an assessment (No. 1) of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the company, No. 331 Kearny street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on Saturday, the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 15th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office—Room 14, No. 331 Kearny street, San Francisco, California.

Public Notice is hereby given by order of Board of Trustees, that the annual meeting of the stockholders of the Linden Gravel Mining Company will be held on Saturday, the 18th day of April, at 2 o'clock P. M., for the purpose of electing a Board of Trustees for the ensuing year and to transact such other business as may come before the meeting, at the office of the company, No. 401 Montgomery street, room 7, San Francisco, April 17, 1874. CHAS. J. COLLINS, President

Silver Cord Mining Company—Location

of principal place of business, San Francisco, California. Location of works, Owyhee Mining District, Owyhee County, Idaho Territory.

Notice.—There are delinquent upon the following described stock, on account of assessment (No. 3) levied on the Fourteenth (14th) day of February, A. D. 1874, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Boyle, John T., Trustee.	193	400	\$300 00
Boyle, John T., Trustee.	251	25	18 75
Boyle, John T., Trustee.	252	25	18 75
Boyle, John T., Trustee.	253	25	18 75
Boyle, John T., Trustee.	254	25	18 75
Galloway, W. T., Trustee.	187	100	75 00
Galloway, W. T., Trustee.	229	50	37 50
Galloway, W. T., Trustee.	221	50	37 50
Galloway, W. T., Trustee.	222	100	75 00
Galloway, W. T., Trustee.	223	100	75 00
Galloway, W. T., Trustee.	224	100	75 00
Galloway, W. T., Trustee.	225	100	75 00
Galloway, W. T., Trustee.	226	100	75 00
Galloway, W. T., Trustee.	227	100	75 00
Galloway, W. T., Trustee.	228	100	75 00
Galloway, W. T., Trustee.	229	100	75 00
Galloway, W. T., Trustee.	230	100	75 00
Galloway, W. T., Trustee.	231	100	75 00
Galloway, W. T., Trustee.	232	100	75 00
Galloway, W. T., Trustee.	233	100	75 00
Galloway, W. T., Trustee.	234	100	75 00
Galloway, W. T., Trustee.	235	100	75 00
Galloway, W. T., Trustee.	236	100	75 00
Galloway, W. T., Trustee.	237	100	75 00
Galloway, W. T., Trustee.	238	100	75 00
Galloway, W. T., Trustee.	239	100	75 00
Galloway, W. T., Trustee.	240	100	75 00
Galloway, W. T., Trustee.	241	100	75 00
Galloway, W. T., Trustee.	242	100	75 00
Galloway, W. T., Trustee.	243	100	75 00
Galloway, W. T., Trustee.	244	100	75 00
Galloway, W. T., Trustee.	245	100	75 00
Galloway, W. T., Trustee.	246	100	75 00
Galloway, W. T., Trustee.	247	100	75 00
Galloway, W. T., Trustee.	248	100	75 00
Galloway, W. T., Trustee.	249	100	75 00
Galloway, W. T., Trustee.	250	100	75 00
Galloway, W. T., Trustee.	251	100	75 00
Galloway, W. T., Trustee.	252	100	75 00
Galloway, W. T., Trustee.	253	100	75 00
Galloway, W. T., Trustee.	254	100	75 00
Galloway, W. T., Trustee.	255	100	75 00
Galloway, W. T., Trustee.	256	100	75 0

Machine Builders.

ESTABLISHED 1851.

PACIFIC IRON WORKS,

First and Fremont streets,

SAN FRANCISCO.

IRA P. RANKIN, A. P. BRAYTON,
GEO. W. FOGG, Superintendent.

Steam Engines and Boilers,

MARINE AND STATIONARY,

IRON AND BRASS CASTINGS

Mining Machinery of Every Description

And all other classes of work generally done at first-class establishments, manufactured by us at the lowest prices, and of the best quality.

Particular attention paid to Jobbing Work and Repairs.

N. B.—Sole Agents for sale of HUNTOON'S CELEBRATED PATENT GOVERNOR.

GODDARD & CO.

FULTON

Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

TEAM ENGINES,

Quartz, Flour and Saw Mills,

Hayes' Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

M. E. corner of Tehama and Fremont streets, above Howard street, San Francisco. 3-47

THE RISDON

Iron and Locomotive Works.

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....\$1,000,000.

LOCATION OF WORKS:
Corner of Beale and Howard Streets,
SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors: Joseph Moore, Jesse Holladay, O. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggis,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS B. MEAD.....Secretary

PACIFIC

Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of

RAILROAD AND OTHER IRON

Every Variety of Shafting.

Embracing ALL SIZES of
Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames

HAMMERED IRON

Of every description and size.

Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention.

The highest price paid for Scrap Iron.

OCCIDENTAL FOUNDRY,

137 and 139 First street.....SAN FRANCISCO.

STEIGER & BOLAND,

IRON FOUNDERS.

IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Rolling Pan and Callahan Grate Bars, suitable for Burning Screenings.

Notice.—Particular attention paid to making Superior Shoes and Dies. 20v26.3m

ADAMS, SPRINGER & CO.,

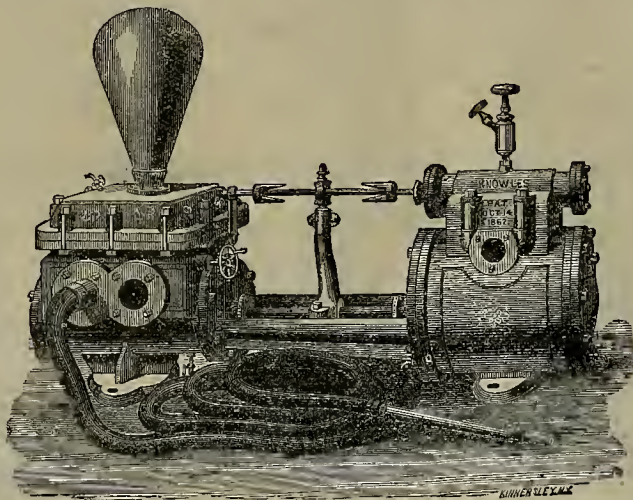
PACIFIC BRASS FOUNDRY,

LOOK FACTORY AND MACHINE SHOP,

No. 20 Fremont street, near Market, S. F.

Manufacture all kinds of Brass Goods, Brass Castings, Babbitt Metal and Brass Ship Work, Ship Locks, Brass Padlocks, with Cylinder Keys, Railroad and Express Locks. Locks of every description made on receipt of Sample Key. All orders attended to with promptness, and satisfaction guaranteed. 14v7-1f

KNOWLES' PATENT STEAM PUMP.



It has no Cranks or Fly-Wheel, and has no dead points where it will stop, consequently it is always ready to start without using a starting-bar, and does not require hand-work to get it past the center. Will always start when the steam cylinder is filled with cold water of condensation.

CENTRAL PACIFIC R. R., OFFICE OF THE GEN'L MASTER MECHANIC, SACRAMENTO, Cal., January 14, 1873.
A. L. FISH, Esq., Agent of the Knowles' Steam Pump, San Francisco.—Dear Sir: In reply to your inquiry as to the merits of the Knowles' Steam Pump, in use upon this road, I will say that it gives me great pleasure to report that they have performed their work well whenever called upon. In no instance have they failed. We have now over 30 of them in use on this road as fire engines, and pumping water for shop and station use. I consider the Knowles' Steam Pump the best in use, and prefer it to any other. Yours truly, A. J. STEVENS, General Master Mechanic.

A. L. FISH, Agent Knowles' Steam Pump.—Dear Sir: In answer to your inquiries, we state that the highest award for Steam Pumps at the Eighth or last Mechanics' Fair in San Francisco, was a First Premium and Diploma, awarded to the Knowles' Patent Steam Pump, as published in the Official List, September 23d, 1871.

A. S. HALLIDIE, President Board of Managers.
W. H. WILLIAMS, Sec'y Board of Managers Eighth Industrial Exhibition, M. I.

WE BUILD AND HAVE CONSTANTLY ON HAND

The Largest Stock of Pumps in the World,

And for Every Conceivable Purpose.

SOLE AGENT ON THE PACIFIC COAST FOR THE

CLAPP & JONES SUPERIOR STEAM FIRE ENGINE,
Challenging the World!

THE CELEBRATED BOOMER PRES,

For Wine, Cider, Lard, Paper, Wool, Hops, Hides, Tobacco, Rags, etc.—the Most Powerful in Use.

A. L. FISH, Agent,

Nos. 9 and 11 First Street, San Francisco, Cal.

P. S.—All kinds of new and second-hand Machines on hand.

10v26-lambp

WARING ROCK DRILL COMPANY.

SOLE PROPRIETORS AND MANUFACTURERS OF

WARING'S IMPROVED SELF-FEEDING

Rock Drill,

BY FAR THE MOST

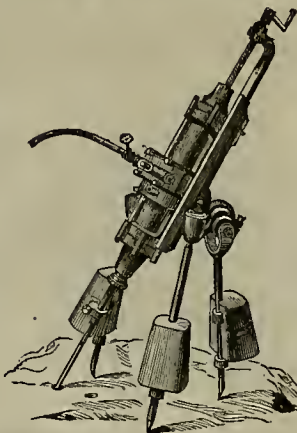
Simple and Effective Machine

FOR ALL DESCRIPTIONS OF

MINING, RAILROAD AND QUARRY WORK

Office, 835 Broadway, Cor. 13th street,

NEW YORK.



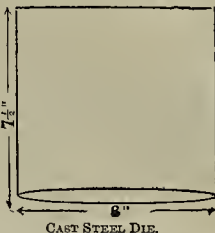
10v28-6m

CAST STEEL SHOE AND DIE COMPANY,

OFFICE—Room 28, Hayward's Building, 419 California St., S. F.

Patented CAST STEEL SHOES & DIES for Quartz Mills.

Price, 20 cents per Pound.

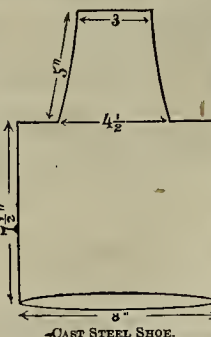


CAST STEEL DIE.

An improvement greatly needed—being Stronger, more Durable and Economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as bar steel; never break, keep their full striking surface. Battery of five shoes crushes one-ton more ore in 24 hours than Cast Iron Shoes, will wear as long as four sets of Cast Iron Shoes, and can be worn down to 1/2 inch in thickness. The stubs can be welded into Picks, Hammers, etc.

—ALSO—
Cast-Steel Tappets, Cams, Hammers, Gearing and Castings

OF ALL KINDS, A SPECIALTY.
It takes forty days to fill orders.



CAST STEEL SHOE.

UNION IRON WORKS, Sacramento.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

STEAM ENGINES, BOILERS,

CROSS' PATENT BOILER FEEDER AND SEDIMENT

COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,
SACRAMENTO CITY.

THOMPSON BROTHERS, EUREKA FOUNDRY,

129 and 131 Beale street, between Mission and Howard,
San Francisco.

LIGHT AND HEAVY CASTINGS,

of every description, manufactured. 24v16cr

Miners' Foundry and Machine Works,

OO-OPERATIVE,

First Street, bet. Howard and Folsom, SAN FRANCISCO

Machinery and Castings of all kinds.

CALIFORNIA BRASS FOUNDRY,

No. 125 First street, opposite Minna,
SAN FRANCISCO.

ALL KINDS of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Belts and Gongs of superior tone. All kinds of Cocks and Valves, Hydrant Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch. PRICES MODERATE. J. H. WEED. V. KINGWELL.

VULCAN IRON WORKS,

MANUFACTURERS OF

MACHINERY OF EVERY DESCRIPTION.

SOLE MANUFACTURERS OF

MOORE'S PATENT STORE HOIST.

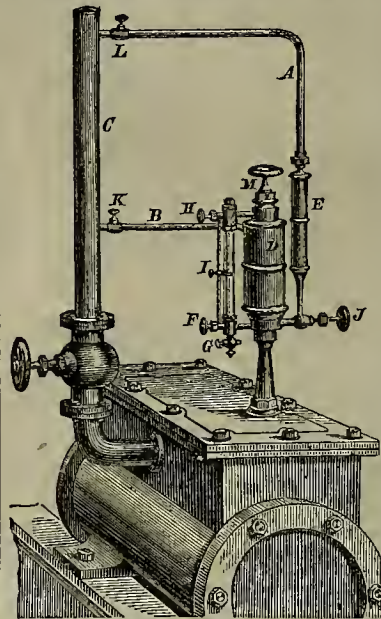
N. D. ARNOT, Manager,

15v28-3m

135 and 137 Fremont Street.

Machinery.

N. Seibert's Eureka Lubricators.



THE HIGHEST PREMIUM

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; if then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stops; H, F, valves to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Man factured by California Brass Works, 125 First street, S. F. 24v23tf

THE SELDEN

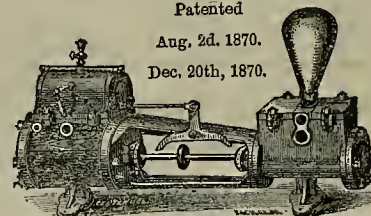
DIRECT-ACTING STEAM PUMP,

A. CARR, Manufacturer & Proprietor.

Patented

Aug. 2d, 1870.

Dec. 20th, 1870.



Combining simplicity and durability to a remarkable degree. Its parts are easy of access, and it is adapted to all purposes for which Steam Pumps are used.

As a Mining Pump it is Unsurpassed.

—ALSO—

STEAM, GAS & WATER PIPE, BRASS WORK STEAM & WATER GAUGES, FITTINGS, ETC.

CARR PATENT STEAM RADIATOR.

Send for Price List and Circulars. Address,

A. CARR,

10v28-1y

43 Courtland Street, New York.

THEODORE KALLENBERG.

MACHINIST,

and Maker of Models for Inventors. All kinds of Dies Stamps and Punches made. Also, all kinds of Small Gears Cut.

Repairing done on very Reasonable Terms and in the best manner. No. 32 Fremont street, S. F. 19v23-3m

MILLMEN.

Boss' Quicksilver Pump saves labor and waste of metal. Address, M. P. BOSS, Bullionville, Nev. 15v7-3m

TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. E. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

All persons infringing on either of these patents WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under Craig's, Rice's, Macey's and Hoekin's patents.

I Guarantee Full Indemnity to all my Customers.

Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an Improved LITTLE OLAN.

For further particulars apply to

R. HOSKIN, D^{ch} Flst,

Or R. E. & J. CRAIG, Room 6, 240 Montgomery st., S. F.

WILLIAMSON & CORY, Marysville, Agents

Dutch Flst, August 10, 1873. 6v27-2m

EAGLE IMPROVED CHLORINIZING AND DESULPHURIZING FURNACE.

(Patented July, 1873.)



The Cheapest and Most effective Furnace now in use

Parties desirous of building above furnace, or for any information on same, address,

I. T. MILLIKEN,

Ja31-2tam No. 302 Montgomery st., room No. 14, S. F.

STEEL SHOES AND DIES

FOR QUARTZ MILLS.

Made by our improved process after many years of patient research and experiment. We have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for



Strength, Durability and Economy.

Will wear three times longer than any iron shoes.

BUILDERS AND CONTRACTORS

Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and general Mining Machinery in all its details and furnishes of Mining Supplies.

All orders promptly filled.

MOREY & SPERRY,

Liberty St., N. Y.

Examination solicited. 9v28-1y

THE ONE-PLUNGER JIG,

Delivered on R. R. Car at Denver, Col., or St. Louis, Mo.

Separates in one and the same operation—1. galena and sulphide of silver; 2. pyrites or blende; 3. tailings, containing no valuable parts; or, 1. gold; 2. pyrites; 3. tailings (quartz, etc.) containing no valuable parts; or, 1. copper; 2. tailings, containing no valuable parts. The One-Plunger Jig can be combined with existing stamp-mills with highly important advantage, as after amalgamation it will recover completely all fine metal and all base ores and all mercury out of tailings. It concentrates all fine metal ores to such cleanliness that low grade ores can be shipped, after concentration, as first-class ores. Its feed and discharge are automatic. Its construction offers better guarantee against loss and repairs than any other apparatus in use. For particulars, apply to the inventor,

F. CAZIN,

Mining and Civil Engineer, Denver City, Col.

L. Box 2225. 13v28-1y

STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

10v27tf J. HENDY, No. 92 Fremont Street.

CROCKER'S PATENT TRIP HAMMER QUARTZ BATTERY.



This machine, complete, weighs 1,500 lbs. Has an iron frame, five steel arms with stamps weighing 17 lbs. each, which strike 25 blows per minute, in a mortar provided with screens on both sides, and crushes 750 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$300.

G. D. CROCKER,

17v26-1f 315 California street, San Francisco.

Metallurgy and Ores.

JOHN TAYLOR & CO.,

IMPORTERS OF AND DEALERS IN

ASSAYERS' MATERIALS

Chemical Apparatus and Chemicals.

Druggists' Glassware and Sundries,

PHOTOGRAPHIC GOODS, ETC.,

512 and 514 Washington street, SAN FRANCISCO

We would call the special attention of Assayers Chemists, Mining Companies, Milling Companies, Prospectors, etc., to our large and well adapted stock of

ASSAYERS' MATERIALS

—AND—

Chemical Apparatus,

Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.

Our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for computation of assays in Grains Ounces, will be sent free upon application.

7v25-1f JOHN TAYLOR & CO.

THE

WHELPLEY & STORER ORE MILL,

215 AND 217 MAIN STREET,

BET. HOWARD AND FOLSOM, SAN FRANCISCO

Has the most Complete Machinery and Appliances

—FOR—

Crushing, Sampling Pulverizing and Working Ores, Minerals, Paints, etc.

We find the highest cash purchasers for GOLD, SILVER, COPPER AND LEAD ORES; pay special attention to consignments and execute with promptness any orders entrusted to our care, and assure the miner he can save from 8 to 10 per cent. of expense by consigning directly to these works.

GEO. D. WYMAN,

13v28-1f Proprietor.

Varney's Patent Amalgamator.

These Machines Stand Unrivaled.

For rapidly pulverizing and amalgamating ores, they have no equal. No effort has been, or will be spared to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits.

They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows:

The pan being filled, the motion of the miller forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular flow between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.

Sellers made on the same principle excel all others. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed.

Mill-men are invited to examine these pans and settlers for themselves, at the office, 229 Fremont Street, San Francisco.

ORE BAGS FOR SALE

IN QUANTITIES TO SUIT

Apply to

CROSS & CO.,

etf 316 California street, San Francisco.

Richardson & Co., Copper Ore Wharves, SWANSEA.

RICHARDSON & Co. have been for thirty years established in Swansea as Agents for the preparation, Sampling, Assaying, and sale of Copper, Silver, Gold, Lead, Zinc, and all other Ores and Metals, for which they have extensive Warehouses and Wharves under cover, 1,000 feet of Quay Frontage within the Floating Dock, and the most complete Machinery and Appliances. They are also prepared to make advances against Ores in anticipation of realization, and to guarantee all payments when required.

24v26-1y

CALIFORNIA

Quartz Crushing & Ore Sampling MILLS.

Noe. 413 & 415 Mission st., bet. First & Fremont, S. F.



Ours is the OLDEST, LARGEST and MOST EXTENSIVELY KNOWN establishment of this kind on the Coast.

We have the best facilities for Crushing, Sampling and Pulverizing all classes of Gold, Silver, Copper and Lead Ore and other minerals.

We also crush and pulverize all kinds of Marble, Fire-Clay, Bricks, Coke, Cement, etc., upon the shortest notice, for which we have special mills.

Reliable information furnished to miners and ore dealers concerning shipments, freight, prices, etc.

Prompt execution of all orders. Faithful attention to business entrusted to us.

Abundant storeroom without extra charge.

Ja31-1f "JIM" WHITLATCH, Sup't.

E. N. RIOTTE. JAS. L. BEYEA. S. O. BROWN.

AUBURN MILL COMPANY,

Reno, Nevada.

Purchase Silver Ores in quantities of ten tons and upward, delivered on board the cars at San Francisco or Oakland at the annexed Net Rates, WITH NO CHARGE FOR SAMPLING OR REDUCTION. On lots of less than 10 tons, freight to Reno will be deducted.

Special Rates for Gold Ores.

On Gold contained in Silver Ores to the amount of \$30 and upwards, 63 per cent. will be paid. When less than \$30, and above \$10, the amount will be added to the Silver value. Sacks promptly returned free of charge. Ores sampled by Battery or Sampling Mill as shipped may be clean, and returns made promptly by cheque on San Francisco.

Rates:

Assay Value.	Per Cent.	Assay Value.	Per Cent.	Assay Value.	Per Cent.	Assay Value.	Per Cent.
\$ 60	25	\$ 90	38	\$125	47	\$160	57
66	27	93	39	128	48	175	58
70	28	96	40	132	50	188	59
73	30	98	41	137	51	190	61
76	31	100	42	142	52	210	62
80	33	107	43	146	53	220	63
84	35	112	44	150	54	230	64
88	37	118	45	158	56	240	65

And on intermediate values in proportion.

C. A. LUCKHARDT, Agent.

21 First St., San Francisco.

S. O. BROWN, Manager,

Reno, Nevada. 3v28-6m

Nevada Metallurgical Works,

21 First street.....San Francisco.

Ores worked by any process.

Ores sampled.

Assaying in all its branches.

Analysis of Ores, Minerals, Waters, etc.

Plans furnished for the most suitable process for working Ores.

Special attention paid to the Mining and Metallurgy of Quicksilver.

E. N. RIOTTE,

C. A. LUCKHARDT,

Mining Engineers and Metallurgists.

Morris' Settler and Amalgamator.

PATENTED MARCH 25, 1873.

An important improvement in milling. Cheap, light, efficient and durable. Gains Quicksilver on working tailings. Is discharged from the surface in the center instead of the side, by means of a Siphon which extends to near the center of the Settler. Heaviest casing weighs only 135 pounds. The sides and bottom of the Settler are made of wood, as also Mullers, placed vertically—the friction of which brightens the quicksilver. One of these machines is in daily operation at No. 616 Merchant street, (basement), San Francisco. Parties desiring information as to rights of use, purchase, etc., can address,

FREDERICK MORRIS,

616 Merchant St., S. F.

Ores Assayed and Amalgamated. 8v28-3m

RODGERS, MEYER & CO.,

COMMISSION MERCHANTS,

ADVANCES MADE

On all kinds of Ores, and particular attention

PAID TO

CONSIGNMENTS OF GOODS.

4v16-3m

O. W. STRONG.

W. L. STRONG.

STRONG & CO.,

Metallurgical Works,

No. 10 Stevenson Street, near First, SAN FRANCISCO.

We purchase high grade Gold and Silver Ores, Bullion, Etc. Ores worked and tested with care; also, Ore Assays of Gold, Silver, Copper, Lead, Tin, Iron, Manganese, Cinnabar, Nickel, Etc.

LEOPOLD KUH,

(Formerly of the U. S. Branch Mint, S. F.)

Assayer and Metallurgical CHEMIST,

No. 611 Commercial Street,

(Opposite the U. S. Branch Mint,

SAN FRANCISCO CAL. 7v21-3m

Important to Miners and Mill Men.

Silver-Plated Copper Amalgamating Plates, for Saving Gold.



Of all sizes and in any quantity, furnished to order. Full instructions sent for operating. Particular attention given to plating goods for Builders, Plumbers, etc. Hotel and Restaurant work registered.

SAN FRANCISCO GOLD AND SILVER PLATING WORKS,

655 Mission street, San Francisco.

2v25-3m E. G. DENNISTON, Proprietor.

CHARLES F. KIRCHNER,

Sampler and Crusher of Ores,

NO. 11 DRUMM STREET,

San Francisco.

PLATINUM

Vessels, Apparatus, Sheet, Wire, Etc., Etc.

For all Laboratory and Manufacturing Purposes

H. M. RAYNOR,

25 Bond street, New York.

Platinum Scrap and Native Platinum purchased.

Quicksilver.

Parties working Quicksilver Ores can obtain the right to use highly successful patented improvements for condensing fumes and working soot, by addressing

F. FIEDLER,

13v28-3m New Alameda

The California Powder Works

No. 314 CALIFORNIA STREET.

SAN FRANCISCO.

Manufacturers and have constant on hand

SPORTING,

MINING,

And BLASTING

POWDER,

Of SUPERIOR QUALITY, FRESH FROM THE MILLS. It being constantly received and transported into the interior, is delivered to the consumer within a few days of the time of its manufacture, and is in every way superior to any other Powder in Market.

We have been awarded successively

Three Gold Medals

By the MECHANICS' INSTITUTE and the STATE AGRICULTURAL SOCIETY for the superiority of our products over all others.

We also call attention to our

HERCULES POWDER.

Which combines all the force of other strong explosive now in use, and the lifting force of the BEST BLASTING POWDER, thus making it vastly superior to any other compound now in use.

A circular containing a full description of this Powder can be obtained on application to our Office.

10v20-3m JOHN F. LOHSE, Secretary.

San Francisco Boiler Works,

123 and 125 Beale Street.....SAN FRANCISCO

F. I. CURRY,

(Late Foreman of the Vulcan Iron Works,) Proprietor.



High and Low Pressure Boilers of all Descriptions.

SOLE MANUFACTURERS OF THE CELEBRATED SPIRAL BOILER.

SHEET IRON WORK of every description done at the Shortest Notice.

All kinds of JOBBING and REPAIRING promptly attended to. 17v25-8m

Steam Boiler Manufactory

—OF—

JAMES H. SHANLEY, Successor to D. McDonald,

Oregon street, below Front, San Francisco.

All Sorts of Steam Boilers Made to Order and Repaired.

Also, all kinds of Sheet Iron Work done promptly, and at prices to suit the times. 1v27

WATER PIPE,

FOR SALE CHEAP.

WE HAVE ON HAND

5,000 FEET OF 4-INCH PIPE,

5,000 FEET OF 5-INCH PIPE,

Made of No. 16 Sheet Iron, which we will sell at a very low price.

FRANCIS SMITH & CO.,

124-1tf 130 Beale street.

McAfee, SPIERS & CO.,

BOILER Makers,

AND GENERAL TUNNERS,

Howard st., between Fremont

THE KNOX & OSBORN QUICKSILVER FURNACE.

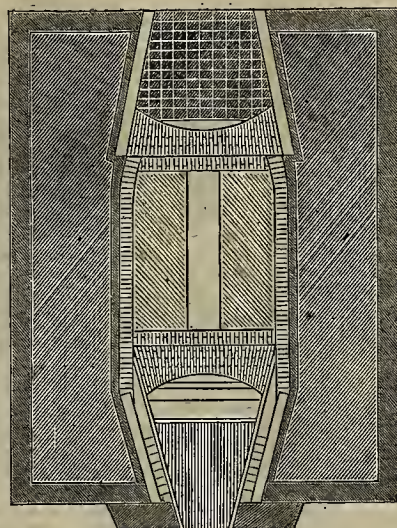
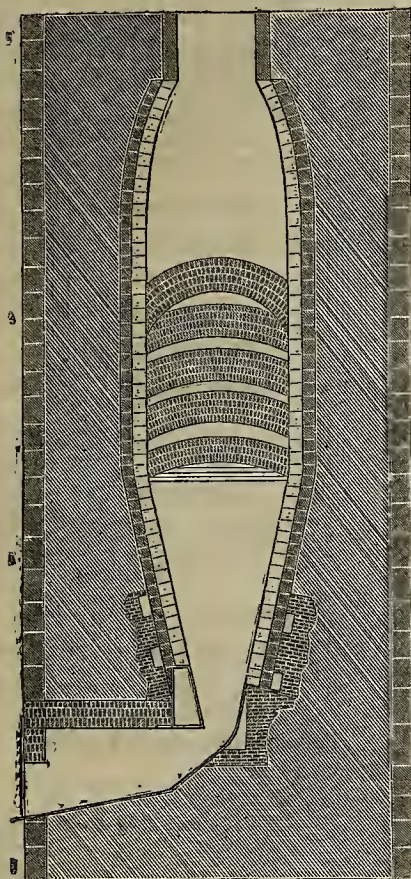


Fig. 3.—Horizontal section at Fire-Grate Level.

THIS FURNACE REDUCES CINNABAR, AND
WORKS CLOSER TO AN ASSAY

And at **LESS COST** per ton than any other furnace. It will work continuously Twelve to Twenty-four months without stopping.

No Man Has Ever Been Salivated

Or otherwise affected by the mercury about the furnace, either in operating it or making repairs. For full particulars, plans, etc., apply at

19 AND 21 FIRST STREET, SAN FRANCISCO.

TO **KNOX & OSBORN.**

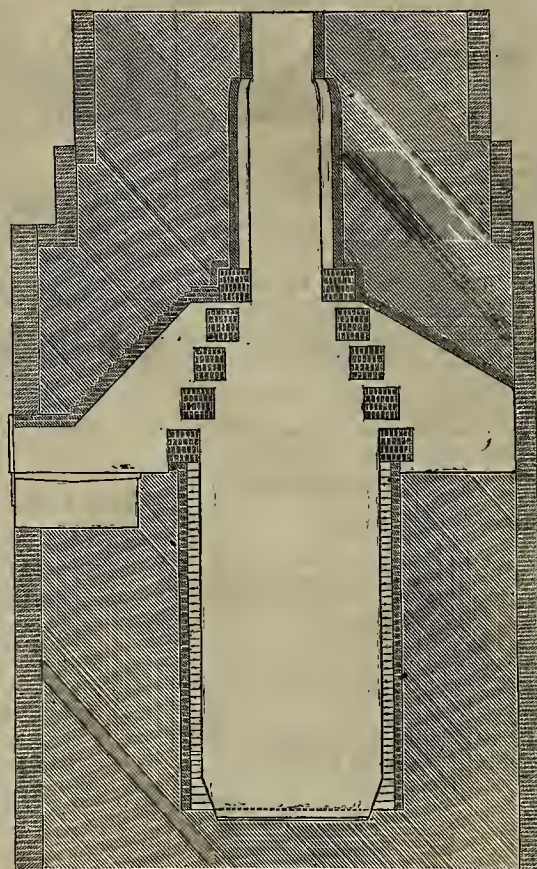


Fig. 2.—Cut Transversely from Fig. 1.

Fig. 1—Long Section of Furnace, main and vapor way arches.

16v28-cow-3m-16p

KABATH & LADD,

109 California Street, SAN FRANCISCO.

HAVE JUST RECEIVED IN PRIME ORDER, PER
"CLEOPATRA,"

A FRESH SUPPLY OF

EASTERN IRON KEG POWDER,

Manufactured by the World-Wide Known

LAFLIN & RAND

POWDER COMPANY.

PATENT SAFETY FUSE,

Electrical Blasting Apparatus, Electrical
Fuse, Rubber Tubing,

LEADING AND CONNECTING WIRE CAPS, ETC.,

AND EVERYTHING IN THE LINE OF

MINE & MILL SUPPLIES.

Send for Further Information.

SMELTER OR ASSAYER.

Advertiser, who has had considerable experience in the treatment of Silver and Silver-lead Ores, both in Europe and America, is a thorough practical Assayer and Analyst of the Chemical Society. Key-² engagement in either of the above descriptions unexceptionable. Address as attended this paper. April 18-19
1874. aranted. 1009

JOS. WAGNER,

113 and 115 Mission Street.....SAN FRANCISCO

MANUFACTURERS OF
**FRENCH BURR
MILL-STONES**

—AND—

Portable Mills.

—ALSO—

MILLS

Especially adapted for
GRINDING QUARTZ.

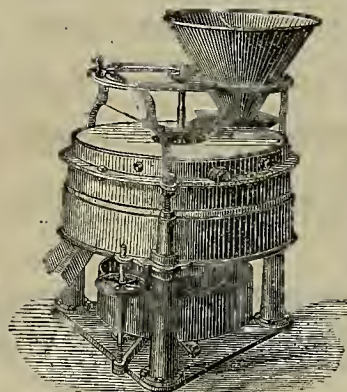
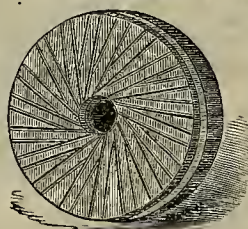
AGENT FOR DUFOUR & CO.'S CELEBRATED

Dutch Anchor Bolting Cloths.
BOLTING CLOTHS MADE UP.

Burke's Shunt Machine, Bran Dusters, Mill Irons, Spindles, Bails, Drivers, Steps, Regulating Screws, Silent Feeders, Pulleys, Proof Staffs, Hoisting Screws, Baile and Pins, Conveyor Flights, Plaster and Leather Belting.

Mill Picke, Mill Picks Dressed, Mill Stones Re-
paired and Rebuilt.

Mill Stones Balanced with FELLEBAUM'S PATENT BALANCE, of which I am sole proprietor for California, Oregon, and Washington Territory. 12v8-2am-3m



GIANT POWDER.

Patented May 26, 1868.

THE ONLY SAFE BLASTING POWDER IN USE.

GIANT POWDER, NO. 1,

For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

GIANT POWDER, NO. 2,

For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc. Its EXCLUSIVE use saves from 30 to 60 per cent. in expenses, besides doing the work in half the time required for black powder.

It is the only Blasting Powder used in Europe and the Eastern States.

BANDMANN, NIELSEN & CO.,

General Agents, No. 210 Front Street.

v22-3m16p

THE PACIFIC REDUCTION WORKS,

GUIDO KUSTEL, Superintendent,

WILL PURCHASE

Gold and Silver Bearing Ores, Cuperiferous Silver Ores,

GOLD SULPHURETS, ETC., AT THE HIGHEST RATES,

OR WORK THE SAME FOR OWNERS' ACCOUNT.

The works will commence operations on or about the 1st of April. Sampling, Assaying of all kinds of Ores, and working of small lots of ore in any desired way, will be promptly attended to and reliable results returned.

mr21. 16p

OFFICE—210 FRONT STREET, SAN FRANCISCO.

N. W. SPAULDING,

**Saw Smithing and Repairing
ESTABLISHMENT.**

Noe. 17 and 19 Fremont Street, near Market.



MANUFACTURER OF

SPAULDING'S

Patent Tooth Circular Saws.

They have proved to be the most durable and economical Saws in the World.

Each Saw is Warranted in every respect.

Particular attention paid to construction of
Portable & Stationary Saw Mills.

MILLS FURNISHED AT SHORT NOTICE
At the lowest Market Price

W. T. GARRATT & CO.

CITY

Brass and Bell Founder,

Corner Natoma and Fremont Streets,

MANUFACTURERS OF

**Brass, Zinc and Anti-Friction or Babbet Metal
CASTINGS,**

Church and Steamboat Bells,

**TAVERN AND LAND BELLS, GONGS,
FIRE ENGINES, FORCE AND LIFT PUMPS.**

Steam, Liquor, Soda, Oil, Water and Flange Cocks, and Valves of all descriptions, made and repaired. Hose and all other Joints, Spelter, Solder and Copper Rivets, etc. Gauge Cocks, Cylinder Cocks, Oil Globes, Steam Whistles. **HYDRAULIC PIPES AND NOZZLES** for mining purposes, Iron Steam Pipe furnished with Fittings, etc. Coupling Joints of all sizes. Particular attention paid to Dietillery Work. Manufacturer of "Garratt's Patent Improved Journal Metal." Highest Market Price paid for OLD BELLS, COPPER and BRASS. 6-11

W. T. GARRATT,

JAMES HILLMAN,

W. T. LITTLE.

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Extension Steps for Railway Cars.

Henry Albert, of this city, has procured a patent, through the Scientific Press Patent Agency, for an improvement in extension-steps for railway cars, the plan of which is shown in the engraving on this page. The steps are constructed so that they may be extended down near the ground, when the cars stop at a station, in order that the passengers may easily mount to the platform; but when the cars are ready to start, the steps can be drawn up to the ordinary length, and thus be out of the way of any obstruction on the road.

In the engraving, A is the end of a railroad car, and B, the platform; C, D, and E, are the three steps ordinarily attached on each side of the platform. These permanent steps only reach half way to the ground, and are always inconvenient, especially at stations where there are no platforms. To remedy this, Mr. Albert arranges side-boards, f, to slide up and down along the side-boards, g, of the permanent steps; suitable guides, i, being provided. The sliding side-board, f, which is next to the end of the car, extends upward along the side of the car at the proper angle, as at j, and this upward projecting portion also moves between dovetailed guides, k, l, on this side of the car. The lower ends of the sliding side-boards, f, are connected by a step, m, so that they will move together. Each of the boards, f, is provided with a longitudinal slot, n, which is as long as the distance which it is desired to extend the steps, and a pin, o, projects from opposite the end of the lower permanent step, through the slot.

Between the lower permanent step, E, and the connecting step, l, of the sliding portion, is another step, O, which has a square tenon on each end. This square tenon is of a proper size to fit snugly in the slot, m, and move up and down along it when required. Two links, p, p, shown in the step, and in detail in the sectional view, are joined together at one end, while one of their opposite ends is attached to the projecting pin, o, of the permanent steps, and the other to a pin projecting from the end of the tenon of the sliding steps. These jointed links are just long enough to support the sliding steps at the proper distance between the connecting step, l, and the lower permanent step. On the inner end of each of the upper guides, i, of the sliding boards, a pin or lug, q, is provided, at a point which will be opposite to the step, O, and also other pins, q, will be opposite the lower permanent steps when the sliding portion is extended. Other projections, r, are secured to the step, O, and also to the lower permanent step at right angles to the lugs, q, so that when the sliding steps are lowered into position, the lower pins, q, will first strike the pins, r, of the step, O, and carry it down to its proper position, or until the hinged links are fully extended.

When fully lowered to this point, the upper pins, q, will have come against the pins, r, on the permanent step, so as to aid in supporting the extension. To accomplish this movement properly, the lower projections, q, on the guides, are shorter than the upper ones, q, so that they will pass the projections, r, on the permanent steps, without striking; and, as a consequence, the projections, r, on the steps, O, are closer to the guides than those on the permanent steps, so that the short pin will strike it, in order to force it to its proper position. When the steps are extended, the step, O, will be held firmly in its position by the square tenons which fit in the slot at each end.

When the steps are drawn up, the lower connecting step forces the step, O, upward until it strikes the lower permanent step. This step can be extended or contracted by a lever, V, which fits closely against the end of the car. This lever can be a single bar, or of a V-shape, as represented in the drawing. In the latter case, one arm of the V-lever will be secured on a swivel block, W, which is attached to the sliding extension, j, of the side-board, so that the brakeman, or other person, can, as soon as the cars cease moving, lower the steps.

By this arrangement the inventor provides telescopic or extension steps, which can be either lowered or elevated as necessary, thereby avoiding trouble and annoyance to passengers getting on board or leaving railroad cars.

The steps on one side of the cars, shown in the cut, are down, and on the other side are represented as up. The cut to the left shows the operating mechanism more in detail.

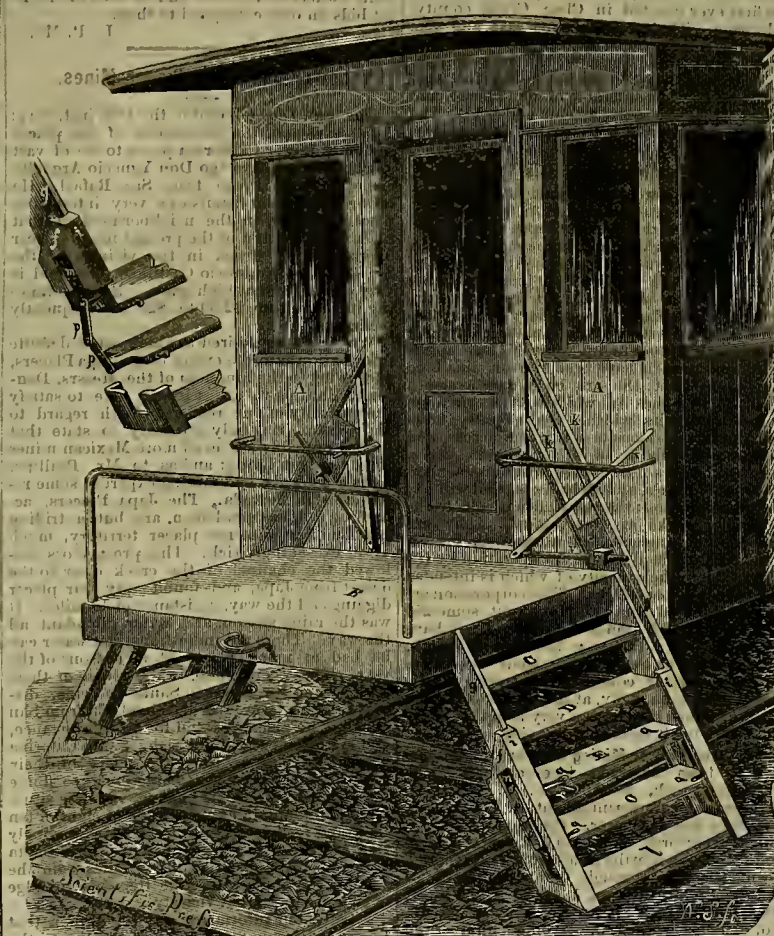
The Gold Run Hydraulic Company.

The claims of this company at Gold Run, Placer county, have been worked more or less for fifteen years. It is at present owned by the Cedar Creek (English company) and Miner's Ditch Company. To W. W. Anderson, for two years superintendent of these claims, and a miner of many years' experience, we are indebted for the principal items following. The claims are 2,400 feet long, by 600 feet wide. The first working comprised acres of gravel

in a month. Ran about five months in 1873. The largest clean-up, \$7,700. Gold, fine. Six to nine flasks of quicksilver are deposited during a run. In warm weather, one-third to one-half a flask is lost; and, during cold weather, about a flask gets away. Had the old bank and present facing been worked together—say, 200 feet in height—the ground would have worked at a great deal better advantage.

Blasting in Hydraulic Mines.

Perhaps all of our readers are not aware of the full extent to which powder is used in hydraulic mines. At Dutch Flat giant powder is employed to break up the boulders so that the fragments will pass through the sluices, leaving



ALBERT'S EXTENSION STEPS FOR RAILWAY CARS.

worked down with old fashioned hand pipes to the depth of about 100 feet on the average. The company are now piping over the same ground, taking it down some 100 feet deeper. They are still leaving a large deposit of unknown depth to the bed rock, which can only be worked after the completion of the tunnel mentioned in a previous issue. Two of Hoskin's giants are used for piping. For convenience of handling in front, and to gain a more concentrated stream, these pipes were made by special order about 4 1/2 feet longer than those of ordinary construction, being 12 feet in full. Including waste water 840 inches are used daily. Water rats in this district are 12 1/2 cents per twenty-four hours.

This sluices of this company are 1,500 feet long and four feet wide; water, four to five inches deep; grade, seven to seven and a half inches in 12 feet. Boulders, one foot or more in diameter, pass "finely" down the sluice. Eight hands are employed, running 24 hours.

Yellow pine and pitch are used for lighting up the diggings in this section, one to one and a half cords being used nightly in some of the claims. Cost, \$4 a cord. Clean up about once

no rocks and stones corded up, as formerly, on the bed rock of old diggings. A system of "top blasting" is practised, followed by breaking open giant cartridges and pouring the powder on to the rock. This is sometimes built over with clay to hold it in place or gives greater effect to the blast. A fuse and cap explode the charge. Huge boulders which cannot be sledged, nor blasted (without drilling) by black powder, are thus quickly reduced, pitched into the sluices, and entirely got rid of.

Pipe clay, the terror of many mining claims in early days, is now disposed of by blasting with giant powder. After the blocks of clay are rolled down from the face of the diggings by this powerful hydraulic pipes, a "clay auger" is sent with ease into the center of each. This is followed by one-quarter or more of a cartridge of giant powder, with fuse attached. When all is prepared, the miner fires in succession perhaps 20 shots by aid of a hot iron and rod. This disintegrates the cement so that it is practicable to reduce it by action of the water, and prevent solid particles of clay from robbing the sluices as formerly, by carrying off gold first imbedded in its sticky surface.

Pullman Cars and Air Brakes in England.

The English journals of recent date contain numerous articles complimentary to the railway systems of this country. They refer more directly to the Westinghouse air brakes and Pullman palace cars. A great number of careful and accurate trials were made with reference to the efficiency of the air brakes system, the results of which proved in every way satisfactory. It seems rather strange that this system was not before adopted in England, since it has been in use with such success in this country. However, some of the more conservative individuals in that conservative isle did not believe in anything new or anything American, on general principles, and it was not until the efficiency of the apparatus was forced upon them that they consented even to try it. As Englishmen are, however, conservatives, willing to adopt any economical arrangement, after it is once proven to their satisfaction, the Westinghouse brake will probably be extensively used. They do not like the idea of a proposed change, but when it is once effected and is advantageous, they allow themselves to be overcome.

The latest trials have been with the Pullman palace cars, something which Englishmen with their love of ease ought all to appreciate. They have been placed on the Midland Railway, and judging from the reports in the English papers, satisfy even the fastidious Britishers with their ease of motion and elegant fittings. Still the cars are as yet only considered as an "experiment," as the following item from a prominent London paper will show: "The manager of the Midland line, Mr. Allport, has always shown that innovations—if they are but improvements—have no terrors for him; and as he was the first railway manager to run third-class carriages in all trains, so he is the first to recognize the undeniable advantages offered by the use of the Pullman cars. As we learned by personal experience of the most gratifying kind, the passenger in the Pullman car has comforts beyond those of the best first-class carriage ever made, and, in spite of the vexatious smallness of our island, which prohibits journeys of a length which is common in the greatest country on earth, we venture to predict a very fair amount of success for this new experiment on the Midland Railway."

The reports go on to describe the cars in detail, size, build, adornment, etc. They speak of the greatest novelty being the facility afforded for passage from one car to another, and they also speak of the ease with which they start up when steam is turned on the locomotive, attributable to the "Miller platform." Of course there will eventually arise something to grumble about, or it would not suit the British public, and this something will most probably be the charges for riding on these cars. However, as Englishmen usually travel with elaborate outfits, calculated to be conducive to personal comfort, all of which is expensive and troublesome, they ought not to growl about paying a little extra for increased comfort and better accommodations. Those "journsying" about the "tight little island" can in a short time do so with greater ease, the only hindrance being that the distances are so short. "Tip" Dorrit, Little Dorrit's scape-grace brother, when traveling in Switzerland was possessed of an equipment so elaborate and extensive, that, as Dickens expresses it, the only fear was that the world would not afford a proportionate amount of travel. This may be the case with the Pullman cars in England, as the shortness of the routes prevents full justice being done to the cars.

THE WHITE PINE TUNNEL.—A bill is before the Senate granting to William P. Walton the right to construct a tunnel, nine miles long, through White Pine Mountain, Nevada, together with the right to purchase six sections of non-mineral land, south of this tunnel, at \$1.25 per acre, and this right to purchase at \$5 per acre, all mineral lands discovered by the tunnel, provided that local mining laws do not prevent such purchase.

The Senate Mining Committee has received the resolutions of the Nevada miners' meeting protesting against the adoption of the Comstock Lode and Sinter Tunnel amendments to the mining bill.

CORRESPONDENCE.

Notes of Travel in Colorado.

(By our Traveling Correspondent.)

EDITORS PRESS:—I have much that is interesting to write about, which would be pleasing to the general reader; but knowing the greater percentage of your readers to be connected with, or interested in, mining, I will confine myself to that subject. To get to this district from the main trunk line of the railway east, the traveler diverges from Cheyenne, Wyoming Territory, on the Union Pacific Railroad, south to the city of Denver, the capital of Colorado Territory. Distance, 110 miles; thence nearly northwest to Floyd Hill, via the Colorado Central Railroad (passing Golden), distance about 33 miles; from there to Georgetown, via Idaho Springs by stage, distance, 15 miles. Total distances from Cheyenne 153 miles, and total cost \$17, currency; at which place you are in the center of

Griffith District.

During the months of August and September, 1859, the Griffith brothers, with a party of 11 men, prospected for gold in what is now Clear Creek county. On the 17th day of September of that year George F. Griffith discovered the Griffith lode. Other discoveries were soon made, which formed the nucleus around which a new district was organized. Twenty-six men were at the organization, and by unanimous vote a large portion of the upper part of what is now Clear Creek county was named the Griffith district. At this time the mining season was far advanced. A few hundred dollars had been washed out of the Discovery claim on the Griffith lode; but as it was the general impression at that time that snow would fall to great depth in the valley of South Clear creek, the new district was entirely abandoned during the winter of 1859 and '60. Early in the spring of 1860 the Griffith brothers began to build a wagon road from Central City to the new mines, and completed it in July. A miners' meeting was held on the 11th day of June, and the town of the new district was called Georgetown, in honor of George F. Griffith, the discoverer of the first lode. The early pioneers of Georgetown, you may readily grant, had some pluck, when you are told that with a working force of from five to 60 men during the years 1860, '61, '62, '63 and '64 the entire district produced less than \$200 in gold.

The lodes were large, well defined and all that, but there was too much galena in the ore. Old California miners were nonplussed. If galena was found in a lode, it was not even recorded; and the necessity of a freer circulation of such papers as the *Mining and Scientific Press* may be inferred from the fact that ordinarily intelligent men lived in this rich district for five years without discovering that this was a silver region. We say that the *Press* should be circulated, because nature has ordained that the American people are to become the great mining people.

At this present time Georgetown and vicinity has a population of about 3,000 people, and, though the "thirst for gold" led to its occupancy, it is now demonstrated that a smaller percentage of gold is contained in the bullion shipped from this district than from any other silver producing region in America. The county officers are good men, and the police regulations of the town and county are exceptionally good.

H. A. Spruance, one of our oldest San Francisco wine merchants, is Recorder of the county.

The following are some of the principal mines that I had the pleasure of visiting, together with the different reduction-works connected with the same: the first of which was the

Pelican Silver Mining Company.

This mine is not incorporated; is owned by E. S. Streeter, Thomas McCunniff, James C. Ford, E. Y. Naylor and Jacob Snider. Thos. McCunniff, Supt., and E. Y. Naylor, Secretary, and Treasurer.

This company's property consists of twelve different lodes, the principal ones of which are the "Pelican," "Gillah," "Bellwether," "Forest," "Unicorn," and others, containing 16,000 feet in length (more or less). These lodes constitute the above named company, and are located about two miles nearly west of Georgetown, on Sherman and Republican mountains; situated at an elevation of 10,000 feet above the sea level.

This mine was first discovered in the float in the spring of 1868, by E. S. Streeter, and the vein finally struck in December, 1870. It has been successfully worked ever since, yielding on the average \$300,000 annually. Some four of their locations are covered by U. S. patents, and this company have expended some \$200,000 in securing patents and buying off adverse claimants, to perfect their titles.

The Development of these Mines

Consist of numerous drifts, shafts, slopes, etc., aggregating some 3,500 feet, and four tunnels, covering in length over 1,200 feet. Numbers 1 and 2 are now the principal openings to the vein. No. 2½ is now in some 510 feet, and within 200 feet of the lode, working under contract day and night. These different tunnels strike the vein at 150, 250 and 450 feet from the surface and tunnel. No. 3 will strike the lode

at a depth of 700 feet. The ore body in these locations runs from a few inches to several feet in width. The walls are a mixture of porphyry and granite; the general country rock is granite; the ores contain some half dozen minerals, the principal of which is silver, averaging some 200 ounces per ton, varying from 140 to 950 ounces per ton. It is not uncommon to find small deposits of brittle silver that run from 6,000 to 16,000 ounces per ton, and "ruby silver" running as high as 20,000 ounces per ton. In this mine they also find some silver glance, varying from 22,000 to 32,000 ounces to the ton. The ore also contains about 15 per cent. of galena and the same of zinc; some iron pyrites, carrying from one to one and one-half ounces of gold, which is lost by the present mode of working. At present they are working some sixty-five men; they have openings at the present time to put on 200 men. They are extracting some 20 tons of ore daily of all grades. Seventeen different shipments to England, aggregating 170 tons in weight, averaged 352½ ounces in silver, as per returns. In connection with their mines this company are leasing reduction works in Georgetown, known as the property of the

Pelican Silver Milling Co.,

Under the management of Mr. Geo. C. Munson, with two Bruckner cylinders, one Dodge crusher, one Ball pulverizer, with Barrell amalgamators. These works are very complete in every department, and running successfully at the present writing. One mile farther west is located the

Colorado Terrible Lode M. Co.,

An English incorporation, with a capital stock of £100,000, (or \$500,000), the principal office of which is in London, England. Sir Cecil Beadon, President; F. Andrews, Secretary; Geo. Teal, resident Manager, at the works, which are located some three miles west of Georgetown, at Brownsville. This corporation's property consists of a lode 1,100 feet in length by 50 feet in width, covered by U. S. Patent, the first ever granted in Clear Creek county, California. The ore body runs east and west and pitches to the north at an angle of 73°. The country rock here is granite; the ores contain silver from 500 to 600 ounces to the ton, lead 50 per cent., a considerable of zinc blende, and a trace of iron, copper, arsenic and gold. The mine of this company is located at an elevation of about 9,300 feet above the sea level.

The Development of this Mine

Consists of one cross cut tunnel 340 feet to the ore body, and extending some 25 feet beyond; this tunnel taps the lode at a depth of about 400 feet from the surface, and is being worked by three levels above the tunnel. At this point a shaft is sunk to a depth of 150 feet, developing the mine to a depth of 550 feet from the surface. This shaft is being developed by two levels below the level of the tunnel, making six levels in all and averaging some 60 feet apart. Drifts and tunnels have been run on this lode some 3,000 feet; the ore body only averages about four inches in width, but its richness makes up for its width. Occasionally, however, immense deposits are come across, and have run as high as 16,740 ounces in silver. This company's first-class ores are sent to Liverpool for sale, and all lead ores that will pay the transportation; the remainder is sold to the reduction works at Georgetown. They are now erecting concentration works of their own, which are expected to be in operation by the 15th of May, the capacity of which is intended to be about 40 tons daily. This corporation are now working 60 men, and taking out some 250 tons of ore of all grades monthly. They have a very fine wire tramway 750 feet in length, with capacity to transport all their ores from the mine to their concentration works, to the extent of 50 tons daily, at the cost of 20 cents per ton. They also have a very complete assay office and do all their own assaying.

The Marshall Silver Mining Company of Georgetown, Colorado—Incorporated.

Capital stock, \$600,000. F. J. Marshall, President and Superintendent; S. W. Bouton, Secretary and Treasurer. Chartered to perforate Leavenworth mountain. Tunnel located one and three-fourths miles south of Georgetown. Distance through the mountain, 4,200 feet; length already run, 1,300 feet. Altitude, 9,600 feet above the sea. No. of lodes cut, 10. No. of lodes worked, 2. Average number of men employed, 30. The only vein worked from the tunnel is "Tunnel Lode No. 5," in which have been cut 1,400 feet of shafts, drifts and levels, mostly within 200 feet of the surface. The tunnel cut this vein at 400 feet depth.

The product of this vein in 1873 was \$85,000. The crevice of this lode is from 50 to 60 feet wide, with several distinct ore veins, of varying richness, from 100 ounces to 2,000 ounces per ton. The belt of lodes of which "No. 5" (also called the "Colorado Central") is the "mother vein," is some 400 feet in width. The tunnel is now being pushed, and is approaching a second belt of lodes distinctly different in character from the one passed, occupying the crest of the mountain, and exceedingly rich on the surface.

Stewart Silver Reducing Company.

An incorporation of \$100,000 capital stock. Is incorporated under the laws of the State of New York. J. O. Stewart, President; J. L. Brownell, Secretary and Treasurer; office 23 Broad street, New York city. J. O. Stewart, resident Superintendent. This corporation is owned by some three or four persons. Their property consists of the "Taylor," "Mount Diablo," "Cuckoo" mines, and other mining property, neither of which are being worked at

the present writing. They are at present purchasing ores from other mines, and reducing them at their

Twenty-Slamp Mill,

Located in the suburbs of Georgetown. They use twelve Vasey pans, with settlers to correspond. It was built in Chicago, but after the California style in every respect. It is very complete in every department, run by a steam engine of eighty horse power, two boilers, etc. This mill is run night and day, and has a capacity to reduce some twenty tons per day, (twenty-four hours.) All of the ores reduced at this mill have first to be roasted. For this purpose they have one large and four small reverberatory furnaces; which, combined, have a capacity of from twelve to fourteen tons per day, but they are at present engaged in erecting another large reverberatory furnace, which will make their roasting capacity correspond to their crushing capacity, when completed. This company are shipping \$50,000 worth of silver bullion monthly. The ores consist of zinc blende, galena, some little fahlerz, or gray copper, ruby and brittle silver. The ores average about fifty per cent. of blende and galena, the former predominating. The silver value is about 160 ounces per ton. The bullion produced from the above ores runs about 800 fine. This company employs some forty-five men.

Miners' Head-Quarters.

A much needed acquisition to Georgetown is the Miners' Exchange of Morris Brothers & Co., the general rendezvous and head-quarters for all the miners and mining business of the surrounding country. In connection with their finely-appointed assay office, a large and handsome free reading room is nearly completed, supplied with mining and newspapers and magazines, and is a general and pleasant resort for citizens, miners and visitors from all sections. The house does a purely legitimate mining brokerage business, furnishing reliable mining intelligence and reports to absentee mine owners and others, and secures the highest bids on ores consigned to them.

L. P. Mc.

Lower California Placer Mines.

The San Diego *World* of the 10th inst. says: As we expected, the dimensions of the placer region of Lower California prove to be of vast extent. A few days ago Don Ygnacio Arguello came to San Diego from San Rafael. He brought with him details of a very interesting placer discovery in the neighborhood of that place. On the first of the present month placer diggings were struck in the vicinity of the house of Don Ambrosio Castillo. The gold is very coarse, and of high grade. Nuggets ranging in value from \$2 50 to \$25 are frequently picked up.

We have long desired to obtain some definite information as to the extent of the Japa Placers, and owing to the kindness of the Messrs. Denton & Phillips we are at length able to satisfy the curiosity of our readers. With regard to Mr. Denton, it is only necessary to state that he has probably surveyed more Mexican mines than any man living; and as to Mr. Phillips, he is a geologist and mining expert of some reputation in Nevada. The Japa Placers, according to these gentlemen, are but a trifling portion of an immense placer territory, much of it exceedingly rich. The prospectors followed the channel of the creek clear to the desert from Japa, and found very fair placer diggings all the way, a distance of 45 miles. It was the rainy season, and water abundant all the way. There are indications that water can be had at many places at all seasons of the year. These gentlemen, in the course of their tour, swung southwest to Santa Catarina, distant 75 miles from Japa, and about 150 from San Diego. The placers extend for all this distance, and are often exceedingly rich. Santa Catarina was the extreme southern boundary of their trip. An arrangement is being made to flume the waters of the Great Laguna, which is situated on a mountain at an altitude of eight or ten thousand feet, in order to work an exceedingly rich bed of gravel which extends into Santa Catarina. At a distance of five miles from the Laguna the flume will strike the eastern edge of the placers in that vicinity.

Finally, our informants are of opinion that Lower California is as rich a spot as lies on the Pacific Slope, and that valuable deposits of copper, iron, silver and gold are lying there perdn on every side for whoever has the good sense, backed by a little capital, to go and develop them.

THE MINES NEAR CAMBRIA.—A correspondent of the San Louis Obispo *Tribune*, writing from Cambria, San Louis Obispo county, says:

The mines are situated about ten miles in a northeasterly direction from the beautiful little town of Cambria, and it is, therefore, you see, a good day's ride to visit the different mines and return to town. The first mine of any note is the Keystone, owned by Cross & Co., of San Francisco. This mine has been worked for over two years, and they have taken out a large amount of good ore—probably six thousand tons are now on the dumps, with a large deposit in the mine in sight, which they are now breaking out. There is no telling the value of this mine now; it cost its present owners \$22,000, and they made a good investment when they bought it. The company have got in their tunnel about 700 feet. They intend putting up smelting works immediately, and when erected they will conduce largely to the speedy development of the mine.

Stickeen River Mines.

The following items from the Stickeen river mines was compile from the *Victoria Colonist*:

We have been placed in possession of several letters from the heart of the Cassiar gold diggings, all of which speak hopefully of the prospects. The general impression is that a great gold field has been discovered; but the writers, almost to a man, declare that there are already too many men on the spot, and that work cannot be successfully prosecuted until May. A few had hit upon the expedient of thawing out the ground and washing it in rockers, and were making from \$10 to \$30 per day.

William Jeffrey writes to Charles Robinson, from the Hudson Bay Company's fort, on Stickeen river, dated 19th of March. The writer says that he and H. Saunders and W. Bradon had overcome great difficulties. The frost was severe, "one half the pot boiling while the other half froze." The difficulties of reaching Cariboo in early days were nothing to those encountered on the Stickeen. The snow was 10 feet deep in places, and two or three trips had to be made to get the stuff up on dog-sleds. The weather was changing, and a thaw had set in. Taylor and Clarke were left behind. But the writer and party stood the hardships like "bricks," and had overtaken some men who left Victoria six days before them. Several miners were at the fort, sick or frost-bitten. Mr. White, at the fort, was very kind to all.

A letter from a miner on Dease lake says that he has been out prospecting. Snow covered everything, and the ground was frozen; but fires were built, and the pay-dirt thawed. Good prospects were had. Several large pieces of gold were found in the dirt. The writer says the country is rich.

The miners have held a meeting and decided to exclude Chinamen from the diggings. Two Chinamen had already gone in, and are allowed to stay, by promising to write to their brother Chinamen not to come up.

Large quantities of goods are cached along the river banks, and will not be moved until the ice is out of the river.

The supply of provisions in the mines is very short. Bacon is \$1.25 per pound, flour \$1.40 a pound, \$2.50 per pound for tea, and a rise anticipated. There are no provisions at Buck's Bar.

Mr. A. Martin, to whom we are indebted for the above information, brought down 130 ounces of dust.

The Olympia *Courier* says: A letter from Mr. Charles Potter, at the "Great Portage on the Stickeen, about seventy-five miles from Dease creek," came to his wife in this city to day, and she has kindly permitted a few extracts to be made. The writer says he and Mr. Shelton went in ahead of their companions, and located claims for all, and then went back to assist in getting in the sleds with provisions, etc. The report of any one freezing to death in that region was false. Of course, it had been cold weather, but that was about over. It is yet hard to tell about the mines; the ground is frozen so hard that it takes a long time to prospect a claim. He would not advise any one to come up at present. All the men who were in there last fall say that the mines paid well. One man took out in one day, with a rocker, nine ounces and fourteen dollars. There are about five hundred men in the mines and on the river coming up. All from this region are well—as the writer jocosely says, "all right, tough and dirty." Mr. Shelton has also received a letter from Lewis Shelton, who is with the party that left this city. He says he can't tell any more about the richness of the mines than he could before he started, and advises any of his friends who may design going to the mines not to start till May.

MINING SALE.—The *Plumas National* has the following: On Wednesday last the claim belonging to Rockwell & Co., near Little Long Valley, known as the Alturas gravel mine, was sold to Mr. A. J. Gould. The price paid, we are informed, was \$1,000 per share. The claim is situated on the head waters of Long Valley creek, and is thought by good judges to be one of the best undeveloped placer mines in the country. The gravel is deep and prospects well and uniformly, from the surface to bed-rock. A comparatively slight expense in ditching brings the water to the claim, and high enough to afford all the pressure required for hydraulic purposes. The flumes will dump over a precipice hundreds of feet high, making an "everlasting dump." The Alturas Co. control all the water high enough to be used on the ground, and their claim is extensive enough to last for years. We heard a mining expert who had prospected the ground, say that he considered this the finest bank of gravel he had ever seen in California. The company will commence work in a short time, and we confidently expect to chronicle some grand results after the Alturas is fairly opened.

QUICKSILVER.—The work at the St. John quicksilver mine, Napa, is being pushed forward vigorously and satisfactorily. New tunnels and drifts are being run, making most favorable developments of the extent and the richness of the mine. There are now seventy men employed; a greater number than ever before. The work of building an additional furnace at the mine was commenced this week, which, when completed, will double the smelting capacity. The St. John is now turning out 200 flasks regularly each month.

SCIENTIFIC PROGRESS.

Gun-Cotton.

It is now more than a quarter of a century since the discovery of gun-cotton, and yet we have not learned fully regarding its wonderful nature and capabilities. It was at one time, soon after its discovery, supposed capable of supplanting gunpowder in war; but this expectation soon gave way to the astounding truth, that it was destined to play a much more conspicuous part in facilitating and perfecting the beautiful art of photography. It was the handmaid of the arts of peace, rather than an agent of destruction in human combats. At Woolwich Arsenal, England, the chemists, Professor Abel and Mr. E. O. Bawn, have devoted more than ten years to investigations into the nature of this explosive, and some of the results reached are curious enough. The object of the researches was to learn if it could not be rendered safe and effective for gun use in the English navy. To reach the desired result the violence of its explosion had to be tamed, then a compressed form of the material was devised, and then it was shown that like its sister explosive, nitro-glycerine, gun-cotton could be violently detonated if ignited by a charge of fulminate. Gun-cotton, in fact, turns out to be sympathetic, for, according to the energy with which it is inflamed, so it responds in its behavior. Thus, if gently ignited by a spark, the cotton, in the form of yarn, smouldered slowly away; when set fire to by a flame, it burnt up rapidly; if in the form of a charge it was exploded in a mine or a fire arm, it at once represented the shock and replied with corresponding energy, behaving like gunpowder under similar circumstances; while, lastly, if fired with great violence with a few grains of fulminate, it was detonated with as much force and with the same terrible effect as its instigator.

The most curious fact learned in this investigation is that gun-cotton is exploded to best advantage when in a wet condition. This grand discovery is of the utmost importance, because, although there may be danger in storing and using gun-cotton when dry, the most nervous would scarcely hesitate to employ it sopping wet. In this latter condition the material is, strange to say, not only non-explosive, but positively non-inflammable; so much so, indeed, that it would be probably as serviceable in putting out a fire as a wet blanket or a damp towel would be. It can neither be inflamed nor exploded when wet; and further, unless one has the key to its detonation—a little fulminate of mercury—it is of no more value as an explosive than so much wet paper pulp. When placed in contact, however, with a fuse of the proper construction and a cake of dry gun-cotton, to start the action, the wet pyroxiline detonates as readily as when the moisture amounts to but a fraction of one per cent. Moreover, the quantity of water in the material is really of no importance, for it has been found that for submarine mines, compressed cakes enclosed in a fish-gut-net, and thrown overboard with a dry primer and a fulminate fuse, will explode with just as much energy as when confined in a water-tight steel case.

Recent experiment has shown that the rapidity with which gun-cotton detonates is altogether unprecedented. Indeed, with the exception of light and electricity, the detonation of gun-cotton travels faster than anything else we are cognizant of. Thus detonation will run along a line of gun-cotton cakes, placed so as to touch one another, with a rapidity only inferior to that of electricity, setting fire to a charge or conveying a signal, if desired, almost instantaneously. Twenty thousand feet, or nearly three miles per second, is calculated to be its rate of traveling, according to Noble's electric chronoscope. In one experiment 42 feet of the material was fired, and records secured at every six feet; and in this case the results given were most uniform, for the velocity only varied from 19,000 to 20,000 feet per second, the ratio of transit being in no instance less than this.—*Boston Journal of Chemistry.*

THE HEAT OF THE MOON.—The Earl of Rosse, in a recent lecture before the Royal Institution, gave some interesting information concerning the various experiments heretofore made to detect the heat of the moon, and then described his own efforts in this line, which are the latest that have been made known. By means of a specula mirror, a thermo-pile, and a pair of reflecting galvanometers, made on Sir William Thomson's plan, and as are used for sending messages through the Atlantic cable, the Earl was enabled to demonstrate the presence of heat from the moon, but the temperature of the lunar surface still remains far from being determined. My calculations, he says, lead me to estimate the heat from the moon as the eighty-thousandth part of that from the sun. Bonger's experiments give the brilliancy of the full moon as the 300,000th part of that of the sun; Wollaston gives it as the 80,172d; Zollner as from 618,000th to 619,000th, and Boud as the 470,980th. The maximum of the lunar heat appears to be a little before full moon; the unequal distribution of its mountain and plains, perhaps, goes to explain this phenomenon.

FUCHSINE, it is claimed, has been used with success as a preservative of meats and other organic substances, one-hundredth part being sufficient to act as a preservative.

Microscopic Crystals in Plants.

Beside the familiar bundles of needle-shaped crystals, called raphides, dispersed throughout the cellular structure of certain plants, there are in the seed covers and leaves of several orders of plants, and in the pods of the bean family, multitudes of prismatic crystals of extreme minuteness, which have hitherto escaped detection. In the horned poppy, these crystals are as small as the 8,000th of an inch in diameter. In the gooseberry and elm, they are 1-3,000 of an inch; in the black currant, about half as large; in the black bryony, they are about 1-1,500 of an inch in diameter, thickly set at regular distances throughout the seed covers. In the gooseberry, they are so distinctly and regularly placed in the outer skin—each crystal in a separate cell—that they present the appearance of crystalline tissues. In plants of the bean family, the size is variable, the average being about 1-3,000 of an inch. In the garden pea, they are much larger. These crystals appear to consist chiefly of oxalate of lime, sometimes carbonate. Raphides are mainly phosphate of lime.

Plants most relished by animals are found to be especially rich in these microscopic crystals. In a piece of the midrib of a clover leaflet, 1.70 of an inch in length, Mr. Gulliver, who has added more than any other to our knowledge of these minute but important products of vegetable action, has counted 10 chains of crystals with 25 in a chain, making 250 in all, or no less than 17,500 to the inch. In like manner 21,000 crystals were reckoned for one inch of the aural margin of a single valve of a pea pod. The pod had four such margins, each three inches in length; so that in a single pod there must have been as many as 250,000 crystals. In view of the marvelous number of these crystals, as well as their regularity and constancy, Mr. Gulliver believes it no longer possible for physiologists to maintain that such structures are accidental freaks of nature, of no relation to or value in the life and use of the species.—*Scientific American.*

THE EFFECT OF HEAT ON TEXTILE FABRICS.—Recent experiments on disinfection by means of heat, made by Dr. Ransom, of Nottingham, England, show that white wool, cotton, linen, silk, and paper may be heated to 250° F. for three hours without apparent injury, although the wool will show a faint change in color, especially when new. The same may be said of dyed wools and printed cottons, and most dyed silks; but one kind of white silk easily turns brown by this heat, and pink silks of some kinds are also faded by it. The same temperature will, if continued for a longer period, slightly change the color of white wool, cotton, silk, paper, and unbleached linen, but will not otherwise injure them. A heat of 295° F., continued for about three hours, more decidedly singes white wool, and less so unbleached and white cotton and white silk, white paper, and linen both unbleached and white, but does not materially injure their appearance. The same heat, continued for about five hours, singes and injures the appearance of white wool and cotton, unbleached linen, white silk and paper, some colored fabrics of wool, or mixed wool and cotton, or mixed wool and silk. It is noteworthy that the singeing of any fabric depends not alone upon the heat used, but also on the time during which it is exposed. In the experiments the heat was obtained by burning gas with smokeless flames, and conducting the products of combustion, mixed with the heated air, by means of a short horizontal flue, into a cubical chamber through an aperture in its floor, and out of it by a smaller aperture in its roof. Fixed thermometers showed the temperature of the entering and outgoing currents, which represented the maximum and minimum temperatures of the chamber. A self-acting mercurial regulator maintained the temperature of the entering current at any required degree.

QUALITATIVE ANALYSIS OF BENZINE.—Commercial benzine often contains quite a large proportion of petroleum, which leaves a disagreeable odor when the benzine is employed for the removal of grease. A small piece of pitch is placed in a test tube and the suspected liquid poured upon it. Pure benzine will readily dissolve the pitch, forming a tarry mass, while adulterated benzine will be less and less colored in proportion to the amount of petroleum contained in it. Coal tar will dissolve easily in pure benzine, but forms distinct layers when impure material is employed for the solution.—*Sci. American.*

EXTRACTING CHLORINE.—The object of a new invention is to facilitate the extraction of chlorine from chloride of lime. For this purpose the chloride of lime is placed in an air-tight cistern or chamber partly filled with water and provided with one or more hollow shafts formed with hollow arms and capable of revolving, by which the chloride of lime contained in the cistern is agitated, and by a current of air passing through the shafts and arms the chlorine is extracted from the chloride of lime and mixes with the water, and the liquor when settled is drawn off for bleaching purposes.

In the juice of beets is contained an acid—metaphacetic acid. It has the formula of Arabic acid from gum arabic. A careful comparison of the two substances shows them to be identical.

MECHANICAL PROGRESS.

The Pneumatic Dispatch.

The London Times gives an account of the origin and development of the pneumatic dispatch system in England, and then goes on to describe the great pneumatic dispatch tube in the heart of London. It says:

The pneumatic tube extends from the London and Northwestern railway station at Euston Square to the general post-office in St. Martin's le Grand. The general station is in Holborn, where is also the machinery for effecting the transit of the trains. Here the tube is divided, so that in effect there are two tubes opening into the station, one from Euston to Holborn, and the other from the post office. The length of the tube between Holborn and Euston is 3,080 yards, or exactly a mile and three-quarters, a greater length than was originally contemplated, but which was rendered necessary by the avoidance of certain property on the route. The tube is of a flattened horse-shoe section, five feet wide and four feet six inches high at the center, having a sectional area of seventeen square feet. The straight portions of the line are formed of a continuous cast iron tube, the curved length being constructed in brick work, with a facing of cement. The gradients are easy; the two chief are one in forty-five and one in sixty, some portions of the line being on the level.

The steepest curve is of 70 feet radius. The tube between Holborn and the post-office is 1,658 in length, or 102 yards less than a mile, and is of the same section and similarly constructed to the first length. Two gradients of one in fifteen occur in the post-office section, but this steep inclination is in no way inimical to the working of the system. The Holborn station is situated at right angles to the line of the tubes, which, are, therefore, turned towards the station, into which each opens. All through trains, therefore, have to reverse there, and this is effected in a very simple manner by a self-acting arrangement. A train, upon its arrival, runs by virtue of its acquired momentum up a short incline, at the summit of which it momentarily stops, and then quickly descends by gravity. In its descent it is turned on to a pair of rails leading to the other tube, into which it enters and through which it continues its journey, the whole process of reversing occupying barely thirty seconds. Trains containing goods for Holborn station are simply run down from the top of the incline on to a siding.

The wagons, or carriers, as they are termed, weigh 22 hundred weight, are 10 feet 4 inches in length, and have a transverse contour conforming to that of the tube. They are, however, of a slightly smaller area than the tube itself, the difference, about an inch all around, being occupied by a flange of India rubber, which causes the carrier to fit the tube exactly, and so as to form a piston upon which the air acts. The machinery for propelling the carrier consists of a steam engine having a pair of 24-inch cylinders, and with 20-inch stroke. This engine drives a fan 22 feet 6 inches in diameter, and the two are geared together in such a manner that one revolution of the former gives two of the latter; or, in technical terms, the engine is geared at two to one with the fan. The trains are drawn from Euston and the post-office by exhaustion, and are propelled to those points by pressure. The working of the fan, however, is not reversed to suit these constantly varying conditions; it works continuously, the alternate action of pressure and exhaustion being governed by valves. The engine takes steam from three Cornish boilers, each 30 feet long, and 6 feet 6 inches in diameter. Telegraphic signaling is carried on between three stations by means of needle instruments.

HIGH-PRESSURE FILTER.—Clemens's self-cleaning filters are made for attachment to the ordinary water main, or the supply pipe from a cistern or reservoir. A regulator forms part of the filter, by which the character of the water can be controlled. This is in the form of a dial, the hand working a tap, which allows water to flow in various directions, so that unfiltered or filtered water may be obtained at pleasure, or the animal charcoal composing the filter may be cleaned. They are not troublesome to work, simply requiring to be fixed to a supply pipe and not to be interfered with, except for cleaning. Thus in large houses and public institutions the filter can be attached to the main where it enters the building, and filtered water can be drawn off at any place. The water runs through the filter quite as rapidly as though nothing had been interposed in its course, and it is singular to see pesty water running from one tap, and the same water after passing through the filter issuing perfectly colorless. It is claimed also that the scaling of steam boilers may be to some extent prevented by the use of these filters.—*Iron.*

POINTING WIRE.—The wires are rolled forward under a roller covered with India-rubber and subjected to the grinding action of a revolving stone. The grinding effect is equalized by using a stone curved to suit the roller and conical. The table moves vertically, having a lateral, longitudinal, and dipping movement. Artificial stones and emery wheels are used when required, with continuous streams of sand or emery upon the wires.

Artificial Marble.

A German chemist claims to have succeeded in making a most perfect imitation of marble in a new and very simple manner. He uses carbonate of lime, without any cement or high pressure, and the product is as hard and easily polished as the best marble, and is readily colored, in any shade, even to the most intense black. As the mass, while in a plastic state, is readily worked into any shape or form, its applicability for ornamental walls, floors, furniture, etc., is alleged to be very great. But the inventor especially directs attention to its value in furnishing material for the finer mosaics, which, as is well known, often consist of as many as a hundred and fifty pieces to the square inch. Convenient forms, brilliant colors, and great durability, even in the thinnest stratum of inlaid work, etc., are said to be practicable by this method.

Another ingenious and valuable process in this line consists in turning slabs of slate into imitation marble. The slabs of slate are first surfaced by a planer, and brought to the required thickness; patterns are then laid upon the slabs, and the mallet and chisel work out the required forms and moldings. The marbleizing, however, is the peculiar feature in the operation. The material for this purpose is prepared in a vat and the slab is let down upon the composition, which adheres to the surface of the slate; the slab is next baked in an oven for one night, then has a coating of a peculiar kind of varnish, and, after six repetitions of these processes, it is finally removed and polished, the surface presenting a beautiful appearance. So firmly united to the slate is this coating that it cannot be scaled or clipped off without taking the slaty substance with it. This material is a valuable substitute for natural marble in a large variety of cases.

SHOES BY STEAM.—Army boots and shoes, having the soles screwed to the uppers by means of brass screws, are being manufactured in Philadelphia. Between 600 and 700 pairs are turned out each day, and the work is almost wholly performed by machinery driven by steam. In this system the uppers, after having been cut out by hand, are sewed together by a machine, and the soles pressed into shape by an iron mold driven by steam. The two are slightly attached by hand, and are then taken to the brass screw-machine, which is about the size of an ordinary lathe, and controlled by a single workman. The shoe is put upon a movable arm of steel, and is placed under the upper gearing, to which a long brass wire one-eighth of an inch in diameter is fed. By one movement a thread is cut upon the brass wire, and the screw thus made is forced through the sole and uppers, and is riveted on the inside under a pressure of 1,700 pounds. Just as the operation is completed, the screw is cut from the rod close to the sole, and the operator repeats the action until the shoe is attended with brass screws from toe to heel. The ends of the wires are cut off by two rapidly revolving discs, and they are then filed down to a level with the sole. The heels are cut off by machinery, and have the holes punched in them for the nails at one motion. The nails are put in the holes by boys, and then by one movement of a machine the heels are securely fastened to the shoe. The heels are furnished by means of a turnisher heated by gas and also worked by steam. The edges of the soles are burnished by hand, and the soles are then sand-papered and finished by machine. The whole operation is exceedingly rapid.

AN EVENTFUL HISTORY.—English exhaugaea give accounts of a much enduring 18-ton gun, with which the Committee on Explosives at the Royal Arsenal, Woolwich, are about to make some experiments, for the purpose of testing the advantages to be gained by various lengths of bore. The gun prepared for these experiments has a rather eventful history. It was first of all fired as a 10-in. gun, re-fired, and drilled through and through in various parts, for the insertion of pressure gauges to ascertain the force of the explosion, and the gun in this state sustained some very heavy strains. It was afterwards rifled, and again underwent some extraordinary pressure, and it was subsequently bored up to 11-in., firing a number of rounds with heavy charges, until at length the tube cracked while firing 1,200-lb. shot with 85 lbs. of powder. A new tube has since been put in, and a considerable piece added to the muzzle, so that the gun is at the present a little over 20 feet long, with a bore of 11 in. still. The most advantageous length for land service guns will, no doubt, be ascertained by experiments with this piece of ordnance. Naval guns are of necessity short. The advantage of length of bore is that slower burning, and consequently less dangerous powder, can be used, as the gases have a longer space in which to act upon the shot, which thus acquires its velocity at less expense to the gun.

NEWBOLD'S IMPROVED FURNACE BARS.—These bars are made in various patterns, and consist mainly in placing between the bars or making them hold what the inventor calls "false" bars, which are made of clay or cheap mineral, and the face of which is presented to the fire, and is burnt away, while the "true" bar remains intact. The new bars may consist of two straps, having the clay lying between; or a trough with the clay bar, covering a passage for water; grooved bar with a serpentine windage; a hollow bar for water, with grooves between for the insertion of false bars.

Weekly Variations in Stocks.

(Based on Regular Sales of the most important stocks on the San Francisco Stock and Exchange Board.)

For 6 days ending Wednesday, Apr. 22, 1874.

NAME OF COMPANY	IN MIN.	HIGH.	LOW.	ADVANCE.	DECLINE.
WASHOE					
Alamo	300	600	14	12	
Alphons	300	300			
American	1500	1500			
Arizona & Utah	1500	1500			
Bacon M. & M.	1500	1500			
Baltimore	1500	1500			
Belcher	1500	1500			
Best & Belcher	1500	1500			
Bowers	1500	1500			
Buckeye	1500	1500			
Bullion	1500	1500			
California	1500	1500			
Chollar	1500	1500			
Confidence	1500	1500			
Con. Gold Hill Quartz	1500	1500			
Con. Virginia	1500	1500			
Crown Point	1500	1500			
Danvers	1500	1500			
Danville	1500	1500			
Empire	1500	1500			
Excelsior	1500	1500			
Farmer	1500	1500			
Flowers	1500	1500			
Franklin	1500	1500			
Globe	1500	1500			
Gould & Curry	1500	1500			
Hale & Norcross	1500	1500			
Imperial	1500	1500			
Insurance	1500	1500			
Jacob Little	1500	1500			
Julia	1500	1500			
Justice	1500	1500			
Kentucky	1500	1500			
Knickerbocker	1500	1500			
Kosuth	1500	1500			
Lady Bryan	1500	1500			
McMeans	1500	1500			
Mint	1500	1500			
Montezuma	1500	1500			
New York	1500	1500			
Occidental	1500	1500			
Overman	1500	1500			
Phil Sheridan	1500	1500			
Pitkin	1500	1500			
Rock Island	1500	1500			
Sage	1500	1500			
Seg. Belcher	1500	1500			
Seg. California	1500	1500			
Seg. Rock Island	1500	1500			
Senador	1500	1500			
Serra Nevada	1500	1500			
Silver Hill	1500	1500			
Sonoma	1500	1500			
South Overman	1500	1500			
Succor M. & M.	1500	1500			
Sutro	1500	1500			
Tyler	1500	1500			
Union	1500	1500			
Utah	1500	1500			
Woodville	1500	1500			
Yellow Jacket	1500	1500			
NEVADA					
Adams Hill	1500	1500			
Alps	1500	1500			
Amador Tunnel	1500	1500			
American Flag M. & M.	1500	1500			
Arkansas	1500	1500			
Black Bear	1500	1500			
Bowling	1500	1500			
Chapman M. & M.	1500	1500			
Chief of the Hill	1500	1500			
Chief East Extension	1500	1500			
Columbus M. & M.	1500	1500			
Con. El Dorado	1500	1500			
Eureka	1500	1500			
Excelsior	1500	1500			
Farmer	1500	1500			
Hays	1500	1500			
Hermes	1500	1500			
Home	1500	1500			
Hunt & Hunt	1500	1500			
Ingot	1500	1500			
Iron	1500	1500			
Jackson	1500	1500			
Joséphine	1500	1500			
Junata	1500	1500			
K. K.	1500	1500			
Kentucky	1500	1500			
Kinston	1500	1500			
Lillian	1500	1500			
Louis	1500	1500			
McMahon	1500	1500			
Marion	1500	1500			
Meadow Valley	1500	1500			
Monk	1500	1500			
Monk-Bellmont	1500	1500			
Murphy	1500	1500			
Newark	1500	1500			
Pacific Tunnel	1500	1500			
Pago & Pano	1500	1500			
Peavine	1500	1500			
Pheasant	1500	1500			
Pioche	1500	1500			
Pioche West	1500	1500			
Pioche Phoenix	1500	1500			
Portland	1500	1500			
Raymond & Ely	1500	1500			
Rye Patch	1500	1500			
Silver Peak	1500	1500			
Silver West	1500	1500			
Standard M. & M.	1500	1500			
Star	1500	1500			
Starling	1500	1500			
Spring Mountain	1500	1500			
Spring M. T.	1500	1500			
Ward Beecher	1500	1500			
Washington & Ore	1500	1500			
Watson	1500	1500			
Yellowstone	1500	1500			
CALIFORNIA					
Alpine	1500	1500			
Bellevue	1500	1500			
Calaveras	1500	1500			
Cedarberg	1500	1500			
Chariot Mill	1500	1500			
Cottonwood Creek	1500	1500			
Dunderberg M. & M.	1500	1500			
El Dorado	1500	1500			
Eureka	1500	1500			
Gillis	1500	1500			
Independent	1500	1500			
Keystone	1500	1500			
St. Patrick	1500	1500			
St. Lawrence M. & M.	1500	1500			
Tecumseh	1500	1500			
Yule	1500	1500			
IDAHO					
Empire	1500	1500			
Golden Chariot	1500	1500			
Ida	1500	1500			
Mahogany	1500	1500			
Red Jacket	1500	1500			
South Chariot	1500	1500			
War Eagle	1500	1500			
WHITE PINE					
General	1500	1500			
Mammoth	1500	1500			
Noonday	1500	1500			
Original	1500	1500			
Silver	1500	1500			
Ward Beecher	1500	1500			
UTAH					
Deseret	1500	1500			
Wellington	1500	1500			
VERMONT					
Verde	1500	1500			

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.

Assessments.—Stocks on the list of the boards.

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.										
Company.	Location.	No. Amt. Levied.	Delinquent.	Sale.	Secretary.	Place of Business.				
Alpha Gold M. & M. Co.	Amador Co. Cal.	6 100	Mar 10	Apr 14	J. F. Lightner	433 California				
Alpine Gold M. & M. Co.	Cal.	6 100	Mar 10	Apr 14	J. F. Lightner	433 California				
Andes S. M. Co.	Washoe	1 50	Mar 2	Apr 6	F. Ward Lander	307 Montgomery				
Arizona and Utah M. Co.	Gold Hill	3 75	Mar 11	Apr 16	J. Macgregor	419 California				
Chief of the Hill	Ely District	1 50	Mar 11	Apr 16	J. Macgregor	419 California				
Danby & S. M. Co.	Washoe	3 75	Mar 31	May 5	C. R. Spence	330 California				
El Dorado South Cons. M. Co.	Nevada	3 100	Feb 26	Mar 31	W. Willis	419 California				
Empire M. Co.	Idaho	6 150	Apr 18	May 23	J. Macgregor	419 California				
Globe Cons. S. M. Co.	Gold Hill	6 75	Mar 11	Apr 16	J. Macgregor	419 California				
Gould & Curry S. M. Co.	Washoe	22 200	Mar 26	Apr 30	A. K. Burrows	Merchants' Ex.				
Hahn & Hunt S. M. Co.	Ely District	9 30	Mar 5	Apr 16	T. Kimball	409 California				
Indus G. & M. Co.	Nevada	10 100	Mar 5	Apr 16	D. S. Widner	419 California				
Justice M. Co.	Washoe	3 150	Apr 18	May 20	F. Swift	419 California				
Lady Bryan M. Co.	Nevada	2 50	Mar 31	Apr 16	F. Swift	419 California				
Mahogany G. & S. M. Co.	Idaho	1 50	Feb 25	Mar 31	T. J. Owens	215 Sansome				
Mammoth S. M. Co.	White Pine	1 50	Mar 31	Apr 16	T. J. Owens	215 Sansome				
Newark S. M. Co.	Ely District	7 200	Apr 20	May 29	D. T. Bagley	401 California				
North-Belmont M. Co.	Nevada	1 10	Mar 17	Apr 18	D. L. Thomas	419 California				
Original Gold Hill G. & S. M. Co.	Washoe	1 30	Mar 24	Apr 18	M. M. Helman	401 California				
Portland S. M. Co.	Ely District	4 25	Feb 27	Apr 6	T. J. Gray	438 California				
Quintero M. Co.	Nevada	1 10	Mar 17	Apr 18	H. O. Kibbe	419 California				
Rye Patch Cons. M. & M. Co.	Nevada	2 50	Mar 25	Apr 18	D. M. Verdenal	409 California				
Samaritan S. M. Co.	Idaho	1 25	Mar 19	Apr 22	A. Noel	419 California				
Silver Cloud G. & S. M. Co.	Idaho	9 200	Feb 24	Mar 30	Frank Swift	419 California				
South Chariot M. Co.	Idaho	1 50	Mar 18	Apr 20	D. M. Verdenal	409 California				
St. Lawrence M. & M. Co.	Placer Co. Cal.	5 100	Feb 25	Apr 1	B. R. Boyer	419 California				
St. Patrick G. M. Co.	Cal.	8 100	Mar 20	Apr 27	D. M. Verdenal	409 California				
Succor M. & M. Co.	Washoe	8 100	Apr 10	May 5	W. H. Watson	302 Montgomery				
Union Cons. S. M. Co.	Idaho	4 200	Feb 25	Apr 1	C. S. Dyer	419 California				
Utah S. M. Co.	Washoe	5 50	Mar 2	Apr 8	J. M. Buffington	Merchants' Ex.				
War Eagle M. Co.	Idaho	5 50	Apr 22	May 26	W. E. Dean	419 California				
Woodville M. Co.	Gold Hill	6 700	Mar 9	Apr 13	L. Kaplan	419 California				
OTHER COMPANIES.—NOT ON THE LISTS OF THE BOARDS.										
Atlantic & Pacific Cons. G. M. Co.	Cal.	81 5	Apr 10	May 15	A. Noel	419 California				
Black Mountain Gold M. Co.	Nevada	3 100	Mar 10	Apr 16	J. F. Lightner	433 California				
Cedarberg 1st N. Extension M. Co.	Cal.	4 10	Mar 7	Apr 10	J. N. Webster	402 Montgomery				
Champion Cons. M. & S. Co.	Nevada	1 25	Mar 5	Apr 6	W. R. Sullivan	Merchants' Ex.				
Comstock Placer M. Co.	Ely District	4 25	Apr 6	May 1	C. R. Spence	330 California				
Commercial Coal M. Co. of S. F.	Cal.	33 33	Feb 25	Apr 6	S. E. Hanson	402 Montgomery				
El Dorado Water & D. G. M. Co.	Cal.	3 50	Apr 19	May 14	H. Elias	416 Montgomery				
Emerald Hill M. Co.	Idaho	1 50	Mar 18	Apr 20	F. R. Swift	419 California				
Esmeralda Hill M. Co.	Utah	6 25	Mar 13	Apr 14	F. Madge	320 California				
Eta Buena Cons. S. M. Co.	Idaho	4 25	Mar 1	Apr 8	A. Noel	419 California				
Glasgow G. M. Co.	Yuba Co. Cal.	2 25	Mar 30	Apr 1	O. S. Gifford	419 California				
Globe Cons. S. M. Co.	Idaho	1 50	Mar 18	Apr 20	D. M. Verdenal	409 California				
Hale & Van Dyke Cons. Coal Co. Wyoming	Wyo.	2 100	Mar 9	Apr 20	A. D. Carpenter	605 Clay				
Iowa M. Co.	Nevada	1 50	Mar 25	Apr 1	O. V. Hubbard	214 & 216 Pine				
Jefferson G. & S. M. Co.	Cal.	4 100	Mar 25	Apr 1	C. S. Dyer	419 California				
Josephine Cons. S. M. Co.	Idaho	8 110	Mar 27	Apr 1	O. S. Gifford	419 California				
Lady Esten T. & M. Co.	Idaho	2 50	Mar 31	Apr 1	O. S. Gifford	419 California				
Lane & Francis Cariboo M. Co.	Cal.	4 100	Mar 25	Apr 1	B. E. Minor	419 California				
McMahon S. M. Co.	Idaho	1 50	Mar 18	Apr 20	C. R. Spence	330 California				
Manfield G. M. Co.	Idaho	2 25	Mar 21	Apr 27	W. Small	331 Kearny				
Mohave Cons. M. Co.	Arizona	1 50	Apr 16	May 6	T. E. Jewell	507 Montgomery				
Monte Cristo S. M. Co.	Idaho	1 50	Mar 18	Apr 20	A. D. Carpenter	605 Clay				
Monte S. M. Co.	Idaho	1 50	Mar 18	Apr 20	A. D. Carpenter	605 Clay				
North Belmont G. M. Co.	Idaho	2 100	Mar 13	Apr 14	Thomas Derby	320 Sansome				
Quintero M. Co.	Idaho	1 50	Mar 18	Apr 20	D. M. Verdenal	409 California				
Samaritan S. M. Co.	Idaho	1 50	Mar 18	Apr 20	D. M. Verdenal	409 California				
Sanderson G. M. Co.	Calaveras Co. Cal.	9 25	Feb 25	Mar 10	Wm. Stewart	413 Leidesdorff				
Santiago M. Co.	Nevada	3 30	Mar 8	Apr 23	D. T. Bagley	419 California				
Santa Rosa M. Co.	Idaho	1 50	Mar 18	Apr 20	D. M. Verdenal	409 California				
St. Lawrence S. M. Co.	Idaho	4 200	Mar 13	Apr 14	O. S. Gifford	419 California				
Table Mt. Alpha M. Co.	Idaho	3 25	Mar 31	Apr 1	T. F. Conner	419 California				
Union Cons. S. M. Co.	Idaho	4 200	Mar 13	Apr 14	O. S. Gifford	419 California				
Ward & Francis Cariboo M. Co.	Cal.	4 100	Mar 25	Apr 1	B. E. Minor	419 California				
Washington M. Co.	Idaho	3 100	Mar 27	Apr 1	J. M. Buffington	Merchants' Ex.				
Zacatero G. M. Co.	Idaho	1 25	Mar 25	Apr 1	T. E. Jewell	507 Montgomery				
MEETINGS TO BE HELD.										
Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.					
Homeriga M. Co.	Lower Cal.	J. H. Applegate	408 California st.	Annual	May 10					
Hunt & Hunt S. M. Co.	Ely District	T. Kimball	409 California st.	Annual	Apr 28					
Josephine Cons. S. M. Co.	Idaho	A. G. Ward	419 California st.	Annual	Apr 28					
New Idria Consolidated M. Co.	Nevada	E. M. Eckle	San Francisco and Cal.	Annual	Apr 27					
Original Golden Treasure M. Co.	Nevada	D. A. Jennings	401 California st.	Annual	Apr 27					
Phenix S. M. Co.	Idaho	J. H. Applegate	419 California st.	Annual	May 6					
South Chariot M. Co.	Ely District	Chas. F. Elliott	419 California st.	Annual	Apr 28					
Stephens & Midas M. Co.	Idaho	Wend		Special	Apr 28					
LATEST DIVIDENDS (within three months).—MINING INCORPORATIONS.										
Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.					
Black Bear Quartz M. Co.	Washoe	H. O. Oliver.	216 California st.	25	Apr 1					
Best & Belcher	Cal.	W. L. Kibbe.	419 California st.	50	Mar 1					
Cedarberg G. M. Co.	California	D. M. Boker.	402 Montgomery st.	50	Feb 1					
Cons. Amador M. Co.	Cal.	F. B. Latham.	402 Montgomery st.	50	Apr 1					
Crown Point M. Co.	Washoe	N. O. Fasset.	220 Clay st.	100	Jan 1					
Enreka M. Co.	Grass Valley, Cal.	R. Wagoner.	414 California st.	100	Dec 1					
Kerstone Quartz M. Co.	Cal.	L. Vessari.		100	Feb 1					
North-Belmont M. Co.	Nevada	Chas. F. Elliott.	419 California st.	100	Feb 1					
Providence G. & S. M. Co.	Cal.	J. M. Buffington.	Merchants' Ex.	100	Nov 1					
Mining Stocks.										
This state of the stock market this week has not been encouraging. Prices have been low and sales small. Washoe stocks have fluctuated between the following prices: Belcher between \$76 and \$83; Best & Belcher between \$26½ and \$30; Caledonia, \$22 and \$29; California, \$42 and \$45½; Chollar, \$60½ and \$65; Consolidated Virginia, \$84 and \$89; Crown Point, \$80 and \$90; Exchequer, \$35 and \$40; Gold & Curry, \$22½ and \$26; Hale & Norcross, \$40 and \$45; Kentuck, \$16½ and \$19½; Ophir, \$16½ and \$22½; Overman, \$46 and \$52; Savage, \$61 and \$68; Seg. Belcher, \$84 and \$93; Union Consolidated, \$15½ and \$19; Yellow Jacket, \$80 and \$85. Other fluctuations were as follows: Belmont between \$5 and \$7½; Enreka Consolidated, \$15½ and \$18; Raymond & Ely, \$20½ and \$25; Golden Chariot, \$15 and \$19; South Chariot, \$27½ and \$30. Prominent declines from highest prices of last week were as follows: Best & Belcher shows a falling off of \$2; Chollar, \$2½; Crown Point, \$3; Exchequer, \$4; Hale & Norcross, \$5; Kentuck, \$2½; Ophir, \$3½; Overman, \$3; Seg. Belcher, \$3; Utah, \$2; Raymond & Ely, \$2. Assessments delinquent this month are those of 22 mining companies and aggregate \$459,014. The dividends are four, and amount to \$944,000, leaving a balance in favor of stockholders of \$484,984. The Morning Call gives this week a short editorial about "how mines are assessed," and does not say a word about how dividends are paid. It gives the figures of the assessments levied this month and never mentions the fact that there were dividends also paid.										
and that they exceeded this assessments by the figures given above. The Call claims credit itself for giving fair and unbiased opinions of the state of mining stocks. We have no chronic quarrel with the Call, on account of its reports, as some other papers have, because we care very little for mining stock, but to a casual observer it appears as if the Call was trying to run down mining matters on general principles. At all events when it sums up "how mines are assessed" under a top-head article, it ought in all justities to mining, say in the same article, that the dividends paid during the same time more than doubled the assessments, as was the case. The total assessments this far this year amount to \$2,221,966 against \$2,306,860 in the same time last year. The dividends this year amount to \$3,448,000, while last year they amounted to \$3,231,181 in the same time. There is another fact that the Call might have mentioned, viz., that the assessments for the first four months of this year were less than last; and that the dividends for the first four months of this year were more than last.										
New Diggonos.—The Chinese have struck diggings in the channel at the mouth of Conner creek (O.) that pay six or eight dollars per day. The diggings are deep, being evidently the old channel of Snake river. The gold obtained is coarse, some pieces weighing as much as 16 oz.										
Diggings have been struck in British Columbia, on Wesley har, which are said to pay from \$20 to \$50 for the day's work of three or four hours to the hand.										
Tin to the amount of from 120 to 130 tons per week is now sent down to port from Stanthorne, Oranienburg.										

INYO COUNTY.

PANAMINT.—*Independent*, April 11: A 10-stamp mill is being erected on Jacobs' Wonder, and another, it is believed, is to be at once built for the Morning Star, owned by Senator Perkins' company. Three shafts are at work on Stewart's Venus, working on a 100-ft. contract. They are now down about 40 ft. The depth attained in the Wonder is only about 36 ft. Many other locations are being prospected to about the same extent, and so far not one but with the most encouraging and materially improving prospects.

EXTENSIVE SALT MINE.—A gentleman from Panamint district, designs to secure by United States patent a portion of a most remarkably extensive salt deposit, located about 10 miles from Panamint. The salt, to the depth of about a foot on the average, covers an area of about a mile and a quarter square, and is a very fine article. And, speaking of salt mines, immediately north and in sight of Cerro Gordo there is a valley along the foot of the Inyo range, which, for several miles square, is covered to about the same depth as the Panamint deposit. The article, ready for use, can be shoveled up by the ton in either of these places.

MONTEREY COUNTY.

Mining Prospects.—*Advance*, April 18: Mr. F. A. Gibbs, formerly engaged in prospecting for quicksilver mines in this district, is at present in New York, but is about to return here, and will immediately open some promising mines within a few feet of Hollister.

NEVADA COUNTY.

WYOMING MINE.—*Transcript*: We saw specimens of rock from the 300-ft. level of the Wyoming mine, which is very rich in sulphurets, and is said to be worth at least \$50 per ton. The ledge on this level has just been cut, and it is 3 ft. thick at the depth named. Every indication is now good for the mine to pay well.

Success.—*Tidings*, April 18: The New York Hill mine still holds good, and Mr. Delano the owner, informs us, the further he drifts on the ledge the richer it becomes, and we judge it so, from the appearance of the pieces of rock he brought us on Thursday of this week.

Idaho.—The Barleigh drill is to be introduced into the Idaho mine. They are worked by compressed air. Four are sent for, and in about 6 weeks will be in use.

PLACER COUNTY.

Mining.—*Herald*, April 18th: Since the white man first disturbed the solitude of the Sierras with the clatter of his pick and shovel, there has not been known so much snow in the mountains, this season of the year, as at present. This snow is now melting, which affords the miners an abundant supply of water. As a consequence, all the mines are working full forces. But what will make this much better than ordinary seasons, the supply of water will last until later in the summer. In short, the indications are that from the favors of Providence, Placer is bound to flourish, for the next twelve months at least.

Mills.—The quartz mills below town are hammering away on rock which is paying some ten, some twenty, and some as high as \$45 per ton.

Coal.—The coal mine at Lincoln is doing considerable business already. Nine carloads were shipped the other evening to Sacramento.

SIERRA COUNTY.

Goodyear Hill Mine.—*Messenger*, April 18: Work is being vigorously prosecuted on the above mine, located on or near the old Florida House trail, on Goodyear Hill.

Manson's Quartz Mill.—Work is being pushed on Manson's Quartz Mill, at the foundry, the castings being nearly all made.

TULARE COUNTY.

From the Mines.—*Times*, April 18: Mr. F. Hunt, Recorder at the new mines, informs us that he has arrived at the District and finds some of the leads to be very rich. He also states that quite a number of miners are now blasting and opening up some of the leads, and others are prospecting for new ones.

TUOLUMNE COUNTY.

Independent, April 18: Jas. Holmes & Lake O'Hara have a good placer and quartz claim at Union Hill, near Springfield. They are down 70 feet. One-half day's work showed 7% ounces of gold.

John Sloom & Jim Thomas, two Tuolumne amalgamators, have started the Golden Gate mill running.

The mines of Colombia and vicinity have now plenty of water and are all busy. Lang & Colby in December and February took out 243 1/2 ounces of gold.

They are still pumping on the Rawhide mine.

TRINITY COUNTY.

Minesville.—*Journal*, April 18: In this district the miners are all busy and doing well. Steve Turner and Dick Killings have found good prospects on the Stuart Fork, near VanMatre's house. Mr. VanMatre bought the interest of Alex. Campbell in the Dutch Gulch claim where the big gold comes from. He informs us that last Saturday afternoon they picked up \$110 in nuggets, and are every day expecting to find a piece of several pounds weight.

Lewiston.—Olney Phillips informs us that Lewiston district will not be behind any other in the county in the amount of gold taken out this season. Olney says he has the best claim in the county and is running it in good shape. The Little Giant is doing good work and saving much expense. Ten dollars and a half a day,

he tells us, does more work now than could be done for \$30 per day before he got the new rigging.

In the Basin.—The miners in Weaver Basin now have plenty of water, and are running it through their flumes well-filled with dirt. Much more bed-rock will be stripped this season than for several years past.

VENTURA COUNTY.

Signal, April 11: Mr. Sardin has some very fine specimens of placer gold washed out by the Chinaman who recently returned from the Piru mines.

Nevada.

WASHOE DISTRICT.

Crown Point.—Gold Hill *News* April 16: Daily yield of ore 550 tons. The ore breasts on the 1,000-ft. level are yielding finely and promise to extend upward through the entire 300-ft. level and perhaps into the 800, affording a vast amount of fine ore for extraction from that portion of the mine. The east ore vein, which on the 1,200-ft. level was only seven or eight ft. in width, was struck 28 ft. of the west vein. On the 1,300-ft. level it had inclined to the eastward until it was 60 ft. east of the west vein and had gradually widened to 37 ft. When the east cross-cut had been run 80 or 90 ft. on the 1,400-ft. level, many gave up the hope of again finding that portion of the ledge, thinking that it had pinched out; but Superintendent Samuel Jones, knowing the inclination of the east body, thought differently, and in spite of all opposition pushed the drift ahead, striking the ore richer than ever at a distance of 101 ft. east of the west vein. This body of ore has been penetrated 60 ft., and promises to open out over a hundred ft. in width, all of the finest quality of ore. Ore stops are being opened in this body, and the extraction of the ore has already been commenced.

Globe Consolidated.—The connection has been completed between the up-raise from the tunnel and the winze from the old works, thoroughly ventilating all the upper portion of the mine, and giving a means of soon commencing the extraction of ore. This winze has passed a distance of 170 ft. upward through ore to reach the old upper works, where the ore had been extracted and milled to the depth of 300 ft. from the surface. The old Globe tunnel will now shortly be extended.

Ophir.—The south drift on the 1,300-ft. level, running to connect with the north drift from the Virginia Consolidated, is fast approaching completion. There seems to be some difference in the depth at which the two drifts were started, and a raise is now being made to complete the connection. No prospecting or cross-cutting will be done on the 1,700-ft. level until the south drift shall have reached the south line of the mine.

Emm.—The property of the Erie Silver Mining Company consists of 1,500 feet in length by 600 feet in width, in the southern extremity of the Comstock, and immediately adjoining the old Pony Express ground on the south. The Florida and Pony Express developments, adjoining and in the same ledge, are highly encouraging for the prospects of the Erie.

Gould & Curry.—Sinking the double winze on the 1,700-foot level is progressing finely, the Burleigh drills driven by the new air compressor working with the utmost perfection and enabling much better progress to be made than by the old hand style of work.

Union Consolidated.—The main north drift on the 1,300-ft. level from the Ophir shaft has struck the west wall of the ledge along which it is being driven toward the Union Consolidated ground. The face of the drift shows some excellent ore indications, which are rapidly improving in appearance.

Chollan Porosi.—Daily yield 100 tons of ore, the assay value of which is \$32 per ton. There is no change to report of the ore producing portion of the mine, except a gradual improvement in the Belvidere section.

Sierra Nevada.—Daily yield 60 tons of ore, keeping the mill steadily running. There is an abundance of low grade ore in sight; prospecting for more in the upper portions of the mine is going on as usual. The new shaft is down 350 feet.

Sutro Tunnel.—The header of the main tunnel is still being driven ahead, and hereafter better progress will be made, as shaft No. 2 is nearly down to the tunnel level. It will probably be completed on Saturday next, and thenceforward the tunnel can be worked both east and west along its line, from the bottom of the shaft, thus giving three working faces and three times as good opportunity for working as there has been heretofore. Shaft No. 3, which is located between shaft No. 2 and the header of the main tunnel, was abandoned some weeks since, it being found that the tunnel could be, with present facilities, worked past it before it could reach the tunnel level.

Yellow Jacket.—The main incline is to-day 40 feet below the 1,640-ft. level in good sinking ground in the west wall, and progressing deeper at the rate of 15 feet per week. It will take about two months to bring it to the 1,740-ft. level, 280 feet in vertical depth below the Sutro tunnel level. When the 1,740-ft. level is reached it will be opened and properly developed, as the indications above in the mine warrant the expectation of something particularly good at this deeper level.

Baltimore Consolidated.—The water has again been drained and work resumed in the bottom of the shaft, notwithstanding there is a strong flow of water that at times will almost entirely stop the work for two or three hours,

when the pumps will again get the better of it and the sinking go slowly on. The erection of the new hoisting machinery is making steady progress.

Bellevue.—Daily yield 550 tons of ore, from the 1,000, 2,000, 1,300 and 1,400-ft. levels. The ore taken from the 1,400-ft. level is of the same quality as that taken from the level above. The ventilation on the level is good, owing to the fact that the cold air passing down the Crown Point shaft finds its way to this level.

Leo.—The main adit is being driven steadily ahead into the hill, following the ledge. The vein water is wide and the rich ore streak has again widened out, being to-day about 20 inches in width, with good indications of still further widening.

Savage.—Sinking the main incline is making steady progress, the rock in this bottom blasting and working finely.

Imperial-Emprise.—The main incline is down 80 ft. below the 1,850-ft. level, the bottom in good ground and sinking making good headway. The main east drift, on the 1,850-ft. level, is making excellent headway, and is undoubtedly passing through the west wall of the ledge.

Genesee No. 2.—This location is a very eligible one, in Spring valley, and adjoins the Daney on the north. It is an old location, but work is now being done to develop it. A new double working shaft is commenced, which is now down 45 ft. in good solid quartz, assaying as high as \$35 to the ton.

Knickerbocker.—The pumps are all completed and in good running order. Good speed is being made in draining the shaft of water. The air pipes are being extended from the shaft into the west drift at the lowest level for the purpose of resuming work in the face of the drift at the earliest moment.

Miner.—The new hoisting machinery is completed and everything working with the utmost perfection. Hoisting the water from the shaft has been commenced.

Bricker.—Prospecting work goes on as usual, and the mill is being put in order for another good run.

Hale & Noncross.—The prospecting on the 1,900-ft. level is confined to two cross-cuts south of the incline and one near the north line. The cross-cuts south have up to to-day been passing through alternate streaks of quartz, clay, porphyry, and seams of rich ore, but showing no body of ore that will pay for extraction.

Julia.—The main south drift, on the 900-ft. level, is now in 800 ft., still following the west wall of the ledge. Cross-cuts are being run 40 or 50 feet apart as the work progresses, for the purpose of determining the quality of the ore. The east cross-cut from the main south drift on the 1,000-ft. level, has struck a solid clay wall which it is not yet through.

Caledonia.—The station and tanks for catching the water have been completed at the fourth level and a west drift started to connect with the air winze from the third station-level.

Florida.—The Florida Silver Mining Company's ground, which is the recently segregated north half or 1,300 ft. of the old Pony Express claim at the south end of American Flat, under the superintendence of J. J. Nagle, is giving a good showing at the present time in both the north drift and the winze, some very good assays being obtained.

Overman.—The main west drift on the 1,200-foot level is still being driven vigorously forward, the rock in the face blasting and working finely.

Kentuck.—The main north-east cross-cut on the 1,000-foot level from the Crown Point is in 120 feet, the face in a mixture of clay, quartz and porphyry. This drift is being run to connect with the Yellow Jacket works. As soon as that connection is made and ventilation obtained, cross-cutting the ledge will be commenced.

Utah.—The south drift from the main west tunnel is still continued to the southward, finding occasional bunches of quartz, but nothing of a very promising character.

California.—The north drift, from the Virginia Consolidated on the 1,300-foot level, is making steady headway, and will probably connect with the south drift in the Ophir in four or five days more.

Rock Island.—New hoisting machinery has been ordered from San Francisco, and the first shipment will probably arrive at the mine by the fifteenth of next month.

South Star.—New shaft down 92 feet to-day, in pay ore all the way, assays running from \$25 to over \$250 per ton. The rock is hard, but blasts well, allowing of good progress. No water encountered as yet.

Segregated Rock Island.—Another cross-cut, No. 2, has been run into the ledge, which shows a steady improvement in the quality of the ore as the work progresses to the northward.

Woodville.—Sinking the main shaft is making slow headway, the rock in the bottom blasting hard and tough. It is to-day down 23 feet below the 300-foot level.

Nevada.—The ore in the south drift, has improved considerably during the past week, both in quality and quantity. The ore in the face is now four feet wide, of good milling quality, with an average assay taken from car samples of \$27.36 per ton.

Pictou.—The tunnel is in over 400 feet, and is being driven steadily ahead with favorable indications. The sinking of a shaft is proposed as soon as this tunnel shall determine the position of the ledge, and the best place for sinking.

Lady Bryan.—Sinking the new shaft is making rapid progress, the rock in the bottom blasting finely. It is now down 75 feet. The erection of the new hoisting works building has commenced and is making rapid headway.

Tyler.—Sinking the main shaft is making excellent progress. It is now down 70 ft. below the 300-ft. station.

Alhambra.—The new hoisting works building is completed. The engine and other machinery is in place, and it is expected that everything will be in readiness to resume sinking the shaft in about 10 days' time.

Chapin and East, Comstock.—Owing to unexpected increase of water, work is suspended in this shaft until arrangements are made for a suitable pump to enable the work to progress advantageously.

Sutro.—Increase of water having seriously impeded the advantageous working of this mine, the expediency of sinking a new working shaft is under consideration by the management.

Crown Point Express.—Work temporarily suspended owing to influx of water. Better pump arrangements required.

Silver Hill.—The machinery is again in good running order, and work has already been resumed in the mine.

New York Consolidated.—The new pumping machinery, and repairs to this shaft being about completed, the works will start up again next Monday, when sinking in the shaft will be resumed.

Lady Washington.—The repairs to the main shaft, and the erection of new pumping machinery, are going ahead vigorously, and the works will start up about the first of next month.

South Comstock.—Incline down 20 ft. below the 150-ft. level, sinking in the foot wall material, which is clay, with a fine looking streak of quartz. No water interferes.

Arizona.

Miner, April 10: Col. H. A. Bigelow called at our office, yesterday evening, when, in the course of conversation, we learned that himself and partners in the Bashford mining claim, Lynx creek, have in a very short time taken out \$788.

Mining Prospects.—*Citizen*, April 11: We noticed last week the rich discovery made in Morgan mountains by Pat Morgan and others. It is said to be parallel to and near a monster lode of galena ore that contains a large percent of silver, and it is thought by some to be a part of the same vein. The walls of these lodes are said to be regular and give evidence of being true fissure veins, of great value.

Thos. Gardner brought in about a ton of very rich ore from the Trench mine this week, which the owners intend to send to the Colorado smelting works for reduction. The Trench lode is increasing in width and richness as they go down on it.

J. J. Muller and Sam'l Hughes returned this week from Sierra mines, south of Tucson. Mr. Muller is a scientific and practical miner, and says that he was surprised to find such quantities of rich ore.

Coal.—*Statesman*, April 16: The Boise City Coal Co. are very much encouraged in their prospecting on the Idaho road, above the Garrison. Fred Dangel, one of the company, showed us a specimen rock containing portions of coal, also several small pieces of very good coal, found about 20 feet below the surface, with good indications.

Montana.

Blackfoot.—North West, April 7: Mining has already been commenced by Tarry & Co. and Hagan & Co. near Blackfoot, and by Kermally & Co. further down Ophir. A considerable number of the miners who have been away have returned, and everything betokens an early general resumption of work.

Oregon.

Summit.—*Baker City Herald*: The quartz which is now being taken out of the Summit mine at Augusta, is of a richer quality than has ever before been produced in that mine. We are inclined to the belief that there are no mines in Baker county which have been fully developed. But much will be done the present season tending that way.

The pinch in the James Gordon ledge, Baker county, has been worked out, and now there is a large vein of quartz developed, which is far richer than any heretofore taken out.

The miners of Eastern Oregon are ready for Old Sol to pour down his beams that the water may pour down into their ditches from the snowy mountains.

Miners in Jackson county are beginning to feel the failing of the water in the creeks and ditches, and many of them will soon be compelled to lay down the shovel for another season.

Washington.

Yakima Mines.—*Union*, April 4: We have been shown a private letter written to a gentleman in this city, from a friend in the Swack mines, in which among other things it speaks of mines having been struck down on the Yakima river at the mouth of the Swack. They prospect well, and it is believed they will prove to be good paying mines. At the newly discovered camp there is no snow, and there is a plenty of water, and the miners are going ahead and are busily engaged in opening their claims. In the Swack mines the nights are still cold and there is not much doing. Snow is from one to three feet deep, and is settling and melting a little. The writer seems to have all faith in the mines ultimately paying rich, both in placer and quartz mining.

Agricultural Progress.

Farming is acknowledged to be progressive, even by farmers. Whatever changes come about are made usually by insensible gradations; but in the course of a few years we are often surprised to see that some innovation, which at the start had perhaps been ridiculed, has wholly ousted the old modes. Never before the present have farmers been so willing to concede that there was any room for improvement. Says the *Western Rural*: The progress in agricultural art within the last fifty years, although not as marked as that made in the mechanic and other arts, is nevertheless fully indicative of the increasing intelligence among the agricultural masses. When we look back upon the improvements in plows, harrows, reaping, mowing and threshing machines, and then to the old-time forks for handling hay and grain, and the many other tools that have been consigned to the tooth of time or utterly forgotten, we may well feel proud of the improvements that now enable the farmer to plow, sow, reap and garner away, enabling one or two individuals to do the work that before required the work of many laborers to accomplish.

The farmer, if so disposed, may now take his riding plow and turn the soil. He may harrow by a machine suspended on wheels, roll, sow, plant, cultivate, reap, bind, stack, thresh and sack his grain by the use of mechanical power. Steam carries the grain from the warehouse or the railway car into the immense bins, from whence it is again distributed, by the same power, to the railway or the ship for transportation to the consumer at home and abroad. All this has been made possible by improvements within the last thirty years.

In live stock, the improvement has been particularly marked, as an examination of our favorite breeds of horses, cattle, sheep, swine and poultry will amply attest. In fact the question is now often asked where is the limit beyond which improvement cannot go.

One of the important questions in this connection is, how has it come about? The only answer is, principally through the education of individuals to the profession in life which they are to follow. An important factor in this connection, however, is the habit of independent thought that has become prevalent among the masses, through the system of universal and free education inaugurated, not only in the United States, but in other enlightened countries, imperfect though it be as yet. A notable fact in this connection is also worthy of mention; that is, the mass of the more important inventions of the day is the result of the brain work of the three nations where education is most advanced, viz: the United States, Germany and Great Britain.

Besides the improvement of farm machinery, agricultural art itself, as connected with the management of the soil, has made no less rapid strides than has been shown in the invention of agricultural implements and machines. We understand far more now about the nature and proper conditions of the soil, and this knowledge is every day becoming intensified. We have done with much that was purely theoretical, and are working upon true principles founded upon experiment, bringing out facts, the foundation of all science.

We should realize the importance of practical experiments, as presenting and substantiating the truth or falsity of theory continually. Our agricultural colleagues are, some of them, doing something in this direction now; so are our agricultural and horticultural societies. Their efforts should be supplemented in every direction by practical workers on the farm, and the result should be made known through the press, that agricultural art may make equal progress with the improvement of agricultural machinery. Many important facts are lost to the public every day, from the feeling among practical men that their discoveries may not be entirely correct, or at least that subsequent experiment may modify the proofs so far as collected. This is certainly true, but the result of one experiment, or one set of experiments, almost always gives rise to others, carried forward in parallel lines. Therefore give us facts, even if they be simple ones only, for it is through these made public that we must expect the greatest progress in the improvement of agricultural art.

One of the principal reasons for the rapid advance in the industrial arts, as distinguished from agriculture, is that no sooner is a result arrived at by practical experiment than it is chronicled in the technical journal, devoted to the trade. Farmers should see to it that their own technical journals, the agricultural papers, are made the means of preserving from oblivion any fact arrived at in the exercise of their daily labor.

VALUABLE ARRANGEMENT.—A large force of workmen were yesterday engaged on Union street, between C and D streets, Virginia, in digging a deep trench in which is to be laid a pipe for conveying water to the Virginia Consolidated works. The pipe is four or five inches in diameter, and with the great pressure there will be on it is capable of carrying a great volume of water. Hydrants are to be placed at convenient points about the works, connected with this pipe, with plenty of carbolized hose ready to attach at a moment's warning. This will be a very efficient protection, in case of fire, either to the works or the surrounding buildings.—*Gold Hill News*.

A Novel Wire Fence.

Wire fences have many points of advantage. They are cheap, where lumber is expensive, and are light, portable and easily put up; and, besides, are of attractive appearance when carefully constructed. The great drawback has been the liability of the wires to sag when expanded by heat, tighten when contracted by cold, and to sag when strained by the efforts of animals to pass through. When attached to rigid supports, such strain stretches the wires so that they remain taut.

In the fence herewith illustrated, known as the Wakefield wire fence, invented by Mr. Chas. A. Wakefield, of Pittsfield, Mass., means are provided whereby, when the wire expands by heat, the increase in length thus occasioned is taken up. When the wires contract by cold, or when tension is put upon them by the efforts of an animal to pass through them, they yield without stretching, at the same time that they afford sufficient resistance to stop animals from passing. A very brief examination of the engravings will show how this is accomplished.

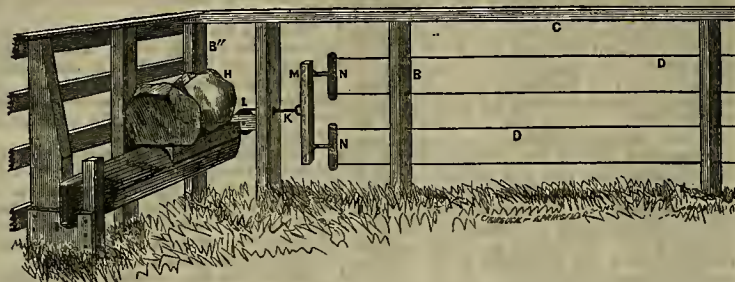


Fig. 1.

The wires are made fast only to the end post at one end of a section of fence. They are then passed loosely through all the intermediate posts to the other end, and are there attached to a set of whiffletrees and an evener. These are attached to a chain and pulley which suspend a weight of sufficient magnitude to prevent the wires from yielding when strained by cattle, and yet allow them to yield before that amount of tension is exerted which will permanently stretch them. This fence has been tested thoroughly for four years on the inventor's farm, and has proved to be not only cheap, but durable and efficient.

Figures 1 and 2 represent a longitudinal

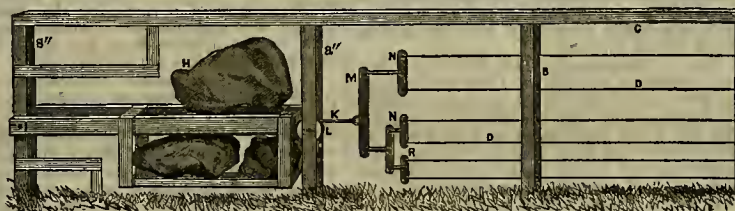


Fig. 2.

elevation of one end of a section of fence constructed in accordance with this invention. Figure 3 represents a transverse elevation of the opposite end, showing only the end posts, the equalizing pins, and the wires coiled around said pins. Pieces of the posts are represented as broken out, uncovering the upper pin.

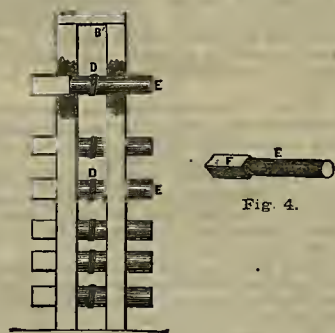


Fig. 3.

B, B, represent the posts; C, C, a continuous rail of wood forming the top of the fence; D, D, the wires; E, E, the round, and F, F, the square section of the pin; H, H, the weights; I, I, the board in Fig. 1, and the pin in Fig. 2, supporting one end of the frame and timber on which the weights are placed; K, K, the chain on which the other end of the weight frames are suspended; L, L, the pulleys; M, M, the eveners; N, N, an ordinary, and R, R, in Fig. 2, a secondary, or short pair of whiffletrees. Fig. 4 shows one of the equalizing pins.

The set in Fig. 2 is arranged like a three-horse, and in Fig. 1 a two-horse evener. An evener may be arranged for a fence of any given number of wires, and have the strain equal on each. The fence may be made with, or without, a rail of wood on top. The advantage of the rail is, that cattle will see it sooner, and be less liable to run into it.

An immense quantity of lead is said to exist in the immediate vicinity of Sherman, Texas.

Coal Ashes.

Fertilizers are becoming nearly as numerous in kind as they are rare in quantity. Farmers are apt, and with reason, to distrust the different substances and compounds which are so vigorously supported by their special advocates; and have little faith in new and experimental modes of increasing the fertility of soil. As a rule, too much is claimed, at the outset, for a particular agent; too much is expected of it and its application is assumed to be too general hence, when it is tried for purposes which it cannot possibly influence, failure and disappointment ensue, and it is denounced as altogether worthless.

The idea of utilizing coal ashes as manure is not a new one. Such a dressing has been successfully applied in many cases for years, and we have previously called attention to its value. After all, actual trial is the only way to determine the real merits of anything; no amount

of theorizing is so convincing as a single, fairly conducted test.

Last year a Pennsylvania farmer, who had always believed that coal ashes had a value for agricultural purposes, and had advocated the free use of them, particularly on limestone soil, determined to get closer to the root of the matter, and test their value fully. He had a plot of ground on which he had been unsuccessful for several years in raising good potatoes. The soil was in the best condition always. The tops did well. In the spring he had a plot of ground scored about six inches deep, placed the cut potatoes in the bottom, and filled up with coal ashes. The plants grew finely, notwithstanding

the dry weather. The tops did not fall over even after the weather changed, and he stated that he secured a crop of the very best potatoes for the table he ever raised.

The second experiment was with onion seed and coal ashes. He put out five good sized beds in seeds. In four the seed was covered with soil; the fifth he covered with sifted coal ashes. The result surprised every person who knew of the experiment and watched its progress.

A third experiment was started on seed which promised utter failure to those who looked on; but the result proved quite as successful. He says: "I have abiding faith in coal ashes and am ready to use all I can purchase." The *Rural Home* cites a case in point, which, if it does not prove too much, is at least a severe strain upon ordinary imagination, as follows:

"In 1857, a man went to Palermo, N.Y., and bought sixty acres of light, sandy land, with here and there a little pertaining to gravel. He paid \$1,800 for it. He knew nothing about farming, being a machinist by trade, and never held a plow. After paying for his land, he had \$200 left. He began, and found his land was worn out. His first crops were—wheat, five bushels per acre; rye, eight bushels; potatoes, seventy-five; corn, mere nothing. The second year was even worse. He had to hire part of his sheep pastured out; he could not hold his own. But being a man of excellent judgment, and a great reader, his good judgment, aided by theories, carried him through. He began by buying ashes and plaster; would draw potatoes fourteen miles to Oswego, and load his team back with manure from the livery stables. His crops increased. His ashes were spread correspondingly thick. He raised, principally, potatoes and wheat. Now, 2,000 bushels of ashes per year is about what he buys. His potatoes, for several years past, average 250 bushels per acre; his winter wheat, 30 bushels and over; and he has saved, from his farm alone, till he now holds \$12,000 in bank stock, and would not sell his farm for \$100 per acre. He sold, in 1869, of potatoes and wheat, over \$2,300 worth. He is known as the best farmer in this county. Yet when he began buying ashes, old farmers shook their heads and said: 'He will know better when he has farmed it as much as we have.'"

The moral to this nice little story is that a light, sandy loam and an abiding faith in the books will carry a man anywhere.

When similar experiments are made with any fertilizer, let the information gained be published, with verification, for the good of others. After the results, there is time to look for a theory. With ashes the explanation is simple: besides the mechanical effect in loosening heavy soil, they supply valuable mineral salts, which enter into the composition of plants.

Deserted Mines.

A new exchange, the *Rocky Mountain Miner and Mechanic*, says: In passing through the various mining districts, on a tour of inspection, the singular feature of a great many deserted holes in the ground attracts attention. Some have been sunk to a considerable depth, 50 or 60 feet perhaps, while others are but shallow excavations. That these holes were dug in search of the precious metal is evident, but the question—why there is nothing being done with them—naturally arises.

In some cases an unusual inferior quality of ore is found near the surface not exceeding \$50 in value per ton. After a few tons have been taken out, a shipment is made, and from the returns it is learned that the yield of the ore was only enough to pay for the hauling and working; the expense of each ranging from \$20 to \$30 per ton, leaving the miner a zero for the reward of his toil. Although every evidence is manifested that the lead contains rich quartz in large quantities if opened to a required depth, the poor miner is forced to abandon his discovery for want of means to develop it.

In other instances where the mine has been opened to a considerable depth, and is turning out good pay, a formidable barrier makes its appearance, and the miner finds his shaft rapidly filling with water. He brings to his assistance all the available means which he is pecuniarily able to procure—endeavoring to take out the water and prosecute his work. He is compelled to employ much extra help, and after having expended his limited capital in this way, he is forced to desert his antiprize.

It is no exaggeration to say that over a hundred valuable mines, rich in gold and silver, within half the number of miles from Denver, are lying idle, which might be worked with large profit, if properly managed.

When the ore is of a low grade, machinery is needed to dress and separate it at the mine, obviating the hauling of worthless rock long distances over steep roads; and where water is the barrier, machinery is necessary to profitably contend with that obstruction.

A small engine of about 10 or 12-horse power would be of sufficient size to run machinery for dressing the quartz, work the shaft and keep pumps in operation, if necessary. Such an engine, together with the machinery and pumps, could be put on the ground and set up ready for use at an outlay of \$3,000 to \$5,000; and in addition to its service in working the machinery, would save the labor of \$2,000 to \$4,000 per annum.

In every instance where an experiment has been made with machinery for these purposes, it has proven a complete success.

This is a subject of much conversation in the mining districts, but the question is how are men of means to be made interested, and capital brought to the assistance of experience and labor, in developing our untold wealth of mineral resources?

The field is open, the harvest is waiting. Come forward, men of enterprise, invest your money, and if prudence is exercised, success will crown your efforts.

Coal in Amador.

The *Sutter Independent* of April 8th has the annexed on this subject: That we have a coal belt running through our county which only needs development to render it an important source of revenue to us, hardly needs to be proven, since several mines have already been opened upon it with extremely favorable results. It is true that the coal heretofore taken from these mines is not of uniform character, some of it partaking more of the nature of lignite, or wood not yet completely metamorphosed into carbon, yet much of it is fully equal in quality to Rocky Mountain or Mount Diablo coal; and the probability is that when that portion of the vein which has been completely prospected from the action of the atmosphere is reached, the whole of the deposit will be found to be of improved quality. But whether this be the case or not, there is now sufficient quantity of coal of good quality opened up to create a large business, when once a cheap method of transportation is obtained to market. It is estimated by those who have examined into the matter, and who have no interest in misrepresenting facts, that upon the completion of the Lone Railroad, at least 200 tons of coal from our mines can be shipped daily, for which a market can be easily found in Stockton, San Francisco and other places. This coal can be sold, with a fair profit to the shipper, at \$5 per ton in Stockton, and \$6 in San Francisco. Numerous tests have been made of the quality of this coal with the most satisfactory results. For blacksmithing purposes it was found to be equal to coal which costs four times the amount this can be sold for, and for fuel in manufacturing, it was found to be equally well adapted.

USEFUL INFORMATION.

The Waste of Oil.

If there be one thing more than another which is likely to be wasted about a workshop, it is oil. This waste is not wanton or even intentional, perhaps, but those who do not have to pay for oil seldom realize how important it is to economize it, and it is not often they know how to use it properly. It would not be extravagant, perhaps, to assert that half the oil used about machinists shops and metal-working establishments in general, is wasted. For example, if a workman wishes to oil his file for finishing, he will pour a stream over its surface, allowing two thirds or more to drip on the floor, when the file could be sufficiently moistened by a small bunch of waste, or better, a small sponge saturated with oil, without wasting a drop. If a hole is to be tapped in iron, whether cast or wrought, the workman too often prefers lubricating oil to patience and "elbow grease," and pours on oil until he saturates the substance or fills the pores of the iron. In ordinary cast iron, a tap, properly made or judiciously used, can be run without oil, or with a very small quantity, and in this work, as in many other processes, a saponaceous liquid is equally as effectual and much cheaper.

It is an old and worn out notion that almost every operation on the metals, and almost every use of a tool, must be accompanied with oil; neither is it correct that oil alone is a lubricant. Holes may be drilled and tapped, and surfaces finished without the use of oil, although some lubricant may be necessary. The addition of oil to an already clogged file, milling tool, saw or rotary cutter, is not only a waste, but is no aid to the progress of the work. Either of them may be quickly and effectually cleaned either by wiping with waste, combing with the card, or heating over the forge fire; when they will do the work required much better than if they had to overcome the resistance of a body of viscid oil.

In the lubricating of shafting, also, great waste is occasioned. Where shafting is suspended in ordinary boxes, most of the oil leaves the journal almost as soon as poured into the box, and finds its way, dirty and fouled, into the drip pan; once there it is nearly worthless for shop use. Gummy, dirty oil, charged with foreign matter, half oxidized by exposure to the atmosphere, although often used for tapping and screw cutting, is unfit for even those purposes. It corrodes the taps and dies, and by its adhesive quality adds greatly to the power required to do the work.

We might add other illustrations of waste of oil, or extravagance in its use, but this article is intended to be suggestive rather than instructive. Every manufacturer can, by investigation and experiment, find out what proportion of the oil used in his business is wasted, and by a judicious overseeing he can usually effect an important economy in the amount annually consumed. It is economy, or a disregard of it, in such little matters that often makes the difference between profit and loss to a manufacturer.—*Iron Age.*

TEMPERATURE REQUIRED TO HATCH EGGS.—A correspondent of the *English Mechanic*, who claims to have had great experience in artificial incubation, and who states that he has traveled over the continent of Europe and in Egypt, to ascertain practical facts in regard to the subject, asserts that the temperature required to hatch eggs should vary according to the thickness of the shells. He says the highest success is only to be reached by particular attention to this point. For thick shells he gives an average heat of 110° as the proper temperature for hatching. For medium shells, 100°, and for thin shells, 95°. Experiments of our own in artificial incubation, show that the latter temperature is several degrees too low for the eggs of any kind of fowl reared in this country. Various authorities give the temperature of the blood of a chicken as 111°. During the act of incubation, the temperature of the blood of fowls is somewhat raised, the animal becoming feverish. The temperature of eggs, during the natural process of hatching, is maintained probably quite up to that of the normal temperature of the blood of the incubating fowl. We have never succeeded in artificially hatching eggs at an average temperature below 110° and we believe that an attempt to hatch even the thinnest shelled eggs with an average temperature of 95° will fail.—*Artisan.*

PRESEAVING IRON AND STEEL SURFACES FROM RUST.—A varnish which will effectually prevent iron and steel surfaces from rusting may be made of the following ingredients: Resin, 120 parts; sandarac, 180 parts; gum lac, 50 parts. These should be subjected to a regular heat until melted and thoroughly incorporated, when 120 parts of turpentine are added, and subsequently, after further heating, 180 parts rectified alcohol. After careful filtration, the varnish should be put up in bottles and kept tightly corked until used. It will keep bright iron and steel rods from rust under almost all conditions.

ADHESIVE PLASTER.—According to Otto Facilities, adhesive plaster, which has become brittle by age, and has lost its adhesive qualities, may be rendered adhesive again by coating it with oil of turpentine, by means of a sponge, and leaving it exposed for a day.

Encaustic Colors.

Encaustic colors are the various metallic oxides. When more than one substance is used for coloring, the proportions must be varied to suit the tint required. For violet, use iron or manganese with soda; for purple, chloride of gold with tin and chloride of silver; for black, iron, manganese, uranium, and iridium; for blue, cobalt, carbonate of cobalt, small or silicate of cobalt. Zinc will brighten blue colors. For indigo, use the materials employed for both violet and blue; for turquoise, use copper with soda, or cobalt with zinc and soda phosphate; green may be obtained with copper, either with or without antimony, or by chrome with cobalt; for bronze green, use nickel. Zinc, or carbonate of zinc, will brighten this color. For olive green, use nickel with cobalt; for yellow, use antimony with potash, titanium, chromate of lead, and chromate of barytes. Zinc will brighten this yellow. For buff, use the materials for yellow, with iron, sepia, sienna, ochre, and amber; for orange, use uranium, or the sulphide of antimony with iron; for red, use iron, chromate of iron, sulphate, copper, and ochre; for carmine, chloride of silver; for pink, iron and chrome, with potash; for brown, use iron, chromate of iron, manganese, with or without cobalt, ochre, and hammer clunder; for gray, use iron, cobalt, iridium, platinum, titanium; for white, white clay and five per cent. tin oxide. The coloring oxides are used in quantities of from five to ten per cent., sometimes from fifteen to twenty per cent. No definite rule can be given for quantity. Some of these oxides act as fluxes, and great skill must be used in their employment, in order to prevent the melting of the tile.—*Artisan.*

STRENGTH OF BUILDING MATERIAL.—Experiments are sometimes made in regard to the power of stones of different kinds to resist compression, by cutting one cubic inch off each, placing it between two steel plates, and charging it with increasing weight till crushed. For convenience sake, this weight is applied by means of a lever, so as to obviate the necessity of actually handling the hundreds and thousands of pounds—one or more sliding weights on a strong beam being sufficient for these experiments. The results, taken from an exchange, are indicated in the following table, in which the number of pounds is that of which the substance could bear the pressure, while it was crushed by the addition of more:

Name of Stone.	Weight applied in Pounds.
Inferior Pale Brick.....	2,000
Common Good Brick.....	4,000
Hard Brick.....	5,500
Pressed Philadelphia Brick.....	5,500
New England Granite.....	11,200
Italian Marble.....	12,800

GLUE MELTING.—Break the glue into small pieces, and soak from 12 to 24 hours in cold water; put the glue in the glue pot, fill the outer vessel with water, and apply heat. For ordinary purposes it should run freely, and be of the consistency of thin treacle. The hotter glue is, the more force it will exert in keeping the two parts glued together. In all large and long joints the glue should be applied immediately after boiling. Glue loses much of its strength by being often melted; that glue, therefore, which is newly made, is much preferable to that which has been used. When done with, add some of the boiling water from the outer vessel to the glue, so as to make it too thin for use. Put it away till wanted again, and by the time the water in the outer vessel is boiled, the glue in the inner is ready melted, and the proper thickness for use. Powdered chalk, brick dust or sawdust, added to glue, will make it hold it with more than ordinary firmness.

FIRE AND WATER-PROOF PAINT.—Slack stone-lime, by putting into a tub, covered to keep in the steam; when slackened pass the powder through a fine sieve, and to every six quarts add a quart of rock salt and a gallon of water; then boil and skim clear; to every five gallons of the liquid add pulverized alum one pound, pulverized copperas, half pound, and stir slowly; add powdered potash, three-quarters of a pound, then very fine sand or hickory ashes, four pounds; then use any coloring matter desired, and apply with a brush. It looks better than any ordinary paint, and is durable as slate; will stop small leaks in roofs, prevent moss from growing thereon, make it incombustible, and render brick impervious to water.—*Boston Cultivator.*

TO KEEP AIR FROM WINE OR CIDER DURING FERMENTATION.—The *Boston Journal of Chemistry* says, that a tin tube made like a siphon, driven into the vent of a barrel of wine or cider, and the other end inserted into a vial of water, will prevent the air from entering the barrel, while the gas escapes through the water. Make the barrel otherwise tight. When the cider or wine is done working, the water in the bottle will cease bubbling. It requires no filling up, as there is no loss.

ANTI BOILER INCORUSTATION.—As a preventive of boiler incrustations, milk of lime and baric chloride are recommended; the former for the precipitation of the lime bicarbonate, the latter for that of the gypsum, before the water is run into the boiler.

A RED INK WHICH RESISTS THE ACTION OF MOST CHEMICALS.—This ink is a solution of carmine in soluble glass, and must be kept in a bottle, with a well oiled cork.—*Sc. Am.*

GOOD HEALTH.

Health from Shakespeare.

How quickly nature falls into revolt
When gold becomes her object.
For this the foolish over-careful fathers
Have broke their sleep with thoughts, their brains
With care.
Their bones with industry.—*Henry IV., 2nd part.*

Will fortune never come with both hands full,
But write her fair words still in foulest letters?
She either gives a stomach and no food—
Such are the poor in health—or else a feast
And takes away the stomach—such are the rich
That have abundance and enjoy it not.
I swear 'tis better to be lowly born,
And range with humble livers in content,
Than be perched up in a glistening grief,
And wear a golden sorrow.—*Henry VIII.*

Foul Air.

Dr. Brigham writes, in the *Herald of Health*: Why need we seek illustrations of bad ventilation when the complaint is so universal, and no place seems to be exempt? What dwelling-house has a perfectly satisfactory air, even where no nuisance can be detected on the premises, and no expense has been spared in enticing into it the breezes of heaven. Where is the workshop in which the pleasure of easy breathing moves the artisan to perpetual song in his toil? Where is the office in which the lawyer finds that the air makes dry briefs spirited, and turns to a pastime the search for authorities; or in which the doctor does not inhale a draught which is only less bitter than his powders and his pills? Where are the bed-chambers in which the dreams are naturally of Araby the blest, or in which the tired brain is left by the air to sleep in Elysium?

Perhaps this complaint about foul air is extravagant, and more ado is made about it than the facts will warrant. Our fathers were not so sensitive, and they kept health in houses where no direct provision was made for ventilation. Have we not grown morbid about a matter which is really of minor importance? Is it not really a misfortune that air is so readily analyzed, and that there is so much prying into its quality, to detect a few grains more or less of intrusive plague? Are we any happier or sounder in body because we know exactly the proportion of oxygen and nitrogen and carbon and water that ought to be in the normal air, and can test it and weigh it? Were not ignorance bliss, rather than this perpetual fret about what seems beyond help? Not a few impatient souls have come to hate this persistent alarm about an evil which seems to have become an excuse for grater evils, and to unsettle the foundations of morality. Are we not told that the sins of men come from the bad air which they breathe, and that crimes are the product of atmospheric impurities? Is not the carbon of the cellars and the attics made responsible for the larcenies and murders upon the highway? "For heaven's sake," they say, "stop this tirade about ventilation and bad air; submit to the inevitable, and let us have peace!"

But science is inexorable. We have discovered the mischief, and in spite of this plea of passive submission science will not be silent until the evil is corrected and the remedy is shown. We shall fight it out on this line, if it takes all the rest of the century to finish the fight. We shall agitate and agitate, until the foul vapors are shaken out and away from the abodes of Christian women and men. We shall try experiments, even if a hundred more shall fail, until "achieved is the glorious work." We shall work on, hoping against hope, it may be, until man becomes a successful ruler of the earth because he has fairly dethroned Satan, and become "Prince of the powers of the air." We shall expose the causes of bad air, and plead and threaten until they are set aside. We shall not let the world live in its delusion, or die in its sin; but shall cry aloud and spare not. There is no discharge in this war for any one who has sworn to protect the public health, and to watch in its behalf.

1. The first source of impurity in the air is the carbon given out in the process of breathing. Each breath that we draw helps to spoil the next breath that we shall draw, if we are held in a room where the air is confined. Of course this cause is more efficient as the number of those who breathe is greater. The air is ruined more rapidly in a room where a dozen are pouring out carbon from their lungs than where only a single pair of lungs are at work; more rapidly in a room where a thousand are crowded together than where there are only fifty or a hundred. The poison there is speedy in its working, and we feel it in nerve and vein. But it is not less real in the chamber where we sleep or the library where we read, because its influence is so silent and we take no heed of it. While we draw in the breath of life we are all the time throwing out the breath of death.

2. *Exhalations from bodies* are a second source from which poison comes into the air. The healthiest body, full of bounding life, sends continually into the atmosphere around it the seeds of disease. The emanations from any organized animal frame put into the air something foreign to its purity. Plants, indeed, purify the air by what they absorb and by what they give out; but no one pretends that animals purify the air by their bodies, whether they are men or swine. Caliban in his den, rolled in his unwashed rug, does not vitiate the air more surely than Brummel in his boudoir, anointed and perfumed. Perspiration assists respiration in the distribution of carbon, and the result of a perspiring crowd

in a ball-room or a church is not radically different from the result in a ginshop, or a hovel, where animal heat infuses the air with its microscopic deadly germs. Even the harmless, necessary cat, clearest of all household pets, does evil to the air which can be appreciated. And the dear love of a spaniel or a poodle, washed and combed, and ringed with a pink ribbon, vitiates the air of the room while he lies upon his cushion.

3. Next to these two causes of impurity in the air, from which we never can get away, we may place the decomposition of waste and refuse, from the influence of which very few homes of men are free. From the store-room and the pantry, from the kitchen and the back yard, from vegetables and fruits in decay, from meats hung up economically, from garments rotting in dampness, from mould upon the walls, from the hanks and parings and the ash-hops, what foul aroma rises before they melt and crumble into common dust! The most diligence cannot quite remove this source of pollution. No sewerage comes so often, or does his work so thoroughly, that he carries off every kind of decaying fibre. Some fungus will stay in the most jealously cleaned habitation. Where there is life and moisture, the rock will have always its moss and its lichens. Is there not paste upon the plaster? Does not the steam of the roasting and broiling come charged with effluvia, which may be grateful to the nostrils yet baseful in the residue of corruption? Friendship may live while the pot boils, according to the Latin proverb: "*Fervet olla vivit amicitia*," but when the pot has done boiling, the latter emanations are unfriendly to health and comfort.

4. Of course dust has a large share in loading the air with foreign substance dust in many kinds, room dust, street dust and field dust, dust which hides in carpets and curtains, dust which is on the hearth and the window-sill and the cornice, dust which is palpable and vexes the nostrils, and dust which we only detect as it floats in the rays of sunlight. We have not to wait for death in order to return to dust; we never get away from it, even if we dwell by the lake and remote from the highway. Very few of the human race breathe an air in which there is no dust. It can only be in the region of ice fields and polar snows. Even in mid-ocean dust flies in the air. Most of us live in an atmosphere thick with dust, rising from the pavement, rolling from the roadway, sifting through all crannies of the house, and borne in the garments wherever we go. Dust accompanies our pleasures; it is raised by the flying feet, and on the race-course we can call to mind the wall of Ezekiel. "By reason of the abundance of his horses their dust shall cover thee."

5. *Sewers and stagnant pools* are another fruitful source of pollution in the air. The best system of sewerage, carefully carried under the ground, with pipes impervious and cemented, cannot keep in all the pestilent vapors. Foul water, in its flow and its evaporation, inevitably dissolves into foul air. The conveniences within the house becomes its plague. How shall the air of a city be kept pure when running rivers of filth are drawn under all its streets, to poison the water of the natural river into which they flow? Shall all the odors of Farina, genuine and spurious, clean the air of Cologne, while the river Rhine catches a flow not strained, but in no other respect like the quality of mercy?

6. *Miasma* from decaying vegetation, from marshes and alluvial soil, is another curse from which, in many localities, the air cannot escape. The deadly blight goes beyond the spot of its origin and spreads far, in spite of all effort to keep it back. It comes from the meadow up to the lawn, and from the lawn into the house. We breathe it in the mists of the evening and the mists of the morning, and the August air, which seems so refreshing and cool, is only malaria, which mortals ought to dread.

7. *Combustion*, too, in the methods which men employ it, destroys the air by the gases which it generates. Through the cast iron furnaces and red hot stoves, carbonic oxide finds its way into the current, and fills the house with a stupefying influence. Factory chimneys and house chimneys in the cities belch forth their smoke and send it through the air in sooty rain. Shall we expect pure air where the curling fumes of a copper mill or a chemical factory flock the sky?

8. And then how many necessary nuisances disperse their odors in the haunts of civilized men! Glue factories, bone boiling works, soap works, tripe works, slaughter houses, breweries, tanneries, petroleum refineries, fish spread upon the land, charcoal pits, etc., combine to poison the air.

NITRATE OF SILVER REMOVED BY IODIDE OF POTASSIUM.—Dr. L. P. Yandell, Jr., reports two cases, both young merchants, who had been unsuccessfully treated for epilepsy by urate of silver, in their youth; and whose skins were badly discolored by the remedy. Both contracted syphilis, and for tertiary symptoms were given iodide of potassium from ten to sixty grain doses, thrice daily, for a number of months. The color of the skin gradually improved, until in one no trace of the staining remained, and in the other but a faint shadow of it. He goes on to state that mercurial vapor-baths were administered during much of the time, which, by the diaphoresis excited, probably aided the action of the iodide; and suggests that in the treatment of urate of silver discoloration, the vapor-bath should be used in connection with the iodide of potassium.

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San Francisco:
Saturday Morning, April 25, 1874.

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MONTANA'S GOLD.—In a debate in Congress, relative to the establishment of assay offices at Helena (Montana), St. Louis (Missouri), and Chicago (Illinois), Delegate McGinnis made a strong appeal for its passage; and, after describing the risks and dangers of transporting the treasure of Montana and the exaction and heavy charges to which his constituents were subjected by gold-dust brokers and private assay offices, made the following interesting statement: "I would say to the House that the Territory of Montana, although one most isolated, is and has been our greatest gold-producing Territory. It has been organized 10 years, and in those 10 years it has produced \$160,000,000 of gold and silver bullion; more than a million a month, and nearly enough to pay one-half of your greenbacks; and I believe that in the ten years to come it will produce enough to pay the rest. By the laws of the United States, and more than that, by the Constitution of the United States, every man who possesses or produces bullion is entitled to have it coined at a reasonable cost. But on all that magnificent contribution to the nation's wealth, the miners of Montana have had to pay from four to five per cent. to get their bullion to the mint at Philadelphia, or the Market at Wall street, New York. They have been obliged to pay express companies 2½ per cent. to get their gold to the mint, and often have had to pay in addition quite as much to get their greenbacks back in exchange, and this, although they are as fairly entitled as any other citizens under the Constitution of the United States to reasonable facilities for converting that gold into coin."

CROWN POINT.—This splendid mine, still "keeps up its tick." The receipts for March were \$738,000; expenses, \$323,000; leaving a net surplus of \$415,000, of which \$400,000 was paid in dividends. The mine is still producing at the rate of 100,000 lbs. of gold per month.

THE MINING EXCITEMENT AT SILVER CITY, NEX.—Large hoisting works and tailing flumes are being constructed at the mines, and not an idle man is to be found in the vicinity.

THE NEW MACHINERY.—which is to be used for the incline of the Crown Point mine, will be the most powerful of its class in the United States.

The Negley Amendment.

The appointment of Senator Jones, vice Senator Chandler, resigned, on the Committee of Mines and Mining, in Congress, just at this time, looks, in view of Senator Jones' experience in this line, like a proper act. Still there are some, who, perhaps, will find fault with the appointment. It does appear rather a questionable proceeding for a man so largely interested as he is, to sit in judgment on the Amendments to the Mining Law, which will affect his interests so greatly. He may be above personal considerations on the subject, but the public have of late come to the conclusion that all people in high places under the Government will bear watching. Senator Jones is pretty well posted in mining matters; that, no one will deny, but is he going to watch out for the interests of the common miner as much as for that of the capitalist? There is something going on in Congress which miners do not understand. Just at a time when highly important bills and amendments are being considered, with strong influences on both sides, changes take place which may portend more than they appear to.

Commissioner Drummond, of the Land Office, an efficient and honest man, resigns shortly after having expressed a decided opinion on the subject of one of these bills. Senator Jones, who is heavily interested in the result of the Negley Amendment, is appointed on the Committee of Mines and Mining, in place of Chandler. Senator Jones has created an excitement, by a surprising speech, and proven that he can talk when he wants to. Could he not have served the mining interests as well out of, as in that committee? If his advice was wanted, it could have easily been procured. We do not believe that his acceptance of the position will be looked upon with favor by any of the miners, except the rich owners of the productive mines on the Comstock. And, looking at it from the view of those who own ledges off the immediate line of the Comstock proper, their reasoning seems very plausible. They say that Senator Jones owns the Crown Point mine. That he, like all the large companies, is working some distance to the eastward of his original location. The Crown Point, like the other productive mines, must define its boundaries within six months under the Negley amendment. The Crown Point does not want to define its boundaries any more than any of the other big claims. The poor men say that under the present system and laws, the rich men have the best of it. The rich men will not patent their claims nor allow the poor ones to do so. If a claim off to the eastward starts in to get a patent, one of the big ones near by enters a protest, on any ground convenient, and by this means gets a "stay of proceedings." Then under the law the case is brought into the local courts, which we all know do not bear the best of reputations. When once in court, and especially in some of the Nevada courts, it does not take much shrewdness to guess who will get a verdict—the rich or poor man.

Now if the Negley Amendment is adopted it will change this method. The productive mines only are compelled to procure a patent, and the others must render annual accounts, and when they become productive, they must patent their land also. The productive mines do not want patents because they must define their boundaries, and the burden of proof rests with them. If they are working over their boundaries, and following other leads, than dips, spurs or angles of the one they originally located, and that under other men's ground, have they got any right to do so? If they have, they will be let alone? If they have not, let the proper owners have it. It does not make any difference to the country at large who owns the productive mines, so long as they are productive ones; works will be erected and men employed just the same. But these rich companies will not define their boundaries, and while working their own mines, will not permit others near by to be patented for fear of losing ground, which many of them do not believe they really own.

Many of these claim owners do not like the Negley Amendment because it provides that the Suto Tunnel royalty must be paid anyhow, whether this amendment is passed or not. And if many of these mines found themselves in early days to do certain things, why should they now seek to crawl out of it to the injury of others, because the others have the best of the bargain? They ought to have looked out for that in the first place. If the Suto Tunnel Company had certain rights and franchises, and undertook an expensive operation because they had them, they should be protected in these rights. Leaving aside all considerations as to whether the tunnel will be beneficial or not, if the tunnel owners have spent large sums of money, on the strength of rights given to them by the highest tribunal in the nation, they ought now to be protected in these rights. If Suto had bound himself to drain and ventilate the mines free of charge, and only claimed the blind lodes he struck, it is pretty certain that the companies would compel him to finish his tunnel.

Now the question with the common miner in relation to the Negley Amendment, etc., is whether there is any great wrong being done in compelling the productive mines to define their boundaries, once for all, so that other people can know where they are. Because these

men have located on a ledge and sunk deep shafts and run lengthy drifts, does it give them the right to everything underground for a mile or two each way, whether on the original ledge or not? Is Senator Jones, who owns one of these productive mines, the man to sit in judgment as to whether the amendment is a proper one or not? Is his opinion an unbiased one? Will the poor man have as good a chance as the rich one? Is it better to make these miners define their boundaries now, or wait until they have worked out all the ore—their own and that belonging to others? Is there any practical hardship in making ten or a dozen mines spend \$1,000 each in getting a patent? It is not the money they care for, but they do not want to define their boundaries.

We give these views as the views of those miners owning ground to the eastward of the original Comstock. If the big miners believe in the "one ledge theory," and can get mining experts to corroborate their views, they need not fear the new amendment. If there is more than one ledge, these companies haven't any right to more than they located, and others ought to have a chance. The amendment only applies to the Comstock, and only to the productive mines; and as their owners only want to fight it, there seems to be a very good reason for poor men to think that it will benefit them more than the rich.

Mining Accidents.

The Eureka Sentinel, of the 16th, mentions an accident which occurred in the Dunderberg mine, on the Prospect mountain, whereby a man named John Buckingham met with serious injury. He was engaged in blasting in the lower mine, and having placed two cartridges in proper position, retired to a safe distance until the explosion had taken place, which shortly followed; but, it appears, that one of the cartridges had performed its work; the other, for some unexplained cause, had not exploded, and just as Buckingham was about proceeding to his work, it went off, the flying rocks striking him with full force about the head and face, cutting him badly. The most serious wounds are a fracture of the skull and a deep cut on the forehead. His hair and eyebrows were badly singed by the burning powder, and he had a very narrow escape from losing his eyesight.

On the 16th inst., at Dutch Flat, Placer county, an explosion occurred in the Cedar Creek Mining Company's tunnel, which resulted in the death of McOlive, a laborer. Six or eight cartridges had been fired, and the workmen were engaged taking out the loose rock, when the deceased struck an unexploded cartridge with his pick, which exploded the cartridge, mauling the lower part of his body in a horrible manner, from the effects of which he died in about half an hour. No other persons were seriously hurt.

VANCE NELSON, a miner employed in the Sheba mine, at Star District, Nevada, had the first joint of the little finger of the right hand cut off, last week, by a falling rock. He was working in a raising stope, and soon after letting off a blast returned to commence work. As he placed his hand on a heavy timber to climb up into the stope a quantity of rock that had been loosened by the blast fell upon him, the largest piece, weighing about forty pounds, catching his finger against the timber cut off the joint.

A PROFITABLE MINER.—The Van, a prominent English miner, has paid more dividends than mines generally do. Since they began work, the ore sold amounted to 25,565 tons of lead, and 5,320 tons of blende, for which the company received a total of \$371,466. The company began work in February, 1869, and these figures include the last sale made on the 12th of March last. From the proceeds of these sales, the directors had divided, up to the end of 1873, a sum of \$167,250 in dividends, or very nearly the capital of the company three times told.

THE MONTEREY AND SALINAS NARROW GAUGE RAILROAD COMPANY broke ground this week about 10 miles from Monterey. The Salinas valley, which was formerly devoted to stock-raising, is now one of the most extensive grain-producing sections of the State; and this railroad will transport grain, etc., to Monterey, to be shipped by sea, instead of by a longer route by rail. The idea of a railroad in Monterey seems a strange one, as it is a sleepy, Spanish town, which, though one of the oldest, is one of the most backward in California.

STICKEN.—The messenger, Sylvester, brought down to Fort Wrangel late news from the Sticken mines. He informs the Victoria Standard that the weather was extremely cold, and it is impossible to prospect. The opinion formed of the country by the miners in general is favorable. There is no doubt whatever of the richness of the mines, as reported after last year's prospect, but one year's further prospecting is necessary. Found 250 men in the mines, and met 300 on the way, bound in.

COMMISSIONER DRUMMOND.—In consequence of the inadequate salary allowed him, Hon. Willis Drummond, Commissioner of the General Land Office, has resigned, and will retire from office on the 1st of May. It is reported that ex-Congressman Burdett will probably be appointed to succeed Mr. Drummond.

Work was commenced this week on the extension of the railroad south from Delano.

The Mining Bill and Negley Amendment.

We give below the full and correct text of the Mining Bill with Negley's Amendment, which was on the 2d inst. referred to the Committee on Mines and Mining, with the Amendment (Negley's) of the House of Representatives viz: Strike out the second section of the Bill as passed the Senate, and insert in lieu thereof the latter part, which is printed in smaller type.

AN ACT supplemental to the Act entitled, "An Act to promote the development of the mining resources of the United States," approved May tenth, eighteen hundred and seventy-two.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That where applications for patents for mining claims have been filed in the proper district land office, and legal notice thereof given without the appearance of an adverse claimant, and in which cases no further proceedings have been had for the purpose of perfecting title, such applicants shall make final proof and payment on said claims within one year from the date of the passage of this act; and in cases of like applications for patents hereafter filed, the applicants shall, in the absence of an adverse claim during the notice, make said final proof and payment within one year from the date of filing such application, in default of which the proceedings for patent so had by such applicants shall be considered void and without effect.

Sec. 2. [That all affidavits required to be made under this act, the act to which this is supplemental, or the act to which said act is amendatory, may be verified before any officer authorized to administer oaths, and all testimony and proofs may be taken before any such officer, and, when duly certified by the officer taking the same, shall have the same force and effect as if taken before the register and the receiver of the district land office.] Provided, that when such affidavits or proofs are taken at any place other than within the land district, it shall be by the clerk of any court of record in the United States.

That all ex parte affidavits and proofs required by law to be made before the local land offices in mining or preemption cases may be taken before any officer authorized to administer oaths in the land district where the claim may be situated, or out of such district, before the judge or clerk of any court of record, and in all cases of contest the testimony or proofs required may be taken before any clerk of a court of record in the land district where the claim may be situated, on personal notice of at least ten days to the opposing party; or, if said opposing party cannot be found, then by publication of at least once a week for thirty days, in a newspaper, to be designated by the register of the land office as published nearest to the location of such land; and the register shall require proof that such notice has been given, and such affidavits and proofs, when filed with the register, shall have the same effect as if taken before those officers. Provided, that in such contest cases, the testimony of a witness residing out of the land district may be taken in the county of his residence, in the mode herein prescribed. Effect shall be given to this act by regulations to be prescribed by the Commissioner of the General Land Office, and no regulation or order, or anything contained therein shall affect or make void any patents granted by applicants for claims on mines on the Comstock Lode, in the State of Nevada, nor shall it be construed to repeal, impair, or in any way affect the provisions of the act granting to A. Suto the right of way and other privileges, to aid in the construction of the Suto Tunnel, and exploring tunnel to the Comstock Lode, in the State of Nevada, approved July twenty-fifth, eighteen hundred and sixty-six. And provided further, That all persons, companies, or corporations owning claims or mines on said Comstock Lode shall make application for patents within six months from the date of the passage of this act, and in the absence of a bona fide adverse claim during the notice make final proof and payment, and file an abstract of the same in the same manner as hereinafter provided within twelve months from the date of filing such application; or, if already filed, from the date of the passage of this act; and in default thereof, or in default of filing with the register of the land office at Carson city, in all cases where patents have already been issued, an acknowledgment of the receipt of such patent, subject to the conditions therein contained, within twelve months from the passage of this act, such claims or mines shall be open to relocation by other parties in the same manner as if no location of the same had ever been made, always subject, however, to the conditions of the Suto Tunnel act approved July twenty-fifth, eighteen hundred and sixty-six. And provided further, That unproductive mines located on the Comstock Lode shall not be required to secure patents until the same shall become productive; but it shall be the duty of the owners or claimants of such mines to make a written report of the progress of development in their mines to the register of the nearest land office at the expiration of each year.

Passed the Senate February 16, 1874.

Attest: GEO. C. GORHAM, Sec'y.

LEAD contains many impurities, such as sulphur, iron, tin, antimony and copper. Impure lead is known by being whiter and less soft than the pure article, which readily stains the hands, linen, etc. The impurities commonly found are injurious for technical applications, especially white lead making. Pure lead melts at 330 deg. to 335 deg. It is brittle a little below the melting point, and volatile in closed vessels at a white heat.

PAGE & PANAMA.—The trouble between the stockholders of the Page & Panama mine, which involved half a dozen charges and cross charges of assault and battery, malicious mischief, vulgar language, etc., was adjourned this week. Mr. Falk, representing one of the antagonistic elements, became possessed of enough stock to elect himself President, which seems to have removed all cause of conflict.

The recent finding of ruins of a fortification and tower, by Lieutenant Ward's command, east of Florence, on the Gila river, is another proof that all of Arizona was once inhabited by a very superior race of beings to those found by the first white explorers.

Eureka District.

[From our regular correspondent.]

The Eureka Mining District was organized sometime in the summer of 1865, yet it was not brought prominently before the public as a mining center till early in the spring of 1870. It is situated among the low range of scrubby hills running northeasterly and easterly from Prospect Mountain, which is the main range of the district, having its course almost due north and south. There are many valuable mines located on the eastern slopes of this range, whose altitude can not be less than 8,000 feet above the level of salt water. The district proper embraces an area of something like four square miles. It is, however, bounded 18 miles on the northeast by Diamond Mountain District; 12 miles southeast by Pinto; 14 miles same direction by New Mark; 7 miles south by Secret Cañon District; and 12 miles to the west by Spring Valley District, which, with the others just enumerated, are all tributary to and dependent upon Eureka for their supplies, as are the districts south of it. The population of the town and district numbers about 6,000 souls, drawn hither chiefly by the prospect of gain which the wealth and great mineral resources of the district held, and still holds out to them, and the others that are sure to make it their homes in the future. Seldom or never were there brighter prospects spread before any of the mining camps of Eastern Nevada, or more real signs of permanency and prosperity before itself, than those and these that are now dawning upon Eureka.

The Town

It is situated in about 38°40' of north latitude, and is built in a long, low cañon, at a point where it opens out in the shape of an ellipse; betwixt the hills that inclose it on the east and west. It is reached by stage, distance of 80 miles from the Palisade station, on the Central-Pacific line, and is distant from San Francisco, probably 460 miles as the crow flies; through by rail, via Palisade, it is something over 600 miles. The general features of the town and surrounding country do not differ materially from those of other sections. There is a sameness about mining towns, particularly about the towns of this State, that can be found nowhere else on the coast, and a description of one would go far to cover all the others. The style, dimensions, appearance and architectural finish of the houses, stores, etc., are about equal. Here we have the inevitable main street, found in every mountain burg, of any pretensions to metropolitan importance. It is a long, straggling thoroughfare, running in a straight line midway betwixt the sides of the ellipse, on each side of whose length, for a half mile or more, are built stores, saloons, restaurants, hotels, lodging-houses, etc. The Richmond and Consolidated furnaces occupy the extreme and opposite ends of the town, the former on the south and the latter on the north, while the Silver West, Jackson, Ruby, Consolidated and Hoosac furnaces are ranged on the declivities of the hills, bordering the west side of the town, which is adorned by many elegant and substantial buildings of wood, brick and a kind of soft, white sand-stone, found in abundance at a convenient distance. Being very soft when first quarried, it is easily dressed and prepared for buildings, and hardens when exposed for any length of time to the air and sun.

The county buildings consist of a jail, a county hospital, a commodious public school house and a court house, in which latter building are arranged the county offices, such as the Clerk's, the Treasurer's, Assessor's, District Attorney's, Surveyor's, Auditor's and County Recorder's office; while the Sheriff and his Deputy have their office in the strong house of the county, over which they preside. The financial affairs of the county, which is yet in its infancy, though it is making vigorous strides toward manhood, are in a very healthy condition, and are ably and judiciously managed by a trimvirate Board of County Commissioners, who hold five sessions a month, presided over by D. H. Hall, of the International Hotel. They receive for their services a pitiable monthly stipend of \$50, and being public servants liable to public censure, are often grossly and outrageously abused for the real or imaginary wrongs they commit; and my opinion is, that the imaginary offences, largely preponderate over the real ones. The dear public is, however, a capricious creature of many impulses, some warm and generous, some cold and selfish, while its very fickleness in matters of the gravest import renders it about as hard to be understood in the various moods and tempers as the caprices of our ancient friend, Lindley Murray, used to be in the days of "auld lang syne," when the hirc and rule helped to indicate the principles they covered, and when the village pedagogue held undivided sway over the minds and senses; for

"There in his noisy mansion, skilled to rule,
The village master taught his little school."
The inculcation of religious and moral ethics

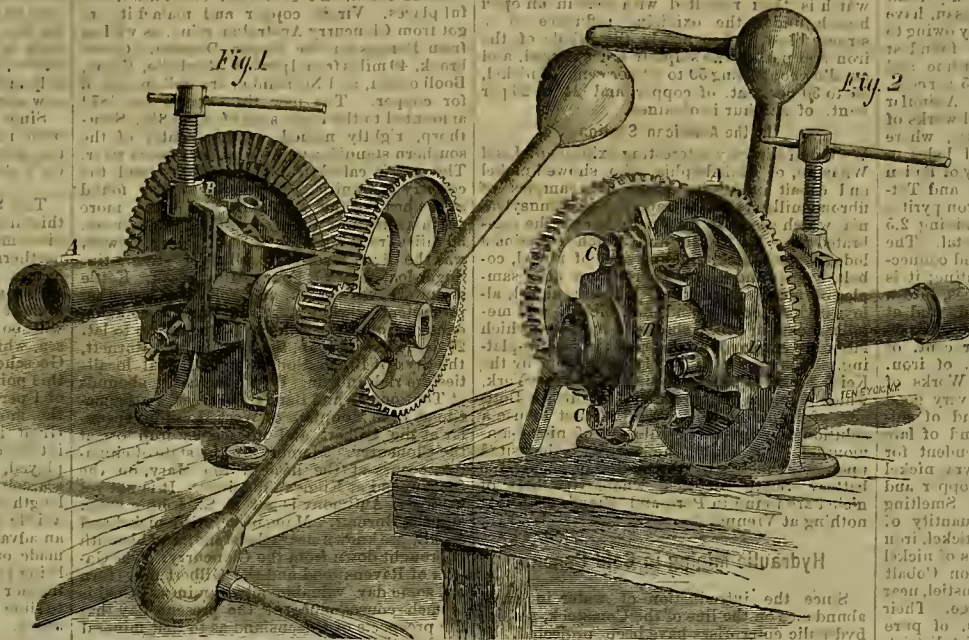
is a thing too that is neither forgotten or neglected as it might be supposed it would be in a mixed and feverish community, such as ours is, and such too as usually constitutes an inland mountain district far removed from the civilizing and refining influences that are found to prevail in less isolated places. Nor do we find that educational facilities are wanting in our midst, for our citizens have manifested a praiseworthy concern in providing suitable schools and competent teachers to mould the plastic minds of their children.

"The education forms the common mind.
Just as the twig is bent the tree's inclined."

Are maxims whose truths are well known and appreciated in our time, and happily too in our country. Intelligence and morality may not always journey together in the same boat, 'tis true, but the first offers of powerful incentive to the growth and perfection of the second, and a combination of the two qualities, when found pervading, animating and directing society, are always sure to bring with them their own reward. There are four places of public worship, which are usually well attended on the Sabbath. You must not infer from this, however, that we are all saints or that we take kindly to the doctrines of the meek and lowly one of Nazareth. These things might be well enough to think of, but somewhat hard to practice in a climate such as ours has been during the past winter. icy blasts will but ill fan the flames of devotion. The human mind is a puzzle to even the keenest metaphysician, and will be so, too, till Gabriel's blast is heard amid the fastnesses of our stern old mountains.

The Weather

Has at last somewhat subsided in its severity. The beautiful vernal season for which we have so long prayed and sighed, has at length burst



THE CHASE PIPE CUTTING AND THREADING MACHINE

over this part of the moral heritage, in the great joy of your correspondent, and divers of his friends. The genial sunshine will now very soon obliterate all traces of the arctic visitations we have just experienced. The snow is fast disappearing from hill and dale, elevated mountain and winding cañon, and the lately impassable approaches to our mines and other places in the vicinity of town are being rapidly put in repair by our two enterprising team owners, Messrs. Davis & Harsh, against the long and busy season they will in a short time inaugurate. Never were there fairer prospects before in Eureka, and never were our people more desirous to take advantage of them than they are at present. Our mining prospects for the coming season are all that the most exacting could desire. Work has been vigorously prosecuted upon many of the mines during the past months, when neither wood nor coal could be hauled to the furnaces. The result of these operations are now everywhere manifest. New strikes are prevalent occurrences in the Richmond, Eureka, Consolidated and K. K. mines. Neither are those of lesser renown behind, for every day we hear of some new and important development. Some notable properties that have long lain idle, to the injury of the district and the disgrace of their owners, are about to have active life and vigor infused into their arteries once more. The Jackson, Phoenix and Adams Hill companies are to recommence work upon their respective mines about the first of the month. There are also many other new improvements and enterprises to be launched here the coming summer, about which I will post the Press in a subsequent letter, when I have more time and greater inclination to write than I have at present.

YUCIPA, a new mining district in San Bernardino county, is bounded on the north by Mill Creek, south by San Jacinto cañon, on the east by Edgar's Creek, and on the west by the San Bernardino mining district.

The Chase Pipe Cutting and Threading Machine.

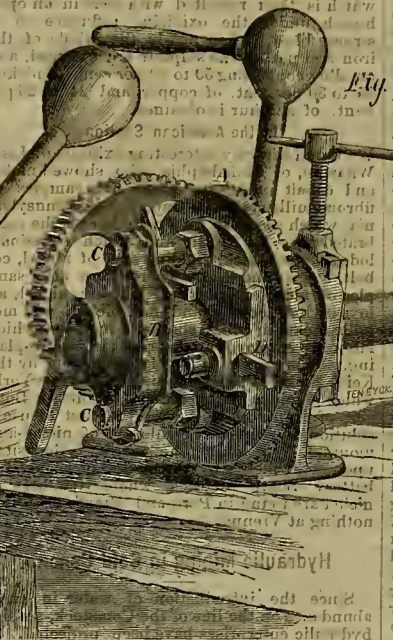
The machine illustrated on this page is for the purpose of cutting and threading gas and other pipes, and bolts from 1-8 to 2 inches diameter. It is portable, weighs 100 pounds, and occupies a space of about 15x17 inches square. It is constructed in the best manner of cast-steel and malleable iron, the gearing is all cut, and all the parts are interchangeable. It will be found of great importance in gas, steam and all other kinds of pipe fitting, in cutting and threading pipes, making nipples, threading bolts and nuts, and in cutting off bolts to any required length.

In making repairs or fitting up work on ship-board, it would prove to be a useful and economical tool, as it can be readily set up almost anywhere, and the large amount of work it is capable of doing could be performed on board, avoiding the necessity and loss of time in going to and from the shop. It could easily be arranged as a convenient drilling machine.

It operates with ease, and its capacity for doing work is said to be fully equal to that of three men under the old method. It can also be operated by a belt and pulley, and it would be a useful tool in any machine shop.

The machine cuts a thread, makes nipples for all sizes of pipes, from 1/8 up to two inches. It will also cut and thread bolts.

The splitting of pipe is entirely avoided, and a thread can be put on a pipe as large as two inches, with perfect ease. It cuts and



threads and makes nipples for all sizes of pipes, from 1-8 to 2 inches.

The manner of cutting leaves the pipe smooth, with no bevel outside or inside, (to be filed off for putting on the die, or to diminish the diameter), and allows two cent ends to fit closely, thus making a perfectly tight joint. The thread cannot be put on otherwise than straight, and, by its manner of working, dies will wear much longer than as used at present, the chipping of the teeth being avoided.

The machine is strongly made of cast steel, malleable iron and cast iron, the gears all being cut, with every part interchangeable. It weighs 100 pounds, and is made to be a portable machine, working either by hand or power, thus enabling steam and gas fitters to cut and thread pipes, and make their own nipples, where the work is being done, thus preventing the necessity of going to and from the shop.

It will be found very convenient to all steam fitters, gas fitters, machine shops, car shops, steamers, sugar refineries, distilleries, railroad trains using air brakes, and all who have to cut and thread pipe bolts. J. M. Keeler, No. 306 California street, in this city, is agent for the Pacific Coast. The machines cost about \$150, which includes a full set of collars for making nipple.

YELLOWSTONE DIGGINGS.—About 100 men will find employment in Emigrant, Bear and Crevic gulches in the Yellowstone country this summer. On a bar, at the mouth of Bear Gulch, there are two companies engaged in mining. The bar is an immense bed of gravel which all prospects well, and they have an abundance of water.

As the bill providing for the coinage of 20-cent pieces has been favorably reported in the Senate, there may be such a thing as checking the "odd five cent swindle," about which our Eastern brethren grumble so much when they visit us.

A Challenge.

[From the Dayton, (O.) Journal.]

OFFICE OF STOUT, MILLS & TEMPLE,
DAYTON, O., Nov. 17, 1873.

We hereby challenge James L. Leffel & Co., manufacturers of the James Leffel Double Turbine Water Wheel, Springfield, Ohio, to a public scientific test of our respective Turbine wheels. Namely, the James Leffel Double Turbine Wheel and the American turbine. Said wheels are to be tested by competent hydraulic engineers of known ability and experience in testing turbine wheels. Said engineers to be selected by the respective owners of said wheels. Said tests to be made with approved instruments and appliances for determining the power of wheels, and quantity of water. Said wheels to be of ordinary finish, such as is furnished to the trade, and of medium size, from 42 to 64 inches in diameter, and to be tested with one-quarter, three-eighths, one-half, one, one and one-half, three-quarters, seven-eighths and full gates, the part gates to be determined by the quantity of water passing the weir in cubic feet per minute, and not by the amount of gate openings, and the wheel producing the highest average to be declared the successful wheel.

The cost of the defeated wheel are to pay all costs of testing, including in said expenses all traveling expenses of engineers, judges, and one member of each company of the respective owners of said wheels; each party, owners of said wheels, to deposit with the judges five thousand dollars (\$5,000) as security for the faithful fulfillment of the conditions herein named; the entire amount of water used, from 42 to 64 inches in diameter, to be tested with one-quarter, three-eighths, one-half, one, one and one-half, three-quarters, seven-eighths and full gates, the part gates to be determined by the quantity of water passing the weir in cubic feet per minute, and not by the amount of gate openings, and the wheel producing the highest average to be declared the successful wheel.

We will under no condition spend time testing water wheels in competition with any one by grinding grain or driving any kind of machinery, as there are so many contingencies in such tests that it would be impossible to determine the difference with any degree of certainty while the percentage of useful effect could not be determined at all. All who understand testing turbine wheels and have made tests with a view of ascertaining the percentage of useful effect, know that a great deal of careful preparation is required in order to determine the exact amount of water employed and power produced, both of which are indispensable in order to render an intelligent verdict. And if tests were made by any other means except with such instruments and appliances as are required in scientific tests for weighing the power and measuring the water it would be time and money spent to no purpose, and neither the parties interested or the public would be any wiser for the tests having been made.

A series of conflicting certificates and and in confusion. What we demand are thorough scientific tests by competent engineers, from whose decision there can be no appeal. To such tests we challenge James Leffel & Co., of Springfield, Ohio, while, at the same time, the same proposition is open to the world.

STOUT, MILLS & TEMPLE.
The above wheels, built by Stout, Mills & Temple, and which have given such splendid results, may be seen at Treadwell & Co's, in this city, who are agents for their sale, and have a large stock of all sizes on hand.

UNDER CURRENTS are among the mining improvements now being extended in connection with placer claims. An undercurrent flame, costing \$1,000 not infrequently pays \$20 a day during the running season, above expense of cleaning up. Scarcely any attention is given to them while running. We shall give an engraving and description of one of the best styles of under currents in an illustrated paper on placer mining ere long. Hoskins Bros., at Gold Run, use a series of secondary undercurrents, having closer (1/4-inch) gratings. They find that the extra saving of quicksilver pays all the expense, besides the gold which is saved in addition.

NEW INVENTION.—MANUFACTURE OF RUBBER GOODS.—The uses to which Caoutchouc or India Rubber is capable of being applied are almost innumerable, but it is only within a few years past that articles made of this valuable substance have come generally into use. Even now the development which has been effected is nothing to what it is certain to be. The value of Rubber Goods imported and used on the Pacific coast, is about \$2,000,000 annually, of Boots and Shoes alone, there being not less than 8,000 cases sold of a value of \$300,000. With such a large consumption it has been often a matter of wonder that the manufacture has not taken root here, and the fact remains but little to our credit. This stain on our industrial caoutchouc is, however, at last to be wiped out. A company for the manufacture of Rubber Goods is at last being organized by a prominent member of the firm of Buckingham & Heath, Boot and Shoe manufacturers. The capital stock which is being taken by our most prominent capitalists and merchants will be \$1,000,000, and constant employment will be afforded to five hundred hands. We hail the enterprise as one of the most important that has for a long time been undertaken in San Francisco.

THOMAS MCGLEN, inventor of the Eagle furnace, has bonded the Trenton mine, Battle Mountain district, Nevada, for \$45,000. He is to build a furnace on the property immediately.

LIGHTNING creek, B. C., yielded 577 ozs. last week, distributed as follows: Victoria claim, 360 ozs.; Vancouver, 117 ozs.; Van-winkle, 100 ozs.

THIRTY flasks of quicksilver were shipped to San Francisco, on Monday, from the St. John mine, Solano county.

SOME fifty ounces of Snow Shoe Gulch gold were sold at Helena, Montana, on the 2d inst., by miners from the camp, for \$17.75 per ounce.

A DROVE of Chinamen have struck rich gold mines near Baker City, Oregon.

Nickel.

In its review of metals at the Vienna Exposition, *Engineering* gives the following account of nickel:

Since coins of nickel have been introduced in Belgium, Switzerland and Germany as fractional currency, the demand for this metal has greatly increased, and also its price, and this cannot fail to greatly influence all other manufactures in which nickel is used as an alloy with copper and zinc, such as German silver, Argentine, Alfenide, and others. The price, which was about 4s. per pound a couple of years ago, has of late risen to 14s. and 15s., and as the annual production of nickel is but about 500,000 lbs. in Europe, and 200,000 lbs. in America, it is not likely to recede much. England, France, Spain and Italy showed no nickel exhibits at Vienna, although England produces a considerable quantity at Swansea and Birmingham from imported Norwegian and South American ores. Belgium owns nickel works at Val Benoit, near Liege, where Messrs. Levi and Kuntzel extract that metal from regulus, which is made at Varallo, in Piedmont, from magnetic iron pyrites, containing 1.5 to 2.5 of nickel and cobalt.

In the German Section

At the Vienna Exhibition we found nickel exhibited by Fleitmann and Witte, of Iserlohn, in Westphalia, and by the Victoria Nickel Works, of Naumburg, in Saxony. Both seem to smelt principally imported ores or regulus, though the first-named firm seems also to receive part of its ores from some Rhenish and Westphalian iron and lead mines. The once important nickel works of Dillenburg, in Nassau, have been stopped for some years, probably owing to the exhaustion of the ore, which was found at Nanzembach, connected with serpentine and diabase, and contained 2 per cent. to 5 per cent. of nickel, together with some copper. A similar fate seems to have befallen the nickel works of Gladenbach, Grand Duchy of Hesse, where nickel ores were extracted from small lodes in Permian rocks. In the Grand Duchy of Baden nickel ores are found at St. Blasien and Todmoss, these consisting of magnetic iron pyrites with some copper pyrites, and containing 2.5 to 5.5, and even 12 per cent. of metal. The ore is found in hornblende gneiss, and connected with rocks of gabbro and serpentine; it is smelted at St. Blasien in blast furnaces, into a regulus, which is calcined, remelted, and at last refined, so as to yield metal containing 60 to 63 per cent. of nickel, 24 to 27 per cent. of copper, and only 0.3 to 0.5 per cent. of iron. This regulus is sold to the Victoria Works of Naumburg. These works made a very good show of metallic nickel in cubes, and of sulphate of copper, at the Exhibition, and of late they have made themselves independent for raw materials by buying the Sagmyra nickel mines in Sweden. The Mansfeld Copper and Silver Company, and the Goslar Smelting Works, produce likewise a small quantity of alloys of nickel and copper, and of nickel, iron and arsenic. The greatest producers of nickel in Germany, however, are the Saxon Cobalt Company of Oberschlema and Pfannenstiel, near Schneeberg, in the Saxon Erzgebirge. Their annual production is over 10,000 lbs. of pure metal. The clay-slate and mica-schist district, near Schneeberg, Lindenan, Zschornau, and Neustadt, contains over 150 lodes, which yield nickel, cobalt, bismuth and arsenic within a zone of six miles in length and about two miles in width. The mines and works date from 1642, and employ at present over 1,200 miners and smelters, while connected with them are the cobalt and nickel works of Modum in the south of Norway, from whence nickel and cobalt regulus are sent to Saxony for refining. The Saxon Cobalt Company exhibited very good samples of cubes and sheets of nickel.

Looking next to

Austria,

We found, in the Duchy of Salzburg, the Leogang Nickel and Cobalt Company, which produces ores of nickel, cobalt and antimony from irregular metallic deposits in clay slate. The ore is hand-picked, smelted in a blast furnace, and the regulus obtained is refined in a reverberatory furnace for a kind of white metal, or "speiss," containing 28 per cent. of nickel, 14 per cent. of cobalt, 6 to 8 per cent. of copper, and the rest iron, sulphur, and antimony. Flora von Flechner-Gersdorf, of Schladming, in Styria, likewise exhibited nickel ore, consisting of arsenide of nickel from the mines at Zinkwand and Vetter. The mica-schist here contains strata, 2 to 8 fathoms thick, which are impregnated with pyrites and other metallic ores, and intersected by lodes which are metalliferous within these metallic zones or strata, and contain ores of cobalt, nickel, arsenic, fahlerz and others.

From Hungary

We found exhibits by the Kolha Metallic Mine Company, of Lihthen, which produce annually about 300 tons of ores containing from 16 to 20 per cent. of nickel, 4 to 8 per cent. of cobalt, and some copper. The richest ores are sold to Evans, Atkins & Co., of Birmingham, and the poorer stuff smelted for white metal before going to the market. The Zemberg Nickel Company, of Dohschau, in the north of Hungary, produce some 400 to 500 tons of nickel and cobalt ore at their mines Altenberg and Zinnberg. The strata of greywacke there enclose a large bunch of spathic iron ore, viz., carbonate of iron, which contains occasionally

nickel and cobalt ores in contact with the enclosing rock. Underlying the iron ore are dioritic slates, which are traversed by numerous lodes and branch lodes, of which the Maria lode is the principal. They are composed of a black bituminous shale, which contains short, but rich, floors of nickel pyrites, together with fahlerz, arsenical pyrites, spathic iron ore, and ankerite. The richer class of ores contains about 17 per cent. of nickel and 5 per cent. of cobalt, and is sold in England.

In the Swedish Department

We found nickel ore, nickel copper, and metallic nickel, exhibited by G. Berg, from Warby and Westervik. The principal nickel works, however, are at Klefva, in Jonkoping-Lan, and at Sagmyra, in Koppaberg-Lan, where magnetic iron pyrites is found in connection with gabbro and serpentine in metamorphic gneiss. In 1871 their produce was 36,800 lbs. of nickel copper, and 673,000 lbs. of nickel regulus, with about 50 per cent. of nickel and cobalt, 30 per cent. of copper and 8 per cent. of iron. Almost the whole produce is sold to Berlin and Birmingham, where the metal is refined. In Norway there were, in 1870, 10 nickel mines, which employed about 140 men and yielded 88,000 cwt. of raw ore, this consisting of magnetic iron pyrites with 1.5 to 3, sometimes 5 to 7 per cent. of nickel. The largest works are at Skjærdalen and Evje, in Ringerike in the south of Norway, belonging to the Ringerike Nickel Company, and at Bamble, near Kragero on the south coast, belonging to Johan Dahll. From both works we found at Vienna very complete exhibits. The raw ore is first calcined in large heaps, and then smelted in a blast furnace with coke, in order to obtain a regulus with about 15 to 17 per cent. of nickel. This is again roasted in kilns, and smelted for a second regulus with about 30 to 35 per cent. of nickel, which is then remelted with coke in an open hearth under the oxidizing influence of a strong blast, when nearly the whole of the iron and part of the sulphur are oxidized, and an alloy containing 50 to 60 per cent. of nickel, 25 to 30 per cent. of copper, and 24 to 26 per cent. of sulphur is obtained.

In the American Section

We found the very interesting exhibits of Josef Wharton, of Philadelphia, who showed nickel and cobalt ores, including fine samples of fibrous millerite, from Gapmine, in Pennsylvania, which seems to be a neighbor of the celebrated mine La Motte, and which contains a lode five feet thick, yielding ores of nickel, cobalt, copper and lead. There were also samples of nickel regulus and metallic nickel, alloys of half copper and half nickel, and metallic nickel in cubes, shot, and in plates, which latter are employed as electrodes in electro-plating. This process is largely carried out by the Keith Nickel Plating Company of New York, which employs the process of Professor Bottger, of Frankfurt, who was the first to use a solution of sulphate or chloride of nickel-ammonium, from which the coating is deposited upon other metals by the action of a galvanic battery. South America, where rich ores of nickel are found in Peru and Brazil, exhibited nothing at Vienna.

Hydraulic Mining in Cold Canon.

Since the introduction of water in great abundance on the line of the Comstock, several hydraulic enterprises have been projected. It is a well established fact that free gold exists in fair quantities in both Gold and Seven Mile cañons, the former running south from Gold Hill, and the latter east from Virginia City. It was while mining for gold with rockers and other rude appliances that Pete Riley and "Old Virginia" discovered the Ophir croppings, which subsequently led to the discovery of the Comstock lode in the Spring of 1859. Alluding to the organization of a company whose object it was to carry on the business of hydraulic mining in American Flat and along Gold cañon, the *Gold Hill News* of a recent date says:

About the first of January last, an extensive corporation was formed under the name of the Nevada Hydraulic Mining Company, with Judge Heydenfeldt, of San Francisco, as President, H. G. Maynard and A. B. Mitchell, of Gold Hill, and Judge Lewis, T. D. Parkinson and others, of Virginia City, for the purpose of hydraulic mining on American Flat and at Gold Cañon, at convenient intervals between Gold Hill and the town of Dayton, in Lyon county. The first step taken was to locate and secure a title to all the unoccupied surface ground on either side of Gold cañon from its head to its mouth. This done, the next was to obtain a supply of water from the Virginia and Gold Hill Water Company for working purposes, which the completion and successful operation of their new flume now enables them to furnish. Having procured the necessary water, the Hydraulic Company propose shortly to commence the erection of extensive hydraulic works on American Flat, at Silver City, and along the cañon between the latter place and Dayton. It is a well-known fact that the sides of Gold cañon, in many places, and the ravines extending down through American Flat, in early days paid handsomely, and in some places richly, for working, with but a limited supply of water. Good prospects of gold can be obtained on the surface in many places high up on the sides of the cañon, and there seems hardly a doubt that, with a good supply of water, and in the hands of energetic, able men, such as compose this company, the project will not only be made to pay richly, but will add another very important feature to our mining enterprises.

Mines in Queensland.

We extract the following, concerning the mining interests of Queensland, from an English work on Australia and New Zealand:

While the Talgai and Lucky Valley by the Darling Downs, and the Ennoggera, of Brisbane, are in the south, a nest of mines are in Burnett district. Near the Gympie are Kilkivan, Jimna, and Cania mines. Port Curtis had a rush as early as 1857. Rockhampton, the so-called northern capital of Queensland, was established by the miners of Canoona, and is now the center of the mines of Central Queensland. These are the Peak Down, Ridelands, Morinish, Rosewood, Crocodile, Calliope, Cawarral, etc. But the most important auriferous display is in the north. Ravenswood, opened in 1869, is a field of 550 square miles; the township is 100 miles south of Townville Port. Charters Towers, Bronghton, Mount Wyatt, the Pyramids, and Milchester are other northern fields. Rosewood is an alluvial ground. The Cape River gold field is 600 square miles in area. The Gilbert is a new auriferous territory, about 200 miles from Rockingham Bay, towards the Gulf of Carpentaria. Gold has been traced along the Palmer river of York peninsula, from Mount Daintree, for 60 miles. This locality is in lat. 16 deg. S. The Cloncurry river mines are 200 miles south of the Gulf of Carpentaria.

The gold raised in 1872 throughout the colony amounted to £660,396. The yield is now at the rate of 210,000 ounces a year. Copper mining is expected to be a great industry. The Peak Downs mine has yielded a million pounds' worth of metal. The dividends in five years were £215,250. Mount Perry, of the Burnett district, is a more southern center of copper-working. Kroomhit is also rich in ores. Nebo, West Moreton, and Trevelton creeks are hopeful places. Virgin copper and malachite are got from Cloncurry Australian mine, as well as from Rannes on the Upper Downson. Cressbrook, 40 miles from Ipswich, Rawbelle, Edina, Boolboonda, and Normanby, are well spoken of for copper. The new tin exports for 1872 amounted to the large sum of £109,816. Stanthorpe, rightly named, is the center of the southern stanniferous field by the Severn river. The area is called 550 square miles, and the country is granitic. The metal is also found at the head of the Burdekin and other more northern rivers. Stanthorpe, Quart Pot creek, 36 miles from Warwick of the Darling Downs, was the first favorite locality for stream-tin. Sugar-loaf creek, Four Mile creek, Kettle swamp, Pike's creek, and Folkstone are other prominent workings. Iron ore is common enough from the southern boundary up to lat. 20 deg. The Loggan, the Burrum, the Burnett, the Sixty of Broad Sound, and all coal localities are rich in iron. Brown hematite abounds at Toowoomba and Bandamba creek, red hematite at Pine Mountain of West Moreton, specular at the Gilbert, and micaceous iron ore at the Cloncurry. Mercury, in the state of cinnaur, occurs at the head of the Mary, on the Clarke, and at Kilkivan diggings. It is not yet worked. Antimony is got at St. John's creek and the Burnett. Manganese, with nickel and cobalt, are known near Gladstone; and bismuth is brought down from the Cloncurry. The Galena of Ravenswood and the Gilbert may turn out some day valuable silver mines. Coal is of such consequence at the present day that the prospects of Queensland as to that mineral need stating.

SALT MANUFACTURE.—A *Call* correspondent says: The manufacture of salt is one of the local interests of Alameda county. There are salt works at Alameda, San Lorenzo, Mount Eden, Alvarado and Centerville. The works of J. A. Plumber, at Mayhew's Landing, below Centerville, are the most southerly in the county. They are called by the proprietor the Crystal Salt Works. The works occupy some forty acres of land for evaporating ponds, buildings, etc. In winter the water is let in by means of a flood gate, and is pumped by wind-mills and conducted by flumes from one pond to another, as it goes through different degrees of evaporation. About the 1st of June the salt will be crystallized. It will then be raked up and ground. About this time, some forty men will be employed at the works. The proceeds of these works are stated at 2,500 tons per annum. The salt interest of this county has been in a depressed condition for some time, on account of the opposition of the Pacific Salt Company, which has run down prices in the hope of breaking up the manufacture here. The Pacific Company has failed in this; but still the opposition is kept up, and consequently depressed prices are the rule. The average price received for the salt made here is \$10 per ton; the lowest is \$7, and the highest \$20. Mr. Plumber claims that he makes salt equal to the best imported from Liverpool. These works are seven miles from Niles station. Mr. Plumber employs a schooner to carry his salt to market. Since this item was written a correspondent states that there are at least 25 of these factories. In the vicinity of Mount Eden alone there are fifteen or eighteen.

TELEGRAPHIC PROGRESS.—In the course of last year the Telegraph Construction and Maintenance Company, Limited, carried out the following works: The laying of a cable for the Anglo-American Company between Valencia and Heart's Content, Newfoundland, and two cables between Placentia and Sydney, Cape Breton, a length of 2,470 nautical miles. Both sections of the French Atlantic cable of 1869 were also successfully repaired last year.

The Haywood Coal Interests.

Within a few days, operations will be resumed at the H. A. coal mine on Sulphur Spring creek, and with a most cheerful prospect of success. The machinery is all in place and arranged, and only a few hours will be required to clear the shaft of water and enable the miners to proceed with expedition and safety. The pumping apparatus is of very simple construction, and is admirably adapted to the purpose. It was all manufactured here, and is extremely creditable to the invention and skill of the constructors, of whom we shall have more to say after a while. The excellence of such machinery consists in its simplicity, strength, safety and power, and all these are combined in the apparatus in question. Under the superintendence of Mr. Ward, the greatest care has been taken to provide against the possibility of accident, and in that respect we have never seen any mining works so well arranged. The object of these works is not to find coal, for that has been already discovered, but to ascertain the quantity available in that location. All persons having any acquaintance with the coal regions of the East agree that the prospects here are most encouraging; every natural indication has been revealed in the course of the work thus far, and we do not entertain a doubt that a few months' work with the excellent machinery now available, will bring the enterprise to complete success. Nor have we a doubt that the entire westward slope from Mount Diablo to Santa Cruz is one vast coal-field; and our reasons for this impression will be given at some future time. There are two other discoveries in this neighborhood, which we intend to visit and examine before long, and then we shall be prepared to make a more elaborate and satisfactory statement concerning an industrial interest which is of vast importance to the whole surrounding country. Thus far the developments of the H. A. mine have been of the most encouraging and conclusive nature, and we think our citizens may reasonably and confidently expect the creation of a new source of life and prosperity.

Since the above was put in type, we have been informed that work was commenced on the shaft this morning.—Haywood (Alameda Co.) *Advocate*.

THE ST. GOTHARD TUNNEL.—The length of this immense tunnel will be 14,900 metres, or nine miles, 715 yards. The altitude of the northern entrance at Goeschenen will be 1,110 metres above the level of the sea, and that of the southern entrance 1,155 metres. The highest point in the interior of the tunnel will be 1,162½ metres above the level of the sea, which will be reached by a rise from the Goeschenen end of seven per 1,000; from this point there will be a descent towards Airolo of 1 per 1,000. The rock to be traversed is, for the most part, mica-gneiss and mica-schist. Great improvements are stated to have been introduced in the perforating machinery employed, but thus far the progress of the works can scarcely be said to have been very rapid. The length of tunnel actually pierced is, however, a little more than 700 metres on each side, and an advance of three metres (or ten feet) is daily made on each gallery at Goeschenen, the rock being perfectly solid, requiring neither planking nor arching; but at Airolo it is necessary to line the gallery and arch the roof with masonry.

THE CUYAMACA CASE.—The San Diego Union of April 11th has the following: A letter from Washington, dated March 28th, informs us that the Cuyamaca grant case will be finally disposed of within the coming six or eight weeks. The case is now pending before the Secretary of the Interior on an appeal taken by the grant claimants from the decision of Commissioner Drummond. There is not the least probability that the decision of the Secretary will differ from that of the Commissioner. But it is important to the welfare of our mining interests that a final settlement of the case by the highest authority shall be made as speedily as possible. There is no doubt at all that the mine of the Julian section possess great and permanent value, and upon the definite adjustment of the title to the land, the capital so necessary to the development of these mines will be forthcoming. At present the outlook for the mining interest of this county is brighter than at any period since the discovery of the mineral deposits.

SOUTH AUSTRALIAN MINES.—The principal copper mines at the present time are at Bremer, 25 miles from Adelaide; Kasmantoo, 25; Reedy Creek, 32; Capunda, 50; Moonta, Yelta, Wheel James, Wallaroo, 85; Burra Burra or Kooranga, 100; Burrowing, 150; Prince Alfred, 160; Blinman, 262; Burr, 300; and Yudanmutna, 325. Those at work for Bismuth are Daly and Stanley, 328 miles. Cobalt is found at Catarpe, 100. The silver working mines are Glen Osmond, 4 miles; Ben Lomond, 10; Almanda, 12; Wheel Cogill, 48; and Talisker, by Cape Jervis, 54 miles from Adelaide. The metalliferous region extends all along the main range northward from Cape Jervis to Blanchewater, 500 miles. The copper for the year, to June, 1873, brought, £796,513.

GRAVEL, yielding six cents to the pan, has been struck in a cañon eight miles from Salt Lake, by two California miners. At eight feet deep they obtained 11 cents to the pan.

DURING March the total shipment of ores from the Comstock to the various mills, by rail, was 3,675 car loads, or 55,135,000 pounds.

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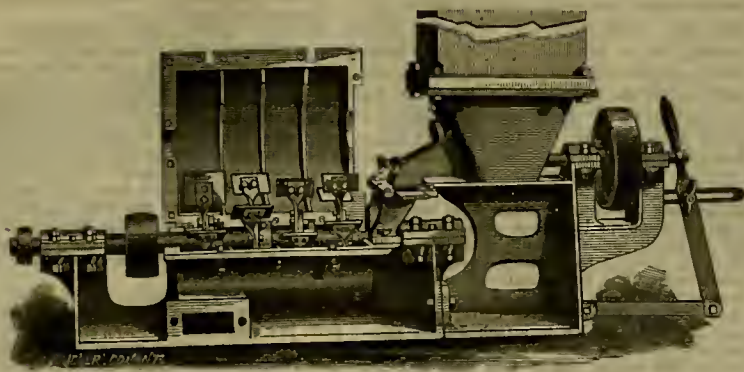
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For Crushing and Pulverizing Dry Ores,

PLASTER, COAL, BONE, MINERAL PHOSPHATES, PAINT STUFFS, DRUGS,
PLUMBAGO, CLAY, DYE WOODS, ETC., TO A FINE POWDER.

THEY ARE THE MOST

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a thorough examination of these machines before purchasing any others.

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Artesian Well Pipe.

Having the Latest Improved Machinery, we can make
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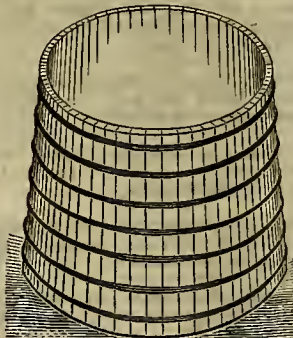
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Philadelphia and London. Visitors to the city invited
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The Best SEALS, MONOGRAMS, BOOK DIES,
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at the most Reasonable Prices.

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GRAND INDUSTRIAL EXHIBITION,

To be held under the auspices of the

MECHANICS' INSTITUTE

OF SAN FRANCISCO, CALIFORNIA,

Opening on August 18th, 1874.

The Board of Managers herewith announce that a
grand Industrial Fair will be held in the city of San
Francisco for 30 days, opening on August 18, 1874.

In view of the increasing commercial and manu-
facturing importance of San Francisco, its contiguity
to close connection with the various countries
bordering on the Pacific, the managers have constructed
a Pavilion, having a floor area of 150,000 feet, and have
invited to it all who are disposed to come and exhibit.
All exhibitors will be placed on the same footing.
 motive power will be furnished free.

The building will be open day and evening, and every
facility will be extended to exhibitors and visitors.

Application for space must be made without delay to
the Secretary of the Board of Managers, 27 Post
street, San Francisco, and all inquiries will be
answered and information extended promptly.

No space can be secured unless applied for before
the 20th of July next. A. S. HALLIDIE, Pres.

13v28-3m J. H. OULVER, Sec'y.

CALIFORNIA THEATER.

BUSH STREET, ABOVE KEAR

JOHN McCULLOUGH.....Proprietor and Manager.
MR. BARTON HILL.....Acting Manager.

OPEN EVERY EVENING.

With the best Dramatic Company in the United States.
Box office open from 9 A. M. to 10 P. M. Seats
may be secured six days in advance.

JOHN T. RAYMOND.

Price of Admission:

Dress Circle and Orchestra.....\$1 00
Dress Circle and Orchestra, Reserved.....1 50
Balcony.....50
Balcony, Reserved.....75
Family Circle.....25
Boxes, according to location.....\$10 & \$5
Doors open at half past seven; Commence at eight
o'clock. ja24-tf

California Assay Office—J. A. Mars &
Wm. Irelan, Jr., Chemists and Assayers, Rooms 47 and
48 Merchants' Exchange, San Francisco. Analysis of
Ores, Mineral Waters, Etc. 6v28-3m

The Sovereigns of Industry.

This new Order seems to be coming prominently before people, especially in the Western States. The National organization is now completed, as well as that of the Order at large. The ritual and all the work has been prepared with the greatest care, and is pronounced of a high character. The Sovereigns of Industry, as is generally known, have been organized to accomplish for mechanics and producers in general, other than tillers of the soil, what the Patrons of Husbandry are doing for the farmers. The "Patrons of Industry," which began to attract some attention last fall, seem to have been gotten up in haste, to anticipate this new organization, and are now generally pronounced a failure—and by some a swindle.

The new movement seems to be very generally approved by the Patrons, although it is recommended that they should not, as a general thing, take hold of it—their own organization being all sufficient, and all that is needful for them to support. Still, important encouragement has been given to it by the members of the late National Grange, inasmuch as some 20 of the Masters of State Granges received the "work" at St. Louis, with the special purpose of introducing it into their respective States. Among that number was Bro. J. W. A. Wright, of this State, who will probably introduce it here immediately after his return, from the visit he is now making to his friends at the East.

The objects of the Order are briefly set forth in the following preamble to the constitution of the National Council:

"The industrial classes are the main producers of the material wealth of the world—that they are the real sustainers of the Government in peace and war, and that they are 'deprived of the full measure of benefit from the wealth they produce and of that large measure of influence in the conduct of public affairs to which justice fairly entitles them; and recognizing that it is only by combined effort that great public wrongs are righted and great public benefits secured,' the Order of the Sovereigns of Industry is instituted 'for the suppression of these evils, the promotion of justice, and for the purpose of improving the material condition of the working classes and raising them to a higher level of social and intellectual life.'"

The question of membership is fixed by the following article in the Constitution:

"Any person engaged in industrial pursuits, not under 16 years of age, of good character, and having no interests in conflict with the purposes of this Order, shall be eligible to membership, and no distinctions in regard to rights and privileges of membership shall be made by this Council, or by a State or subordinate Council, on account of sex, creed, race or nationality."

Hemp, Flax and Jute.

Says a high authority in agricultural and economical matters: Our textile products are becoming sadly neglected. Ten years ago hemp was quite an important product, and now we find it in a state of sad neglect. The world demands it as much as ever, and yet it is falling into neglect. Flax is another fiber that can be grown with success and in demand as such, as well as for its seed as an oil-producing and feeding product. Jute takes an important position.

The demand for grain sacks and hurlaps has increased to such an enormous extent within the last few years, that as an article of commercial importance, the manufacture of jute has become one of the great commercial staples of both this country and Europe—ranking second only to the grain itself, and heading the list in all our commercial records. This fact is so thoroughly established, so patent to every body, and so well understood by those familiar with the subject, and has been discussed and advocated so frequently and at such great length by the leading newspapers of the country within the last few months, that it would almost seem superfluous to urge the consideration of such an enterprise for encouragement at the hands of the public; yet the public, and particularly the farmers, are invited to lend their co-operation to the enterprise, as one promising the fullest success, not only in supplying an indispensable requisite, but promising to be highly remunerative to stockholders as an investment.

The mere question of begging is running into the millions of dollars. Several of our indigenous plants are of great value for their fiber, as the Northern ramie or *artemisia purpurea*, and are worthy an extended trial.

A COLFAX CONCERT.—The pupils of the public school, Mr. Fenton, principal, recently held two evening concerts, creditable alike to teachers and scholars. Julia M. Traphagan, a miss of 11 years, for her "Deisy" song received the heartiest applause of the large and respectable audience. Willie Loebner and Ida Hayford, as miniature peasants, rendered the "Irish Lover's Departure" with equal credit.

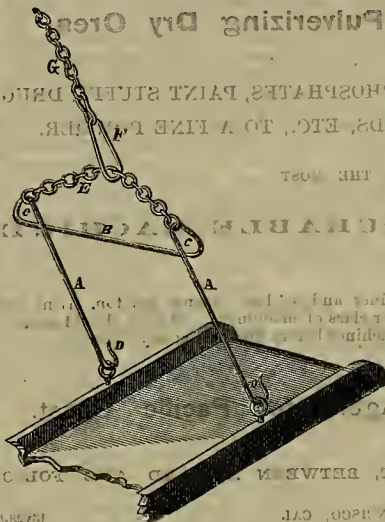
NUGGET.—A thirty-ounce gold nugget was recently found in the Bald Mountain mine, Sierra county. It is said that this company are taking out over 300 ounces per day.

THE MANHATTAN MILL AND MINING COMPANY.—At Austin, shipped bullion valued at \$140,000 to New York during the month of March.

Hudspeth's Improved Bail for the Inclined Spout of Headers.

This invention, which is herewith illustrated, is an improvement in the construction and mode of attaching the bails of the inclined spouts of headers, which support the spout and to which a rope or chain is attached, passing thence to some part of the machine where it is made fast. These bails are ordinarily made curving, like a pot bail, and the rope is secured near their center. As the rope is carried back at an inclination to the spout, the latter is not at all times equally supported. The inventor, Mr. W. G. Hudspeth, of Santa Rosa, claims that a bail made according to his plan is far preferable to the ordinary hoop bail, as the former acts as a regulator to the chute, which the other does not.

Mr. Hudspeth's invention contemplates the use of a bail which is made with two parallel sides, having supporting hooks at their lower ends. The upper ends are united by a cross-bar, which is formed in the same piece as the sides, and so as to leave an eye at each corner, to which to attach a chain passing from one side to the other. A link encircles this chain, and to this link the sup-



Improved Bail for Header Spouts.

porting chain or rope is fastened, the link being free to move from side to side between the eyes.

In the illustration are shown the two parallel side pieces, A, A, of the bail. These sides and the cross-bar, B, are bent from a single piece so as to leave the eyes, C, C, at each of the top angles. The lower ends of the side pieces, A, A, are provided with hooks, D, D, which are joined to the sides of the spout by eye-bolts or otherwise. The cross-bar, B, is clasped by the link, E, loosely, so that the latter may move along it freely. The rope or chain, which passes over the usual pulley and thence to the point of attachment on the header, is shown at G, secured to the link, F.

The operation of the device will be as follows: The bail will support each side of the spout equally, and thus regulate the strain upon it as the weight shifts. As the header moves over the ground, and the spout takes various positions and angles, it is evident the elongated link, F, will slip from side to side upon the chain, G, and thus transfer the support of the chain, G, more or less directly over the place where it is most needed.

Improvements in agricultural machinery are fast becoming limited to particular working parts of the leading types of machines. As the patents upon different working portions of the more complicated printing press or loom multiply, so do the patents upon special parts of the threshers, reapers, headers, plows and other farm implements increase. In the invention which we have described, there is what would appear to be a very important improvement in a part so simple that, whatever its defects, few have thought of enlarging upon it.

ALL the mills along the Carson river are running to their full capacity. As yet the wagon roads are not in first-rate order, but the teamsters manage to haul sufficient ore to the outside mills to keep them in operation.

THE Floral mill at White Pine has just been overhauled and put in order. The stamps will now drop 90 times per minute instead of 72 as heretofore.

FIRE.—The town of Colfax was afflicted with a fire this week, which destroyed about half of the business part of the town. About forty-five buildings in all were burned.

SUPPLIES at the Caesar mines are quite limited; prices are as follows: Flour, 75c.; bacon, \$1; sugar, \$1; tea, \$2.50; tobacco, \$3 per pound.

WORK on the Palisade and Eureka Narrows has been resumed.

Academy of Sciences.

A regular meeting of the California Academy of Sciences was held on Monday evening, Vice-President Hewston in the chair. The donations to the museum of the Academy were large and interesting. Among them were the following:

From F. Gruher, collection of birds, embracing eight specimens.

From J. C. Merrill & Co., collection of fishing implements, lines, bows, bundle of arrows, and a rook with a polished groove, supposed to have been used for sharpening spears and other implements, from the South Pacific Islands.

From W. W. Russell, a cluster of hercules taken from the bottom of the iron ship *Milicet*, after a voyage of six months and three days, from Bombay to Liverpool. Thirteen tons of this material were taken from the bottom of the ship. Also, from the same gentleman, a rock-bearing mollusc, from the Choumagin Islands, and egg of the small black terrapin.

From E. F. Loring, rare specimen of crane, from Santa Barbara.

From W. N. Lockington, specimen of crab, crawfish, two species of *orchestia*, or sand-hoppers, two species of lizards, a fresh water salamander, and a curious insect, found running in the sand, thrown up by the tide near Fort Point.

From Dr. G. C. Woods, Surgeon U. S. Navy, a large and valuable collection of specimens from islands of the Pacific, embracing a suit of armor, made from cocoa-nut fiber, from the island of Apia, of the Gilbert group; rope made of cocoa-nut, covered with banana fiber, from Atoli; sennit of cocoa-nut fiber, matting of banana leaf, helms of the same, woven in native looms, and worn by the chiefs, from Ascension Islands; a great variety of similar manufactures, representing the arts of different islands; head decorations, from the Navigator Islands; fishing implements, weapons, etc. This extensive donation was collected by Dr. Woods during four years' cruising in the Pacific, in Government vessels.

Dr. J. S. Hudson, of Oakland, read a paper descriptive of an ancient shell mound in that town.

Dr. Pourgeard read a paper, entitled "General scientific hypothesis as an introduction to a work on evolution of the inorganic and organic world."

Dr. H. Gibbons, Sen., communicated some experimental information on the growth of the potato, and exhibited specimens from his garden that had the peculiar tendency of developing in the ground without throwing out stems.

Mr. Gibbs announced that Major Sparrow Purdy, a corresponding member of the Academy, now at the head of a large expedition in Upper Egypt, had been making large collections of curiosities, for the Academy's museum. Major Purdy will be able to ship his collection in June, and it will probably arrive here some time in August.

After this announcement was made, Dr. Blake read a paper denouncing the management of the Academy and every body else, except himself. The Doctor has a little plan for dividing up the academy into fellows, resident members, etc., which no one else but himself wants to adopt, and he periodically bursts out on his favorite subject. "This time," he read a paper reflecting severely on certain ones of the Trustees, and stirred up a pretty lively discussion in which he was handled without gloves by several of the members. The opinion of most of the members was that Dr. Blake was out of humor because he had not been elected to an office, as he took occasion to air some of his grievances while reading his paper. He wants at least four scientific men in the Board of Trustees, and his amendment to the constitution provides for this. The amendment is not at all necessary, for there are at least four there now. Professor Davidson, R. E. C. Stearns, Col. Gray and Henry Edwards. It is hardly probable that the Doctor's plan will amount to anything, but it is to be hoped that the committee appointed to investigate Dr. Blake's charges will effectually suppress him. He is breeding dissension and doing more harm than good to the Academy.

A SEAT in the San Francisco Stock and Exchange Board was sold this week to a New York operator for \$10,500.

QUICKSILVER miners in Sonoma county have had to employ Chinamen, as they could not get white men at \$3 per day.

MONTEREY COAL.—Some 500 tons of coal are said to have been taken from the newly discovered mines near Monterey.

THE Granite Tunnel mine and mill, near Placerville, has been sold to Lucas, Pertridge & Co., for \$20,000.

Last week a carload of miners arrived in Gold Hill, from Camhorne, Cornwall.

CINNABAR mines are being developed on Silver creek, Santa Clara county.

New Inventions!

Of real merit, it brought plainly before the public when fresh, are most likely to become profitable to the patentee. For this reason, patentees (of worthy devices) should have the best of Engraving Made, and published in the Press. Superior Engraving Made, at reasonable rates, by artists in this office.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS, AND EDITORS OF U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, April 21, 1874.

FOR WEEK ENDING April 7, 1874.

MILK-PAIL.—Ledyard Frink, Rio Vista, Cal.

CAR-COUPLING.—Jacob F. Buruer, Elko, Nevada.

MEDICAL COMPOUND.—Hawkins W. Epperly, Cambria, Cal.

CLASP FOR STOCKING SUPPORT.—Edward Halsey, San José, Cal.

DESIGN.

CENTRE-PIECE.—Samuel Kellett, S. F., Cal.

"The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business, for Pacific coast inventors transacted with perfect security and in the shortest time possible."

DEWEY & CO., 311 N. 3rd St., San Francisco.

San Francisco Metal Market.

WEDNESDAY M., April 22, 1874.

Scotch Pig Iron, 10 tons	\$52.00	@	—
White Pig, 10 tons	52.00	@	—
Refined Bar, 48 assortment, 100 lbs.	52.00	@	—
Refined Bar, good assortment, 100 lbs.	52.00	@	—
Roller, No. 1 to 4, 100 lbs.	52.00	@	—
Plate, No. 5 to 9, 100 lbs.	52.00	@	—
Sheet, No. 10 to 13, 100 lbs.	52.00	@	—
Sheet, No. 14 to 20, 100 lbs.	52.00	@	—
Horse Shoes, per keg	52.00	@	—
Nail Rod, 100 lbs.	52.00	@	—
Norway Iron, 100 lbs.	52.00	@	—
Roller, 100 lbs.	52.00	@	—
Other Irons for Blacksmiths, Miners, etc.	52.00	@	—
Brass, 100 lbs.	52.00	@	—
Copper, 100 lbs.	52.00	@	—
O. N. P. Pat., 100 lbs.	52.00	@	—
Sheathing, 100 lbs.	52.00	@	—
Sheathing, Yellow, 100 lbs.	52.00	@	—
Sheathing, Old Yellow, 100 lbs.	52.00	@	—
Composition Nails, 100 lbs.	52.00	@	—
Composition Bolts, 100 lbs.	52.00	@	—
Tr. Plates, 100 lbs.	52.00	@	—
Plates, Charcoal, 100 lbs.	52.00	@	—
Plates, 100 lbs.	52.00	@	—
Roading Plates, 100 lbs.	52.00	@	—
Band, 100 lbs.	52.00	@	—
Steel, English Cast, 100 lbs.	52.00	@	—
Drill, 100 lbs.	52.00	@	—
Plough, 100 lbs.	52.00	@	—
Plough Points, 100 lbs.	52.00	@	—
Zinc, 100 lbs.	52.00	@	—
Zinc, Sheet, 100 lbs.	52.00	@	—
Nails, Assorted sizes, 100 lbs.	52.00	@	—
LEAD, 100 lbs.	52.00	@	—
Pig, 100 lbs.	52.00	@	—
Sheet, 100 lbs.	52.00	@	—
Quicksilver, per lb.	52.00	@	—

LEATHER.

WEDNESDAY M., April 22, 1874.

No change to report of the Leather market. Prices are about as low as they can well be, and the slight movement in local Leathers of a week ago is not sustained.

City Tanned Leather, 100 lbs.	52.00	@	—
Santa Cruz Leather, 100 lbs.	52.00	@	—
Band, 100 lbs.	52.00	@	—
Stockton Leather, 100 lbs.	52.00	@	—
Jodot, 8 Kil., per doz.	52.00	@	—
Jodot, 11 to 15 Kil., per doz.	52.00	@	—
Jodot, second choice, 11 to 15 Kil., per doz.	52.00	@	—
Cornellian, 12 to 15 Kil., per doz.	52.00	@	—
Cornellian, females, 12 to 15 Kil., per doz.	52.00	@	—
Cornellian, 15 Kil., per doz.	52.00	@	—
Simon, 15 Kil., per doz.	52.00	@	—
Simon, 20 Kil., per doz.	52.00	@	—
Robert, 15 Kil., per doz.	52.00	@	—
Robert, 17 and 9 Kil., per doz.	52.00	@	—
French Kips, 100 lbs.	52.00	@	—
California Kip, 100 lbs.	52.00	@	—
French Sheep, all colors, 100 lbs.	52.00	@	—
Eastern Calf for Boots, 100 lbs.	52.00	@	—
Sheep Rone for Topping, all colors, 100 lbs.	52.00	@	—
Sheep Rone for Lining, 100 lbs.	52.00	@	—
California Risset Sheep Lining, 100 lbs.	52.00	@	—
Best French Calf Boot Legs, 100 lbs.	52.00	@	—
Good French Calf Boot Legs, 100 lbs.	52.00	@	—
French Calf Boot Legs, 100 lbs.	52.00	@	—
French Sheep, 100 lbs.	52.00	@	—
Brilliant Leather, 100 lbs.	52.00	@	—
Skirting Leather, 100 lbs.	52.00	@	—
French Sheep, 100 lbs.	52.00	@	—
Buff Leather, 100 lbs.	52.00	@	—
Wax Side Leather, 100 lbs.	52.00	@	—
Western Wax Leather, 100 lbs.	52.00	@	—

The Mining & Scientific Press

Started in 1860, is one of the oldest weekly journals now published in San Francisco. It has been conducted by its present proprietors for ten years, during which period it has been repeatedly enlarged and constantly improved. The active and steadfast efforts of its publishers have gained for its conduct an amount of practical experience greater than any other publishers have accumulated on this coast, of a weekly journal.

The sum paid by us for the best editorial talent obtainable for our special class journal; for engravings, for interesting news and correspondence, and for printing a large-sized, handsome sheet, is unequalled by that of any other American weekly west of the Mississippi.

As a PRACTICAL MINING JOURNAL it has no rival on this coast.

It is the only MECHANICAL, and the only SCIENTIFIC journal of the Pacific States.

Every Miner, Assayer, Millman, and Metallurgist in the United States should take it.

Every Pacific Coast Mechanic, Engineer, Inventor, Manufacturer, Professional Man, and Progressive and Industrial Student should patronize its columns.

Every Mining Engineer, Superintendent, Metallurgist, Mine Owner and Mine Worker in the world should profit by its illustrations and descriptions of New Machinery, Processes, Discoveries and Record of Mining Events.

Every intelligent thinker in the land, in high or humble station, who would avoid literary trash for genuine information, should SUBSCRIBE AT ONCE.

TWO MONTHS DEWEY & CO., 311 N. 3rd St., San Francisco.

THE NEW U. S. MINING LAWS.

The new Laws of 1872, governing the location and purchase of Placer and Quartz Mines and Agricultural Lands in Mining Districts of the U. S., printed in circular sheet, for sale at this office. Single copies, 25 cts.

Rabbit Culture.

Necessity is the mother of invention, and a hundred devices are now in vogue in England to meet the difficulties consequent on the high price of butcher's meat. Prominent among these is rabbit culture. A number of places have lately been started for this purpose in London, and they are said to be paying very well. At these places rabbits are being bred in large numbers, and if they increase at their present rate they will make an appreciable addition to the food of London.

Lately the first annual show of the Metropolitan Rabbit Association was held in the same city, when there was a numerous collection of rabbits exhibited. They were generally what is known as the long-eared breed, and the size and weight of nearly all the specimens exhibited were extraordinary. There was no rabbit in the show less than eight pounds in weight, and two of them weighed respectively eleven pounds four ounces and eleven pounds. The first prize was awarded for a rabbit five months old, and weighing ten pounds. This animal's ears were 26 1/2 inches long, and 6 1/2 inches wide, and it should here be stated that a few days before the show it was purchased for breeding purposes for the large sum of £20. The second prize was awarded to a rabbit eight months old, and weighing ten pounds ten ounces. Its ears were 23 1/2 inches in length, and 5 1/2 inches in width. During the exhibition the chairman of the association addressed the company assembled, and, referring to the present high price of meat, stated that the association had been mainly established to encourage the breed of rabbits, which could be largely and profitably produced and reared. He urged the desirability of a wider and more extended production of rabbits as an article of animal food at a time like the present, when beef and mutton were beyond the reach of large portions of the population.—*Poultry Bulletin.*

THE FARE AND FREIGHT QUESTION.—Some few injudicious people of "Placer" county recently burned Assemblyman Gilman of that county, in effigy, at Shingle Springs, whereupon an endeavor was made to show that the feeling of the people in that place was in sympathy with Mr. Gilman, notwithstanding the act of burning. As an offset to this, effort a mass meeting of the citizens was subsequently called, which, although it did not endorse the unwise demonstration of the effigy burners, yet passed some most scathing resolutions condemnatory of the course of Mr. Gilman on the Fare and Freight question. There is no mistaking the opinion of the people of California on this question, and they will not fail to embrace the first and every proper opportunity to make it known. All those who, like Mr. Gilman, misrepresented their constituents at Sacramento, last winter, will receive a most signal rebuke from the people at the next general election.

The blower for the Sacramento smelting works arrived from Boston on Tuesday. It weighs twenty-one hundred pounds.

PAIN-KILLER.

1840. 1874.
Time Tests the Merits of All Things.

THIRTY YEARS is certainly long enough time to prove the efficacy of any medicine, and that the Pain-Killer is deserving of all its proprietors claim for it, is amply proved by the unparalleled popularity it has attained. It is a sure and effective remedy. It is sold in almost every country in the world, and it needs only to be known to be prized, and its reputation as a Medicine of Great Virtue, is fully and permanently established. It is the great Family Medicine of the age. Taken internally, it cures Dysentery, Cholera, Diarrhoea, Cramp and Pain in the Stomach, Bowel Complaint, Painters' Colic, Liver Complaint, Dyspepsia, or Indigestion, Sudden Colds, Sore Throat and Coughs. Taken externally, it cures Bruises, Blisters, Felons, Cuts, Burns, Scalds, Old Sores and Sprains, Swellings of the Joints, Toothache, Pain in the Face, Neuralgia and Rheumatism, Chapped Hands, Frost Bitten Feet, etc.

Pain is supposed to be the lot of our poor mortals, as inevitable as death, and liable at any time to come upon us. Therefore, it is important that remedial agents should be at hand to be used on emergency, when we are made to feel the excruciating agony of pain, or the depressing influences of disease. Such a remedial exists in Perry Davis' "Pain-Killer," the fame of which has extended over all the earth. Amid the eternal ices of the Polar regions, or beneath the intolerable and burning sun of the tropics, its virtues are known and appreciated. And by it suffering humanity has found relief from many of its ills. The effect of the Pain-Killer upon the patient, when taken internally in cases of Cough, Cold, Bowel Complaint, Cholera, Dysentery, and other affections of the system, has been truly wonderful, and has won for it a name among medical preparations that can never be forgotten. Its success in removing pain, as an external remedy, in cases of Bruises, Sprains, Sore and Swellings, Cuts, Stings of Insects, etc., and other causes of suffering, has secured for it the most prominent position among the medicines of the day. Beware of counterfeit and worthless imitations. Call for Perry Davis' Vegetable Pain-Killer, and take no other.

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A well-constructed model is generally first needed, if the invention can well be thus illustrated. It must not exceed 12 inches in length or height. When practicable, a smaller model is even more desirable. Paint or engrave the name of the article, and the name of the inventor, and his address upon it.

Send the model (by express or other reliable conveyance), plainly addressed, to "DEWEY & Co., MINING AND SCIENTIFIC PRESS OFFICE, SAN FRANCISCO." At the same time, send a full description, embodying all the ideas and claims of the inventor respecting the improvement describing the various parts and their operations.

Also send \$15. currency, amount of first fee of the Government. The case will be placed on our regular file, the drawings executed, and the documents made up, and soon sent to the inventor for signing.

As soon as signed and returned to us with the fees then due us, it will be sent straightway to the Patent Office at Washington.

When the invention consists of a new article of manufacture, a medicine, or a new composition, samples of the separated ingredients, sufficient to make the experiment (unless they are of a common and well-known character), and also of the manufactured article itself, must be furnished, with full description of the entire preparation.

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Mining and Other Companies.

On the 1st of the present month the present large edition of the M. & S. Press, are obliged to go to press on Thursday evening—which is the very latest hour we can receive advertisements.

Land Purchasers' Association—Office, No.

425 Kearny Street, San Francisco, Cal. Notice is hereby given that at a meeting of the Directors or Trustees of this corporation, held on the 14th day of April, 1874, an assessment of ten dollars per share (being the 4th monthly installment on the subscription to the stock) was levied upon the capital stock of said corporation, payable immediately, in United States gold coin, to the Secretary, at No. 425 Kearny Street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 15th day of May, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 26th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office, No. 425 Kearny Street, Room No. 2, San Francisco, California.

N. B. This assessment is levied to pay the balance due for grading Washington Street.

Diamond Silver Mining Company.—Loca-

tion of works, East Tintic Mining District, Utah

County, Utah Territory. Principal place of business, San Francisco.

Notice is hereby given that at a meeting of the Board of Directors, held on the 18th day of April, 1874, an assessment of ten (10) cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Treasurer, J. H. Fish, at the office of the Company, No. 123 Post Street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 1st day of June, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 26th day of June, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office—No. 123 Post Street, San Francisco, Cal. ap23

Jefferson Gold and Silver Mining Com-

pany. Location of principal place of business, San Francisco, Cal. Location of works, Brown's Valley, Yuba County, California.

Notice is hereby given that at a meeting of the Board of Directors, held on the 26th day of March, 1874, an assessment of fifty cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Treasurer at the office of the Company, Nos. 214 and 216 Pine Street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 1st day of May, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 1st day of June, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

C. V. D. HUSSARD, Secretary.

Office—214 and 216 Pine Street, San Francisco, Cal. ap23

Public Notice is hereby given by order

of Board of Trustees, that the annual meeting of the stockholders of the Lumber and Gravel Mining Company will be held on Saturday, the 18th day of April, at 2 o'clock p. m., for the purpose of electing a Board of Trustees for the ensuing year and to transact such other business as may come before the meeting, at the office of the company, No. 321 Montgomery Street, Room 17, San Francisco, April 20, 1874.

Adjournd until May 2, 1874.

Mount Saint Helena Gold and Silver

Mining Company. Principal place of business, San Francisco, California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the 10th day of March, A. D. 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Swift, J. H.	75	50	\$5 00
Brady, John	79	6	50
Badlam, A. C.	62	50	5 00
Badlam, A. C.	63	100	10 00
Winans, J. W.	60	1800	180 00
Tietreau, O. L.	75	10	1 00
Wills, W. B.	61	50	5 00
Tourtel, E. C.	88	10	1 00

And in accordance with law and an order of the Board of Directors, made on the 10th day of March, A. D. 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of said Company, 418 Montgomery Street, San Francisco, Cal., on Tuesday, the 12th day of May, 1874, at the hour of 1 o'clock p. m., and the day, pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

Office—No. 418 Montgomery Street, San Francisco, Cal. ap18

Missouri Quicksilver Mining Company—

Principal place of business, San Francisco, Cal. Location of works, Clinchburg Mining District, Sonoma County, California.

NOTICE TO STOCKHOLDERS.—A meeting of the stockholders of the above named company will be held at the office of the company, No. 204 Front Street, San Francisco, the 25th day of April, 1874, at 12:30 p. m., for the purpose of adopting By-Laws for the company, and such other business as may be brought before the company. By order of the Board of Directors.

Office of the Company, 204 Front Street, San Francisco, Cal. ap4

Mansfield Gold Mining Company—Loca-

tion of principal place of business, San Francisco, California. Location of works, El Dorado, California.

Notice is hereby given that at a meeting of the Board of Directors, held on the 21st day of March, 1874, an assessment of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 331 Kearny Street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 27th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 18th day of May, 1874, to pay the delinquent assessment together with costs of advertising and expenses of sale.

Office—Room 14, No. 331 Kearny Street, San Francisco, California.

Starlight Gold and Silver Mining Compa-

ny. Location of works, Humboldt County, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 19th day of March, 1874, an assessment of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at his office in San Francisco.

Any stock upon which this assessment shall remain unpaid on the 25th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 18th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expense of sale. By order of the Directors.

DAVID WILDEH, Secretary.

Office, 24 Merchants' Exchange, San Francisco, Cal.

Virginia Consolidated Mining Company.

Location of principal place of business, San Francisco, California. Location of works, Keapage District, Inyo County, State of California.

Notice is hereby given, that at a meeting of the Directors, held on the 11th day of March, 1874, an assessment of \$1.00 of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 27th day of April, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 18th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office—No. 315 California Street, San Francisco, California. (Room No. 13.)

POSTPONEMENT.—The day for deeming stock

delinquent on the above assessment is hereby postponed until the 16th day of May, 1874; and the sale thereof until Wednesday, the 10th day of June, 1874. By order of the Board of Directors.

ap16-3w

Washington Mining Company—Location

of principal place of business, San Francisco, California. Location of works, Mariposa County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 27th day of March, 1874, an assessment (No. 8) of one dollar per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 15th day of May, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 26th day of May, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

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14v11-47

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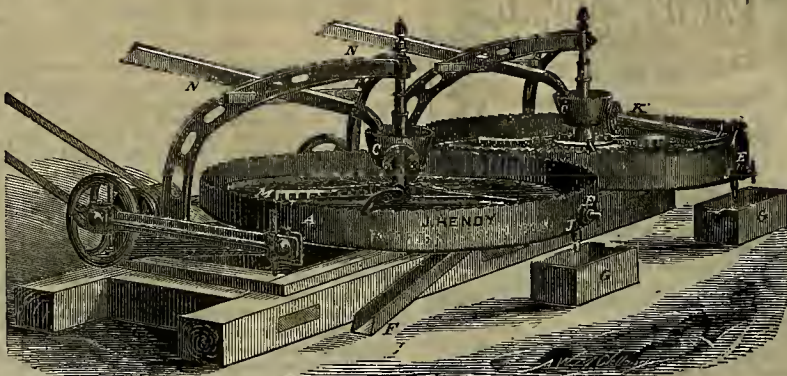
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Manufacture all kinds of Brass Goods, Brass Castings, Babbitt Metal and Brass Ship Work, Ship Locks, Brass Padlocks, with Cylinder Keys, Railroad and Express Locks. Locks of every description made on receipt of Sample Key. All orders attended to with promptness, and satisfaction guaranteed.
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4th. They require but little power and attention to run them, and with ordinary care will last for years.
I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oaks and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,
Yours respectfully,
JAS. H. CROSSMAN, M. E.

409 California street, or Cosmopolitan Hotel.

SAN FRANCISCO, April 27, 1872.

OFFICE SUPERINTENDENT OF KEYSTONE CON. M. CO., AMADOR, AMADOR COUNTY.
MR. J. HENDY—Dear Sir:—In answer to your inquiries as to your concentrators furnished our company last July, I would say that I am more than pleased with them; and the saving to the company has been over \$3,500 per month more than with the blankets and buddies formerly in use.
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NUMBERS.	1	2	3	4	5	6	7	8	9
Diameter of Steam Cylinder, in inches.....	4	6	8	10	12	14	16	18	20
Length of Steam Cylinder, in inches.....	24	36	48	60	72	84	96	108	120
Capacity per cubic foot, in gallons.....	1.6	2.5	3.3	4.5	6.0	8.0	10.0	12.0	14.0
Capacity per cubic foot, in gallons.....	10	15	20	25	30	35	40	45	50
Maximum Capacity.....	25	40	60	80	100	120	140	160	180
Boilers in horse power they will supply.....	25	40	60	80	100	120	140	160	180
Size of Exhaust Pipe, in inches.....	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2
Size of Discharge Pipe, in inches.....	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2
Weight of Pump, in pounds.....	180	255	360	480	600	720	840	960	1080
Height over all, in feet and inches.....	1-0	1-9	1-9	2-0	2-3	2-3	2-3	2-3	2-3
Width over all, in feet and inches.....	1-0	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1
PRICE.....	\$100	\$150	\$200	\$250	\$300	\$350	\$400	\$450	\$500

These Long Stroke Pumps have large five openings, and are highly esteemed for draining mines.

CAST STEEL SHOE AND DIE COMPANY,

OFFICE—Room 28, Hayward's Building, 419 California St., S. F.

Patented CAST STEEL SHOES & DIES for Quartz Mills.

Price, 20 cents per Pound.

An improvement greatly needed—being Stronger, more Durable and Economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as bar steel; never break, keep their full striking surface. Battery of five shoes crushes one-ton more ore in 24 hours than Cast Iron Shoes, will wear as long as four set of Cast Iron Shoes, and can be worn down to 1/2 inch in thickness. The studs can be welded into Picks, Hammers, etc.

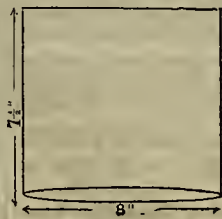
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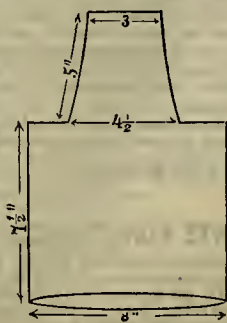
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CROSS' PATENT BOILER FEEDER AND SEDIMENT

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Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for new and old Cylinders.

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UPRIGHT SAFETY ENGINES,

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MADE BY THE N. Y. SAFETY STEAM POWER CO.

Has tubular boiler, and therefore is secure against the dangers common to shell boilers. Power is taken from near the base, which avoids vibration or top-heaviness. Occupies but two feet square of floor space and is so simple a boy can run it. All its parts are easily accessible—a great advantage. Is complete in itself as a Portable Engine and Boiler, or the engine can be detached from the boiler and run independently, if required. Its main points are SIMPLICITY, SAFETY and ECONOMY. For printing offices, laundries, tanneries, ranches, small repair and machine shops, or for hoisting whenever a small and safe power is required, they are peculiarly adapted.



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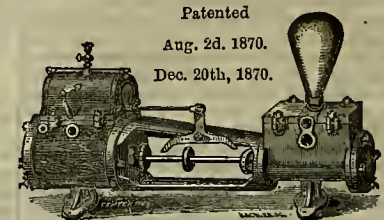
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Combining simplicity and durability to a remarkable degree. Its parts are easy of access, and it is adapted to all purposes for which Steam Pumps are used.

As a Mining Pump it is Unsurpassed.

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I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Right on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

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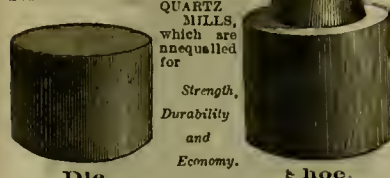
I Guarantee Full Indemnity to all my Customers.

Machines of all sizes always on hand. If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an Improved LITTLE GIANT.

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Made by our improved process after many years of patient research and experiment. We have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for



Will wear three times longer than any iron Shoes.

BUILDERS AND CONTRACTORS Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and general Mining Machinery in all its details and furnishers of Mining Supplies. All orders promptly filled.

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Delivered on R. R. Car at Denver, Col., or St. Louis, Mo.

Separates in one and the same operation—1. galena and sulphide of silver; 2. pyrites or blende; 3. tailings, containing no valuable parts; or, 1. gold; 2. pyrites; 3. tailings (quartz, etc.) containing no valuable parts; or, 1. copper; 2. tailings, containing no valuable parts. The One-Plunger Jig can be combined with existing stamp-mills with highly important advantages, as after amalgamation it will recover completely all fine metals and all base ores and all mercury out of tailings. It concentrates all fine metal ores to such cleanliness that low grade ores can be shipped, after concentration, as first-class ores. Its feed and discharge are automatic. Its construction offers better guarantee against loss and repairs than any other apparatus in use. For particulars, apply to the inventor,

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This machine, complete, weighs 1,500 lbs. Has an iron frame, five steel arms with stamps weighing 17 lbs. each, which strike 20 blows per minute, in a mortar provided with screens on both sides, and crushes FINE 600 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$900.

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Our mills are under the direct supervision of one of the most experienced Samplers and Millmen in the country, and we purpose carrying on the business upon a scale commensurate with the wants of the mining public.

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THE WHELPLEY & STORER ORE MILL,

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Has the most Complete Machinery and Appliances

—FOR— Crushing, Sampling Pulverizing and Working Ores, Minerals, Paints, etc.

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Varney's Patent Amalgamator.

These Machines Stand Unrivaled.

For rapidly pulverizing and amalgamating ore, they have no equal. No effort has been, or will be spared to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits. They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows.

The pan being filled, the motion of the mill forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular flow between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.

Setters made on the same principle excel all others. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed.

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Special Rates for Gold Ores.

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Rates:		Value		Value		Value		Value		Value		Value		Value	
Assay	Per Cent.	Assay	Per Cent.	Assay	Per Cent.	Assay	Per Cent.	Assay	Per Cent.	Assay	Per Cent.	Assay	Per Cent.	Assay	Per Cent.
\$60	25	\$50	38	\$125	47	\$165	57	\$250	66	\$450	76	\$600	87	\$800	97
\$65	27	\$55	40	\$130	48	\$170	58	\$260	67	\$460	77	\$610	88	\$810	98
\$70	28	\$58	41	\$135	49	\$175	59	\$270	68	\$470	78	\$620	89	\$820	99
\$75	30	\$60	42	\$140	50	\$180	60	\$280	69	\$480	79	\$630	90	\$830	100
\$80	31	\$62	43	\$145	51	\$185	61	\$290	70	\$490	80	\$640	91	\$840	101
\$85	32	\$64	44	\$150	52	\$190	62	\$300	71	\$500	81	\$650	92	\$850	102
\$90	33	\$66	45	\$155	53	\$195	63	\$310	72	\$510	82	\$660	93	\$860	103
\$95	34	\$68	46	\$160	54	\$200	64	\$320	73	\$520	83	\$670	94	\$870	104
\$100	35	\$70	47	\$165	55	\$205	65	\$330	74	\$530	84	\$680	95	\$880	105

And on intermediate values in proportion.

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Ores worked by any process. Ores sampled. Assaying in all its branches. Analysis of Ores, Minerals, Waters, etc. Plans furnished for the most suitable process for working Ores. Special attention paid to the Mining and Metallurgy of Quicksilver.

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Morris' Settlers and Amalgamator.

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RICHARDSON & Co. have been for thirty years established in Swansea as Agents for the preparation, Sampling, Assaying, and sale of Copper, Silver, Gold, Lead, Zinc, and all other Ores and Metals, for which they have extensive Warehouses and Wharves under cover, 1,400 feet of Quay Frontage within the Floating Dock, and the most complete Machinery and Appliances. They are also prepared to make advances against Ores in anticipation of realization, and to guarantee all payments when required. 2v26-1y

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Parties working Quicksilver Ores can obtain the right to use highly successful patented improvements for condensing fumes and working soot, by addressing **F. FIEDLER,** 13v28-3m New Almaden.

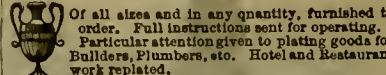
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OF SUPERIOR QUALITY, FRESH FROM THE MILLS. It being constantly received and transported into the interior, is delivered to the consumer within a few days of the time of its manufacture, and is in every way superior to any other Powder in Market. We have been awarded successively

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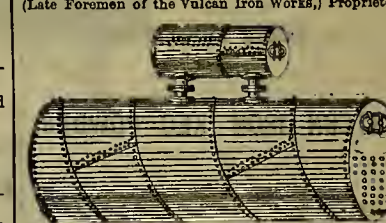
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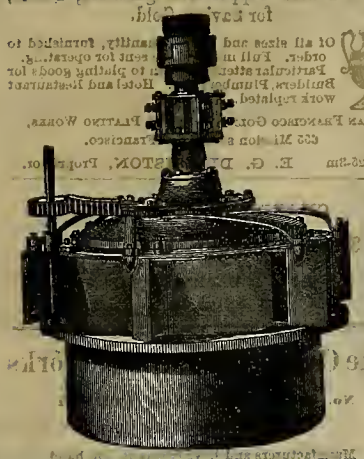
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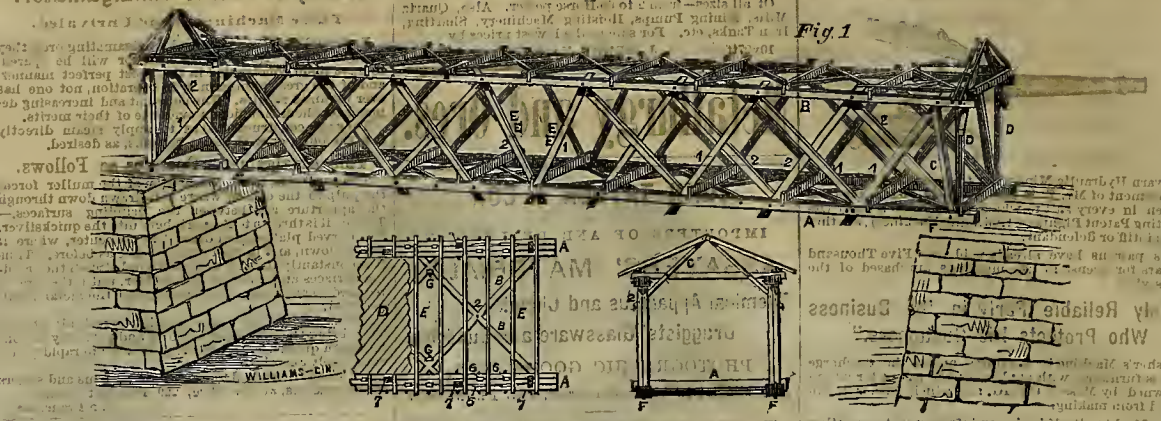
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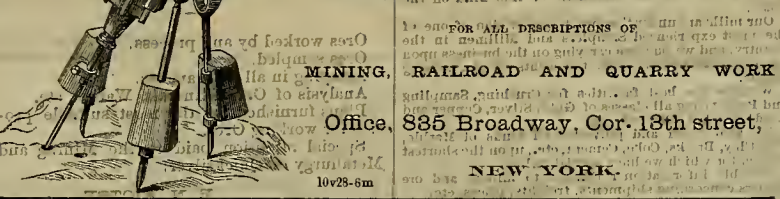
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Simple and Effective Machine



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Will purchase Gold and Silver Bearing Ores, Cuperiferous Silver Ores,

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OR WORK THE SAME FOR OWNERS' ACCOUNT.

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Hose and all other Joints, Spelter, Solder and Copper Rivets, etc. Gauge Cocks, Cylinder Cocks, Oil Globes, Steam Whistles, HYDRAULIC PIPES AND NOZZLES for mining purposes, Iron Steam Pipe furnished with Fittings, etc. Coupling Joints of all sizes. Particular attention paid to Distillery Work. Manufacturer of "Garratt's Patent Improved Journal Metal."

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JACOB SCHREIBER, President. A. D. CARPENTER, Secretary. 728-3m

San Francisco Cordage Company

Established 1856. We have just added a large amount of new machinery, the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes; Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

MINING AND SCIENTIFIC PRESS

An Illustrated Journal of Mining, Popular Science and Progressive Industry.

BY DEWEY & CO.,
Patent Solicitors.

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VOLUME XXVIII
Number 18.

A New Threshing Engine.

It has been rumored for some months past that a firm in this city were to bring out a new threshing engine this season which for simplicity and economy was to eclipse any previous efforts in that direction. A sample engine has arrived and is now on exhibition at Treadwell & Co.'s; and we have the pleasure this week of laying before our readers a partial description of its merits and the two accompanying illustrations showing a side and end view in perspective.

It is an "Improved Hoadley", and is manufactured by the same parties East who have hitherto made the old Hoadley engine so well known throughout the country.

The agents claim that with an engine weighing 1,000 lbs. less, and consuming fifty per cent. less fuel, they are able to accomplish a greater amount of work than with the old style 8x12 engine.

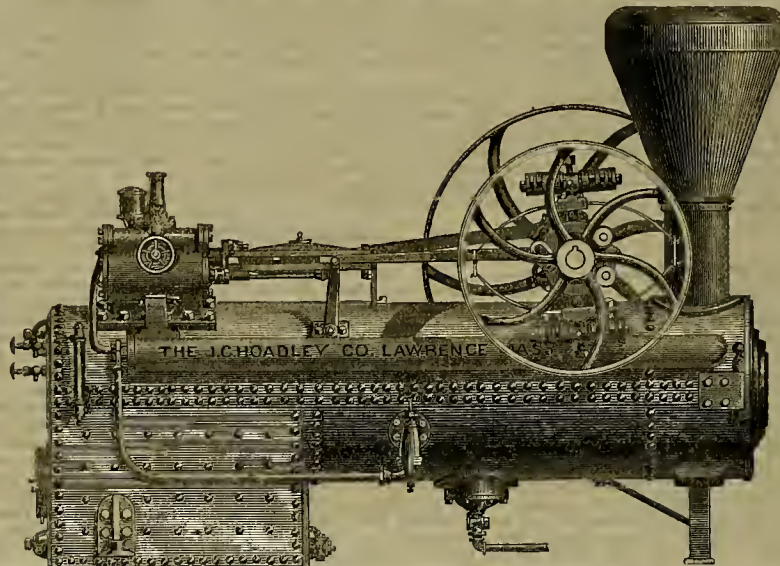
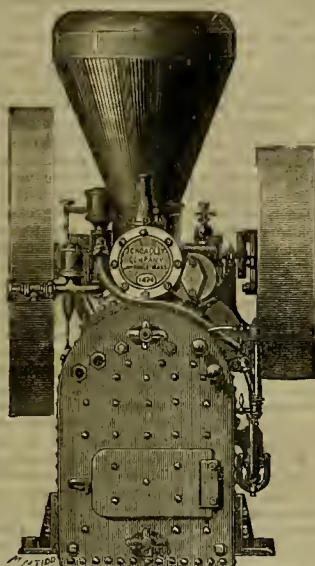
This result is accomplished by means of several radical changes. Mr. Hoadley, who is considered one of the most thorough engineers in the United States, seems to have taken an entirely new departure in the construction of his present engine. A noticeable feature, which at once strikes the eye on seeing the engine, is the absence of the old governor with its attending steam pipes and throttle valves, all of which tended materially to decrease the pressure of the steam on its way from the boiler to the cylinder, by condensation and what is termed "wire drawing." In the new engine the cylinder and valve chest are surrounded by a steam jacket. The valve is of the style known as the "balanced piston," and, through the eccentric, is acted upon directly by a governor of peculiar but simple construction placed on the crank shaft and entirely within the run of the drive wheel. It controls the engine steadily, and can be easily set to vary the speed, and should it from any cause get out of order the engine will at once stop.

The valve is constantly surrounded by steam at full boiler pressure consequently, the initial pressure on the steam piston is very nearly equal to the pressure in the boiler. The regulator acts by cutting off shorter or following the piston at greater length as the case may require, the initial pressure being the same under a heavy or light load. This idea of making an automatic variable cut off with an ordinary slide valve and the use of but one eccentric is a valuable invention. In a trial which took place on the evening of the 23rd inst. in Fremont street, near the corner of Market, the efficiency of the new spark-arrester, which is placed on all these engines, was thoroughly tested.

The spark is so constructed as to obviate the necessity of any hood or wire screen being used, leaving the top always open and free for the escape of the gases of combustion, thereby in no manner impeding the draught. Steam being raised to one hundred pounds, a powerful brake was applied to the fly wheel. The valve was thrown wide open, and with the ex-

haust due from an engine of that size working at full 30-horse power, not a spark was seen issuing from the pipe, although fuel of the lightest kind (shavings and wood) was used and well stirred during the trial. The test seemed to be thorough and most satisfactory.

placed between it and the boiler, be at once removed without the necessity of blowing off the steam. The running gear is of the most approved construction, the wheels being built in the strongest manner possible with very wide and heavy tires; the old style of attaching



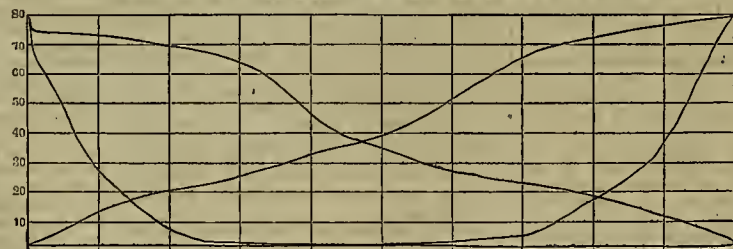
THE NEW STYLE "HOADLEY" VARIABLE CUT-OFF 15 HORSE-POWER PORTABLE ENGINE.

The fire box is steel throughout, while the shell is of very heavy iron and double riveted. Ample facilities are offered for cleaning by hand-hole plates, mud plugs in each corner of

the hind axle to the fire box by means of flanges has been discarded in favor of the more expensive bent axle. In a word, the engine seems to be well and faithfully made; and anyone in-

the same period last year. Stocks of West Coast produce were estimated at 19,574 tons against 23,370 tons on the 1st of March. There does not seem to be much encouragement to ship copper during the present depressed state of the market.

INDICATOR DIAGRAM OF THE HOADLEY ENGINE.

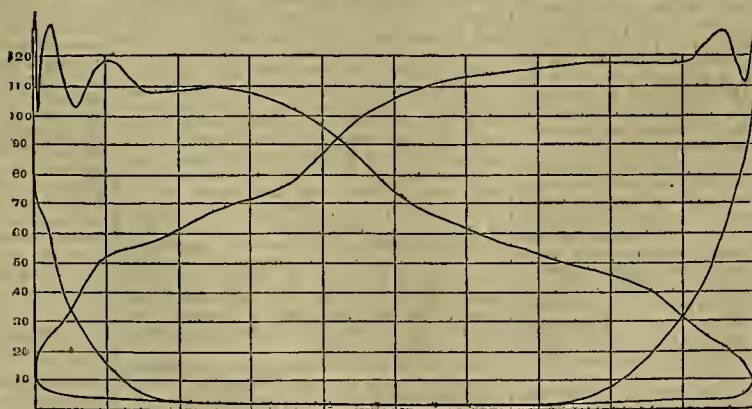


ENGINE NO. 1125.

25 HORSE-POWER ENGINE WORKING AT 27 HORSE-POWER.

SCALE 56.

BACK END
STROKE, 12 INCHES
REVOLUTION, 200
AVERAGE PRESSURE, 32.8
NET AREA OF PISTON, 70
INDICATED H. P., 27.83



ENGINE NO. 1125.

25 HORSE-POWER ENGINE WORKING AT 64 HORSE-POWER.

SCALE 56.

BACK END
STROKE, 12 INCHES
REVOLUTION, 200
AV. PRESSURE, 75.85
NET AREA OF PISTON, 70
INDICATED H. P., 64.35

MR. A. S. HALLIDIE, who recently resigned from the Board of Regents of the State University, is nevertheless, still one of that body. The President of the Mechanics' Institute is *ex officio* a member of the Board of Regents, and as Mr. Hallidie intended resigning his position in the Institute, and his presence was required in the Board of Regents, he was appointed a special Regent at the request of Governor Booth, in anticipation of his resignation as President of the Institute. But being unprepared to remain in the Institute as President, he resigned his special appointment which he had received in place of Mr. Butterworth, and is now a Regent *ex officio* as before. Mr. J. M. Hamilton, Master of the State Grange, has received the appointment and filed Mr. Butterworth's place, which Mr. Hallidie held under the special appointment.

STRAW BURNING BOILERS.—We are happy to learn that the straw-burning boiler, patented through our Agency, by H. W. Rice, of Haywood, are meeting with good success, and are proved to be of greater value than has been claimed for them. This patent relates to a novel way of burning fuel in a long, tubular furnace, and returning the bent through the entire length of the boiler, giving a complete combustion, and making them not only desirable in the saving of fuel, but also in

being perfectly safe in the harvest-field. Two of these machines operated successfully last season in the San Joaquin, Livermore, Salinas and San José valleys.

GILPIN COUNTY, Colorado, furnished \$204,588 in bullion, in March, of which \$116,000 was gold, and \$88,588.37 was silver.

Another quicksilver mine has been discovered one mile from Stower's ranch, about four miles from Jackson, Amador county.

CORRESPONDENCE.

Cremation and Interment in Regard to the Cycle-Metamorphosis of Organic Bodies.

[Written by Dr. L. THIES.]

Cremation.

This burning of dead human bodies, was a usage among some ancient nations and is yet in use among some few unchristianized, or rather heathen, populations. It was and is still there the belief, to send the bodies of the deceased by the action of the sacred fire, the trusted messenger of nearly all their sacrifices, living or dead, bodily and directly to the gods and therefore directly to the place of their future abode. Bodies of criminals, of hated foes and infected were thrown on the field and served as food for ravens, vultures, etc.

Interment

Of the bodies is also a very ancient usage; among some nations we find graves, bones and other relics in graves and caves many centuries old. In all cases it was more or less a desire of the bereaved relations or people, to know and mark the resting place of the beloved or mighty one, to visit the now sacred place, to cherish the remembrance and love and nurse the soil which covered the form of the body, man, woman, child, or often only a pest animal.

In the more recent time of the Christian Era, the burning of the bodies was gradually abandoned for burying. The principal reason, therefore, may be found in the implicit belief and adherence to the bible and its very words, which promise to its believers a day of judgment, when they will be awakened, and some of them perhaps astonished, by the sound of tremendous trumpet blast, which will call them up from their so long occupied resting place for the last and general meeting.

This Faith,

In the words, is perhaps one of the reasons which create opposition to the seemingly entire destruction of the body by fire. Added to this belief also are the instinctive love and affection, which in old times, as well as now, built monuments over the resting place of the body.

We live in an age when all the words of tradition, no matter from which source, are and will be in the end powerless against this flood of enlightenment which burst the clouds of darkness in which we were living.

The fertile brain of man goes always onward and figures no longer with fiction; it defines the truth by the slow logical means acquired by facts, gathering these as it moves along, and shows the fallacy of those doctrines, which once it was a crime to doubt. Above all the sciences is the

Science of Chemistry.

The never resting one; and it is this science alone which teaches and learns, and learning finds new stations to locate a new marked era for and in the progress of the scientific world.

To our times were the greatest strides of this science reserved; no more a single science, but associated and combined with the new progressing arts and mechanical contrivances, not fruitless in its researches, not egotistical, following the trail for individual benefit; but disclosing before our eyes and senses every day new experiences, new facts, and opening the widest field for appliances in commerce and agriculture, a benefit for each and all. With reasons and proofs, it narrates to us the hitherto unreadable hieroglyphics of the creation, the composition of bodies; nay, it tells us with unsparing certainty the nature of gases which surround our terrestrial globe millions of miles distant from our own, defines to our astonished ears the laws of all the creation on our globe, and last, but not least, proves that the process of resurrection is going on. For this bright light of absolute truth, we thank the genius of the eminent chemist, Liebig.

But may we ask, what has this to do with cremation and interment? His researches and others prove to us that metamorphosis of matter, which our organic bodies, animal as well as vegetables, are subjected to, end at last in one and the same result, no matter whether the seeming destruction is performed by slow combustion, (decay, oxidation,) as in the case of interment, or by actual, perfect and rapid combustion, as is done by this proposed cremation. The processes give back to the inorganic world what was taken from it by the action of life, for the building and the keeping of the body and in turn expelled again, as long as life lasted.

We have here only to do with the matter, and leave the power of life, soul or spirit, as a subject of belief, to the doctrines of the church.

Inorganic and Organic Creation.

But matter is nothing of belief; it belongs to realities, and is subject to proof. We divide this matter into inorganic and organic creation. The first comprises the foundation of our globe, — a body without inhabited life, lasting without apparent alteration, centuries after centuries, produced by inorganic forces, by chemical affinity and cohesion, existing by themselves, and as passive tools of the totality.

The principal bodies, and those which come under contemplation in regard to the above metamorphosis, are the atomistic, endowed with

the organs of life or activity; and these again we divide into animal and vegetable bodies. Composed of more or less organs, and forming a relatively independent individual, they exist for a certain time, not only by physical and chemical laws, but also by the vigor of life, more or less clear to our senses.

Their being is subject to constant alteration of substance; arising, growing and decaying are the cycle they perform. They die, but other similar beings take their place, only to go through the same procedure. The exchange which perpetually gives new material to them and takes away the expelled, is, next to the life power, their chief condition for existence. In these regards, they are the counterpart of the before named inorganic bodies, and show by comparison more distinctly opposition to, than harmony with these lifeless masses; and yet they consist, in the principal composition of their chemical ingredients of well known inorganic elements, principally water and mineral salts, joined to a singular organic matter, without which there is never an appearance of life. The difference is, therefore, not in the simple constituents themselves; these are identical, but it is the adaptation of a few elements to this harmonious structure of the organized body, and this is the condition of existence.

Decay.

A principal faculty is absorption of oxygen to saturation and, therefore, aptness for combustion and final redistribution of the accumulated inorganic elements to their sources. Water, ammonia, carbon, etc., go back, whence they came, to the atmospheres. Sulphur, phosphorus, iron and alkalis are left in the residue, the ash; and are again ready to be used anew for building up of new structures in organic bodies.

We see, therefore, no matter which was the destroying agent, the same results appear from the slow decay, or the rapid combustion; it is in such way destruction of the mold, but destruction of the matter itself is an impossibility. The one is slowly preparing for future use, the other is ready with the same material, in a rapid way.

Let us see now how this newly prepared raw material passes through the metamorphosis to its starting point.

By aid of root and leaves, the plant absorbs from soil, water and atmosphere, these immense warehouses of inorganic matter, all necessary elements for construction, keeping and developing in form of carbon, water, ammonia and mineral salts. In the organs of the leaves, it absorbs by the assistance of sunlight, the carbon, etc., from the atmosphere, retains the carbon and returns the oxygen; it forms with the carbon, and with the help of water, ammonia, new combinations; builds with these as material, fiber on fiber and vessel on vessel; fills these again with juice and sap, inorganic in origin, but now organic, with wonderful harmony and fresh from oxygen, so long as life lasts — a laboratory in itself working and creating; unknown in its actions and its working process, a mystery like its principle, the life.

Materials of Growth.

What we know and have to contemplate, is the result of this co-working of life and body, and this is ours by "encheiresis nature," and open for our researches, giving to us the Ariadne thread in hand to follow through the labyrinth of errors back to the beginning, with unerring certainty. The perfect counterpart of the plants is the animal system in its actions. It needs for its structure, as a condition of sustaining its life, the already formed organic substances; it has not the faculty to extract and form from simple organic elements those organic substances which it needs for sustenance. Only in vegetables are the required funds for its structure and life, and only there it finds the sources in form of carbon, hydrogen, fat and albumen, either directly, or indirectly by devouring other animals, which were themselves living on plants.

But besides these, it needs also some inorganic matter and finds this in the water and mineral salts, partly prepared in the plants, partly directly in the organic creation. Among these, the oxygen, above all, is a condition for the functions of its body and preserving of life. Like the leaves of the plants, the lungs are here the never resting feeders on the atmosphere, acting in an opposite manner to the leaves, by keeping the oxygen and expelling the carbon. The oxygen penetrates through the surface of the respiratory organs and comes in contact with blood and fluids in the vessels of the body, distributed and penetrating not alone the animal structure, but also acting a principal part in the nutritive substances, which modified by digestive process are divided through the whole body. And here already this organic combined substance undergoes a gradual oxidation and passes over from simple to higher and more oxygenated combinations, till they are saturated and expelled and leave their former combined, but now separated inorganic elements, to the warehouse of nature; ready again to be used for new structures and metamorphoses.

This is the cycle of the household in the nature and clearly and distinctly do we see the boundaries, conditions and laws of not alone our existence, but also those of more or less life-endowed creation; and these are as significant of the end and beginning. No truer words than from dust to dust on to eternity!

Is Cremation Preferable to Interment?

And by what reason? The answer must be: Most positively! Slow combustion, or decay, by slow absorbing of oxygen, as by interment,

produces and gives in a slow way to the inorganic creation, what life-endowed energy took and used from there, for building and constructing, in a space of a few years. It radiates the elements, but in an imperfect way, holding back essential parts and retarding by this the recreation of new bodies, impoverishing, nay robbing, the store-house of nature of a part of their due. It does still worse: made from simple and originally healthy elements, the structure of plant and animal is a model of beauty and health, an edifice appropriate and worthy for its inhabiting soul, pure and good as nature itself. But as impoverished, poor, or poisoned soil will starve, cripple and poison the plant and bring it to an early decay, so will thus, as an unhealthy poisonous or adulterated food, vice, bad habits, abuse of body create more or less diseases and sickness in the animal world; and more, in our human body, as in other animals, it poisons the body and makes from this temple of purity a miserable wreck, often deserving this worthy house of a miserable soul; often innocently, and then a loud lament and accusation from the guilty one arises. Premature decay is the result, and its results, again, are the undestroyed modified and spreading germs, inoculating with an increased progress new victims. Plague and pest reap with insidious interest from the capital of negligence and improvidence.

All this would be avoided by the rapid and actual combustion, which dissects the constituents of the body into its original elements, but rapidly and perfectly, and also purifies and disinfects; it destroys the organic germs, and gives the inorganic elements back, pure and healthy, for further healthy structures.

In the century in which we live — a century of intelligence and research, but also often of mercenary principles — we may expect much opposition to this proposition of cremation. But there never was a better and more useful proposition made for warm climates, over-crowded countries, cities, and also here for our particular locality, San Francisco, where the influx of foreigners from all parts of the globe is steadily increasing its population, and where, besides, is kept and nursed, in its very heart, the best established and most ingeniously planned breeding place and hot-house for plague; but where it would be, if properly executed, the only remedy against its spreading among that class of inhabitants, who, too improvident or otherwise, do not belong to the proprietors of one or more of the above-named nurseries, and can therefore not afford to live across the bay or further off. For these and their families cremation would be a feasible protection; and it is to be wondered at that the Board of Health did not before this order the cremation of the bodies as well as of the straw and clothe (provided these were not stolen before). The destruction of contagious germs, and, therefore, preventing the spreading of these diseases, would be the result. And in this case cremation should be compulsory by law, at least for those who have died from contagious diseases in public institutions.

Buckeye Mountain.

With last Friday's stage, arrived in Weaver-ville Mr. John Simpson, of Cerro Gordo, Iroquois county, and Mr. J. E. Spencer of San Joaquin, who came here to look at Trinity county. After a week's stay, Mr. Simpson informs us that he came here for a specific purpose, had examined the matter thoroughly and was more than satisfied with the result of his examination. He says that Trinity is at once the most extensive and evidently the richest gravel mining section on the Pacific Slope, and that the facilities for working the immense gravel deposit found here are unsurpassed. Plenty of water (by going after it), plenty of gravel, plenty of pressure, and plenty of outlet, and, we might add, plenty of gold. What more could capital seeking investment in hydraulic mines desire? Certainly nothing more.

Feeling confident that the investment will prove one of the most productive and certain that can be made, Mr. Simpson has bonded the Atkins & Lowden property, in the interests of the company he represents. This property consists of a Stuart Fork water-right and ditch, and a large area of mining land on Buckeye mountain. Mr. Simpson says that operations on this property will commence at farthest by the middle of May and that in six weeks from that time a portion of the waters of Stuart Fork will be used in washing gravel in the great Buckeye range. It is the intention of the company to dig a ditch, on the upper line, eight feet on top, five feet on bottom and three and a half feet deep, and have water in it by the first day of July. After that they propose to construct a second ditch of equal dimensions 200 feet lower. The reason for two ditches is that either will be high enough to cover the mines, and that it will be cheaper to dig two small ditches than one very large one, on account of the mountain rising so abruptly; also that the danger from slides and breaks is much less on smaller ditches.

Want of space at the late hour we were made acquainted with this matter forbids a more extensive review of the enterprise at this time. Men experienced in gravel mining need but to look at Trinity county to know that the inducements for investments in ditch and mining enterprises within her borders are superior to those presented by any other section. The Weaver-ville Ditch and Hydraulic Mining Company and the one referred to in this article — not yet incorporated — are but the forerunners of others which will be formed and operating in Trinity within the next twelve months. — *Trinity Jour.*

The Georgia Gold Fields.

The following, taken from a letter just received in this city from the gold fields of Georgia, written by the celebrated mineralogist, Dr. M. F. Stephenson, formerly assayer to the United States Mint, will be read with interest:

The Chestatee rises in the Appalachian mountains of Georgia, in Lumpkin county, and flows southward through one of the most picturesque and charming countries in America, and falls into the Chattahoochee river in Hall county; then aways on to the Gulf of Mexico. The Chattahoochee is so called, in the Cherokee language, from rubia being found in its sands. It has become historical as being the western base of "De Soto's conquering march" through the Seminole, Creek and Cherokee nations of Indians. All along this route, from St. Augustine in Florida to the Nacoochee Valley, are found numerous relics of his fortifications, his battles and explorations for gold, the last being his chief object.

This Chestatee, as well as the Chattahoochee, traverses the gold belt for a distance of 20 or 30 miles, mostly at right angles to the strata or trend of the gold veins, which necessarily has produced rich and extensive deposits in the creeks and river beds, as well as places on the table lands and hill sides. The Chestatee, from its mouth to the junction with the Tennessee, above Dahlonega, is vastly rich, but has not been worked, excepting the shoals, which yielded large profits to the operator. Several companies have been organized heretofore to turn this river by canals, and one by a wooden flume for some 10 or 20 miles, but this war prevented a successful development of their plans. Two companies are now engaged in preparation to work the river bed, one from Ohio, under the control of Colonel Price, who is cutting a canal and tunneling through a ridge so far as to bare and make available three miles of gold deposits. This canal is near its mouth. The other is constructed by J. K. Bartlett, of Boston, who has engrossed nearly ten miles of the river. Both are practical men, and have not only the capital, but the skill and determination of purpose to carry it out to completion. All the workings, in years gone by, in the shoal water, yielded from \$1 to \$10 per square yard, which, if properly worked, with energy, as the above parties indicate, will give millions annually to the treasury of the country.

The vast mineral wealth of this region, heretofore scarcely known, is beginning to be appreciated. Capital and enterprise from the North and West are coming in, people of the States are excited, and already, on every hand, evidence is increasing of the practicability of gold mining, which bids fair to exceed the most flattering productions of California. Another company from Ohio, under the supervision of Colonel Hand, of Cleveland, is preparing to work the extensive placers controlled by the charter of the old Yahoala mining company, around Dahlonega, upon the canals and mills of which the former company expended nearly half a million dollars. When the rich and extensive gold field is put under the hydraulic process, the yield will be enormous, and the same process will expose hundreds of rich veins which have now no outcrop. Of their success, no practical miner here has any doubt. The capital necessary to work many of the more favorable sections of the river will be comparatively small, and many veins found without any expense. It was thus with the "Boly-Flains vein," which is now being developed by Mr. Bartlett, of Boston.

This vein is in hornblende gneiss, and when first opened yielded the richest ore ever worked in the world. Its most singular characteristics are that it is in the oldest formation, and disproves the absurd theory of Lord Murchison, Lyell, Dana and other authors, that gold was brought to the surface only a short period before the appearance of man on earth. We have two other mines which prove the same, one where the gold is diffused through the oldest granite in paying quantities for miles, and the other in feldspar over a hundred miles from any over-lying rock containing organic remains, proving this mountain ranges to be millions of years older than the Rocky mountain chain, the Alps, the Andes, or Himalaya, where you find vegetable and animal organisms from 10,000 to 16,000 feet above the sea, in the overlying rocks on the mountain sides, incontrovertibly proving that they were elevated above the sea in the Tertiary period, whilst the Appalachian chain was upheaved in the Azoic age.

All we need here is capital and enterprise to develop millions, at one-half the expense of working the mines on the Pacific Coast, in Central and South America, or Australia. Hundreds of rich veins have been worked to the water-level and abandoned long since, for want of capital. — *Boston Advertiser.*

The *Pioche Record* in concluding its mining review of the past week says, we may say that though perhaps there might be more favorable developments, still enough has been shown in the Page & Panaca and Washington & Crook to demonstrate that the lead struck in the Lightner shaft is the true ore-bearing vein of the district, and that depth, or superficial disturbance, does not alter its character. It may be that from cross-heads, or some other wrong head, it may be slightly moved from its course, but still, like the Flag, it is still there, and will yet send forth a stream of bullion that will make Pioche renowned.

MECHANICAL PROGRESS.

A Gravity Elevated Railway.

A merchant in Chicago has recently patented a device for a street railway, dependent upon gravity for the motive power. The *Chicago Tribune* thus describes it: The railway itself consists of a series of inclined tracks, elevated upon a heavy framework of pillars and trestles, upon which the wheels which carry the car travel. The central posts are heavy timbers, 12 inches square, into which are set the cross-joists which support the double tracks on each side. The inner track is set one foot from the post, and the outer is 18 inches from the inner. The tracks are set on beds, two by 14 inches, and are braced to the trestle-work and to each other. The cars do not run on the tracks, but a set of four wheels with grooved edges travel on the half-round rails, and the cars suspended from the axles of these wheels by wire rope. On starting at the highest point of the first section of track, the car is hung about one foot clear of the ground, and, as the sections are one mile long or more, and the grade is about 25 feet to the mile, it is evident that the car would strike the ground within a very short distance. To obviate this a large wheel, five feet in diameter, is placed at the front end of the car, on the side. This wheel is turned by spokes, like a ship's wheel, and the bold pilot of the car occupies a little platform, where he can keep a lookout for passengers and work the machine. As the wheels descend the operator winds up the car a distance corresponding to the vertical fall, by means of his large wheel, and a series of pinion-wheels which turn the shaft to which the supporting rope is attached. The car is thus kept constantly at the same distance from the ground at which it started, and the exertion necessary is not great, owing to the lightness of the car and the leverage obtained by the gearing.

The tracks are arranged with opposite inclination on opposite sides of the posts, so that the cars travel in opposite directions on each side. As above stated, the average length of the inclined sections is one mile, but the road can be extended indefinitely by a simple contrivance. On reaching the lower point the wheels run upon a piece of track which slides vertically in grooves to the height of the original starting point. The trestle work here is again high up, the wheels start on their descent once more, and the journey continues. The car itself is neither raised nor lowered, but the wheel is simply thrown out of gear, and the rope unwinds from the cylinder to be rewound as the wheels again descend. The sets of wheels weigh less than 100 pounds each, and are raised by the descent of a counter weight at each station, where a station-keeper is placed to attend to the changing of wheels from the lower to the upper track. Each car carries ten persons, for each of whom a seat is provided with a sliding door for each seat, and, when they are filled, no more passengers can be carried. The cars weigh about 500 pounds each, and cost from \$75 to \$100. It is thought that the road will not cost over \$2,000 per mile where the incline is not over twenty feet to the mile. This rate of speed, of course, depends upon the amount of the incline, and the weight of the cars and passengers. The full car should have a speed of fifteen miles per hour, with an inclination of twenty-five feet to the mile. They may have more, but the conductor has a brake upon the wheels, and another check in the shape of two obliquely inclined iron rods which will drag along the ground to prevent lateral motion of the car. They can be pressed into the ground by a treadle, and the forward motion thus checked also.

IMPROVED WHEEL FOR VEHICLES.—Upon the end of the axle is formed an axle arm, made octagonal or of other polygonal form. A short cylinder has a hole formed through it of the same shape as the axle arm, and its outer surface forms the journal of the hub. The cylinder is placed upon the middle part of the arm, and upon said arm, upon each side of the cylinder, is placed a flange, made somewhat conical in form, which is secured in place upon said axle arm by a linch pin. A ring, which forms the hub proper, is made with a ring groove to receive the tenons of the spokes, which tenons are separated from each other by thin partitions, which may be V-shaped. The outer edges of the ring have flanges formed upon them, which overlap the edges of the flanges first mentioned. The spokes may be further secured in place by bolts passed through the flanged outer edges of the ring.

AMERICAN LOCOMOTIVES.—An article in *La Bourse*, of St. Petersburg, warmly commends the construction and performance of the American locomotives for burning anthracite coal, recently arrived in that city. The frame, it says, is solid, instead of being of plate, and the character of the cylinders, the manner in which they are adapted to the machine, and the mechanism of all the details which enter into the construction of a locomotive, it pronounces superior to anything of the kind ever seen. It especially notices the immense fire box, about nine feet long, which forms the essential part of the system of heating with anthracite; and the grates formed of several ranges of tubes, one above the other, extending from front to rear in the furnaces, and the circulation of water in these tubes so as to protect the interior walls against the intense heat.

Weight in Machinery.

It is undeniable that the mere inertia of the material of which a machine is made is a most important element, as concerns its strength and durability, and also even more especially its stability when in use. We are here speaking of matters wholly outside of dynamic effects, and with especial reference to the utility of greater weight than is now accorded to many varieties of machinery. An apparatus constructed with a slender frame rigidly bolted in place and stiffened by the careful adjustment of braces will serve its purpose well for a while. But the very rigidity which reduces its vibrations to a point imperceptible will, by the same agency, quickly jar loose its joints, and, in many instances, where steel is used for parts subject to percussion, deteriorate the quality of the metal and prove the remote cause of breakage and loss. Imagine a percussion strain, that, under the conditions just supposed, would prove mischievous, distributed through a larger mass of metal (a dead weight, if one should please to call it so), the effect is deadened, the parts work more smoothly, and greater uniformity in operation and of products is the result. We speak here in general terms, for these remarks apply generally to machinery run by steam or equivalent motive power.

But the advantage of due weight in machinery is not confined to its framing or to merely the static conditions under which such is commonly employed. We know that a light balance wheel run at a high rate of speed may be made to do the work of a heavy one run at a low speed, and as far as regards the founder's bill for the casting, may have the preference. But no balance wheel can be run exactly, or in other words have its axis of motion really and truly coincident with its axis of weight and form. At a moderate or ordinary number of revolutions per minute, this may be practically inappreciable. But increase the ratio of motion and the effect of any inequality, however slight, is manifest. It is on record that a displacement of two pounds of metal in the weighty balance wheel of a down-east cotton factory shook the whole building as the wheel revolved. Not only must balance wheels be as truly poised upon their axis as the best workshop practice will insure, but they should be of such weight that they secure their avowed objects at a moderate motion. Our steam engineers as a rule understand this, and to them we are not particularly speaking; but designers of new machinery, and of the latter a hundred examples are brought forth each day, are more apt to fall into the errors to which we have hastily alluded, and it will be well for the success of such undertakings if, as a rule, weight, combined, of course, with sound judgment as to proper proportions of parts, receives the credit that belongs to it, as a safe and reliable conservator of mechanism in motion.—*Newark Manufacturer.*

SAFETY RAFT.—An extraordinary safety-raft, the invention of Mr. J. A. Fontaine, is about to be presented to the consideration of the French society for saving lives from shipwreck by Admiral La Ronciere le Noury. This raft is described as large enough to support from 400 to 600 persons, as neither encumbering, nor requiring any alteration in the arrangement of vessels, and requiring only a minute or two to inflate and launch it. It is an air-tight tress, with a surface of eighty square metres, inflated in one minute, it is said, from a reservoir fixed in the engine room and always charged with air under a pressure of fifteen atmospheres. When not in use, it is rolled up, and takes no more room than a boat. When inflated it falls over the side of the vessel, against which it is retained by means of ropes till all the persons on board are transferred to the raft. Three strong spars, passing through tubes the whole length of the raft, keep it flat and solid.

IMPROVED MACHINE FOR ASSORTING POTATOES.—This machine consists of long rollers, a hopper, assorting board, and grading chutes, so combined and arranged that the potatoes being shoveled into the hopper at one end and caused to run along the assorting board and the rollers, the smaller potatoes will escape between the roller and assorting board, while the larger ones will be discharged at the end. The distance between the roller or rollers and the assorting board increases from the head toward the tail, and the potatoes escape through the space, varying in size in the same measure, so that they can be separated into two or more grades by suitable partitions in receptacles below. The assorting board is adjustable toward and from the roller, so as to change the grade at will.

An apparatus for planing, tonguing and grooving wood has recently been patented. This invention relates to apparatus for planing true on the face and tonguing and grooving its edges, more particularly applicable in the preparation of flooring in small pieces, which can be continuously fed and discharged. The table of the machine consists of an endless chain of plated links, traveling between guides, and provided with edge dogs for holding the pieces which are passed between revolving edge cutters for grooving and tonguing, and under a planing disc mounted on a vertical spindle, at the side of the wood. The wood is released by the hand of the chain over the chain wheel and the withdrawal of the back dog.

COLORING PLASTER.—A delicate cream color may be given to plaster by mixing with it a little yellow ochre.

SCIENTIFIC PROGRESS.

Reclaiming the Desert Places.

The explorations of the French engineers have proved that the surface of the great Desert of Sahara is below the level of the ocean, in fact that it is the bottom of an ancient fresh water lake, which has dried up by gradual changes in the surrounding levels, the streams which once supplied it now going directly to the ocean. It has been therefore suggested to change this desert back into a lake, and in this way to alter the whole climate of that country. This would, of course, create a moist atmosphere in place of the burning, hot, dusty whirlwinds which are the curse of that region. There are, however, no rivers to be turned into the basin; and the artesian wells, successfully bored by the French, which create oases in the desert round them, give too insignificant a supply for such a great purpose. It has, therefore, been proposed to make a channel to the ocean, and lead the ocean water into the desert; but in consequence of the vigorous evaporation in that latitude, the water, when once spread out over any considerable surface, would probably disappear as quickly as even the largest sized canal could pour it in.

The Caspian sea, which is situated below the surface of the ocean, evaporates the waters of the Volga as rapidly as that colossal river, the largest in Europe, is able to pour them in. The water of the Volga is fresh, containing only a small percentage of salts; but this small amount of salt remains in the Caspian sea, while pure water only is abstracted by evaporation; thus the sea is very salt, and becomes more so every year. If now the collection of fresh water in a closed lake, from which there is no exit but evaporation, ends in making a salt lake in a cold climate, the introduction of sea water to form such a lake under a tropical sun, as proposed for Sahara, would result in making a huge salt pan, which would gradually fill up with solid salt, till it reached the level of the supplying ocean; and we should only have transformed the dry sandy plains of the desert into dry salt plains, and which of the two would be the worst is a matter for discussion.

We think that a continuation of the French system of boring artesian wells in all available spots is the best method of reclaiming the desert. Many of these wells have already been completed; and it is indeed touching to read the description of the joy and religious enthusiasm of the natives when they see, for the first time, a bountiful supply of fresh, cool water poured forth from the bowels of the earth in spots where never before was water seen for miles around. The creation of an oasis in the desert is the immediate consequence of each well; and in the course of years the dreadful Sahara may be so profusely clothed with artificial oases that most of its terrors will have passed away.

As to our American deserts, recent explorations and surveys of the great desert of the Colorado river have shown also that it was the bottom of a lake which had dried up, because the river has cut its channel in the rocks, through which it flows to the ocean, so low down (from 4,000 to 6,000 ft.) that the lakes, formerly connected with and supplied by the river, lie now far above its present level. These lakes have for centuries collected at their bottoms the deposits of the Colorado river; and the now exposed surface consists, therefore, of an alluvial soil of extreme fertility (containing potash, soda, lime and phosphates), which, however, cannot produce any crops on account of the total absence of moisture. The whole region is, indeed, a desert, like that of Sahara; and, like the latter, a portion of it lies below the surface of the ocean, as proved by barometric observations. It is believed that the waters of the Gulf of California formerly extended some 175 miles further inland than they do now; that subsequently the delta deposits of the Colorado (which were enormous, considering the deep channel which it has hollowed out for itself) formed a dam in the sea 175 miles from the shore, finally enclosing a sheet of water, which then dried up and now forms that part of the desert which is lower than the ocean.

It is proposed to lead the waters of the ocean into this low portion, so as to inundate it, and increase the atmospheric moisture in that region; and it appears that the plan is feasible, at a comparatively small cost; but one objection is that then a large portion, some 30,000 or 40,000 square miles, which otherwise might be made productive, would be sacrificed; and this plan is also open to the same objection as that of inundating the Sahara with sea water: it would end in the creation of an enormous salt pan. We prefer the other plan which has been suggested, irrigation from the upper part of the Colorado river, which, to be sure, would cost much more, but would reclaim all the highlands of this desert. The geologist of Williamson's expedition, Mr. W. P. Blake, points out that, by cutting a canal or deepening a certain small river low enough, so that the water from the Colorado could enter it at all seasons of the year, a constant and plentiful supply of water can be furnished to the interior of the desert and used for irrigation, while the surplus will fill the lower portions with fresh water, find its exit to the Gulf by a pass to be constructed, and also establish navigation from the Gulf of California to the interior of the great lake. A thorough survey is needed, and also experiments in boring artesian wells;

which, without doubt, would here be as successful as in the African desert, as is indicated by indisputable geological evidences.—*Scientific American.*

UNDERGROUND TEMPERATURE.—At a meeting of the physical science section of the British Association, Professor Everett read the report of the committee on underground temperatures. It is well known that the temperature of the earth increases, as a general rule, the deeper instruments can be sent below the earth's surface, and the committee has been at work for some years collecting accurate information on the subject by trying experiments in wells, mines and tunnels. The report told how temperatures had been observed in the deep well at St. Denis, near Paris, also in the Kentish Town well, where, at a depth of 1,000 feet, a temperature of 57 degrees Fahrenheit had been observed. In the Sub-Wealden here, near Battle, Sussex, a temperature of 68½ degrees had been observed at a depth of 168 feet, the temperature of the surface springs being then 51 degrees. Preparations are being made to observe temperatures in Mont Comis tunnel, also in the St. Gothard tunnel. The latter will be larger and deeper than the Mont Comis tunnel; it is already begun; and the mountains have been pierced about 300 metres at each end of the tunnel. Experiments on the thermal conductivity of rock would give results, said the report, which would much aid in researches on underground temperatures.—Mr. Sissons asked to what extent the temperature of the earth increased as greater depths were reached?—Professor Everett said that the temperature increased, but at different rates in different places; in some places it increases one degree Fahrenheit in every 100 feet, and in others as much as one degree in every 50 feet. The President said that there were two leading sources of error in experiments and researches of this nature; first, the friction of the boring apparatus was liable to raise the temperature temporarily; secondly, the thermometer had frequently to be sunk into water in which liquid struts are always mixing more or less, so as to affect the reliability of the indications.

TREATING SULPHUR ORES.—Messrs. Croll and Dalglairns, London, suggest improvements in the mode of treatment of sulphur ores, for the separation of the foreign matters and impurities, found so largely combined therewith, without the agency of heat, as customarily employed, whereby the pure sulphur itself is to a considerable extent dissipated and carried off to waste, besides generating a nuisance in the locality by the escape of noxious volatile emanations. For this purpose the purer portions of the sulphur ore are to be separated from such portions as are most debased by admixture with foreign matters and impurities; and these mixed or impurer parts, having been thoroughly comminuted and reduced to a state of fine pulverisation, are to be treated with water, and agitated or otherwise manipulated, so as to effect a complete separation of all the different ingredients, according to their various specific gravities, within a suitable reservoir or receptacle, whereby the sulphur is eliminated from the impurities. Muriatic or other acids may be employed to combine with the foreign matters and aid the separation; and the washed particles, according to their densities, may be drawn off and removed at different points.

A NEW ALKALOID FROM MORPHIA.—A new substance has been prepared, by G. Nadler, by the action of an ammoniacal solution of cupric oxide on morphia. Its chloride is of a brilliant white color, and is easily soluble in hot water, in which the ammonia throws down an amorphous precipitate, that remains unchanged in the air in the moist state. With concentrated sulphuric acid, it becomes of an intensely green color. From the potash solution, when boiled, the alkaloid separates in scales having the luster of silver. It is, moreover, distinguished from morphia by its trifling solubility of its sulphate, and from apomorphia by its stability in moist air.

EXPERIMENTS made to test the vitality of frogs, in relation to the fabulous accounts of frogs found embedded in rock in deep workings of mines, in England and elsewhere, showed that frogs frozen up in blocks of ice for over eight hours were alive and breathing normally as soon as they were thawed loose from the ice.

PROFESSOR DONDERS shows that the time occupied in the transmission of a sensation through the eye to the brain, the formation of a judgment, and the transmission of a volition from brain to hand is .15 of a second; but when the ear is the receiving organ the time required is only .09 of a second.

SEVEN minor planets have been discovered during 1873, all in our own country. Four of these were detected by Prof. Watson, of Ann Arbor; three by Dr. Peters, of Clinton, New York. Seven comets were discovered during the year, all in Europe.

An inventor has perfected and patented a process by which raw hides can be utilized for harness, helting, and in many other ways without the process of tanning. His claims in favor of it are greater durability and cheapness.

The velocity of sounds in different gases is found to be inversely proportional to the square roots of the molecular weights.

Weekly Variations in Stocks.

(Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.)
For 6 days ending Wednesday, Apr. 23, 1874.

NAME OF COMPANY.	FEET IN MINE.	SHARES IN MINE.	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.						
Alamo.	300	6000	13P	10 1/2 W		
Alpha Con.	3600	36000	6 1/2 W	4 1/2 W		
American Flat.	1800	18000	2 1/2 W	2 1/2 W		
Bacon M. & M.	65	2400	1 1/2 W	1 1/2 W		
Belmont Con.	1040	10400	8 1/2 W	8 1/2 W		
Belcher.	224	2240	20 1/2 W	20 1/2 W		
Best & Belcher.	20	2000	1 1/2 W	1 1/2 W		
Bowers.	20	2000	1 1/2 W	1 1/2 W		
Buckeye.	2500	25000	2 1/2 W	2 1/2 W		
Bullion.	5000	50000	2 1/2 W	2 1/2 W		
Caledonia.	2000	20000	2 1/2 W	2 1/2 W		
California.	2000	20000	2 1/2 W	2 1/2 W		
Chollar-Potosi.	2000	20000	2 1/2 W	2 1/2 W		
Citizens.	130	24500	1 1/2 W	1 1/2 W		
Con. Gold Hill Quartz.	3410	34100	1 1/2 W	1 1/2 W		
Con. Virginia.	1000	10000	1 1/2 W	1 1/2 W		
Cook & Sawyer.	1600	16000	1 1/2 W	1 1/2 W		
Crown Point.	600	10000	1 1/2 W	1 1/2 W		
Danely.	2000	20000	2 1/2 W	2 1/2 W		
Dardanelles.	1200	12000	1 1/2 W	1 1/2 W		
Empire.	70	25000	1 1/2 W	1 1/2 W		
Empire M. & M.	75	50000	1 1/2 W	1 1/2 W		
Exchequer.	400	8000	1 1/2 W	1 1/2 W		
Farmington.	3000	12000	1 1/2 W	1 1/2 W		
Flower.	2000	20000	2 1/2 W	2 1/2 W		
Franklin.	2000	20000	2 1/2 W	2 1/2 W		
Globe.	1200	12000	1 1/2 W	1 1/2 W		
Gould & Curry.	400	16000	1 1/2 W	1 1/2 W		
Hale & Norcross.	184	100000	1 1/2 W	1 1/2 W		
Imperial.	2000	20000	2 1/2 W	2 1/2 W		
Indus.	2000	20000	2 1/2 W	2 1/2 W		
Insurance.	2000	20000	2 1/2 W	2 1/2 W		
Julia.	2000	20000	2 1/2 W	2 1/2 W		
Justice.	2000	20000	2 1/2 W	2 1/2 W		
Kentuck.	2000	20000	2 1/2 W	2 1/2 W		
Kentuck & Co.	1200	24000	1 1/2 W	1 1/2 W		
Kossuth.	2000	20000	2 1/2 W	2 1/2 W		
Lady Bryan.	2000	20000	2 1/2 W	2 1/2 W		
Leland.	2000	20000	2 1/2 W	2 1/2 W		
Mint.	1600	50000	20C	30C		
Nevada.	3000	40000	20C	30C		
New York Con.	3000	30000	20C	30C		
Ontario.	800	10000	3P	3P		
Ophir.	1000	10000	2 1/2 W	1 1/2 W		
Overman.	1200	12000	1 1/2 W	1 1/2 W		
Phil. Sheridan.	2000	20000	2 1/2 W	2 1/2 W		
Rock Island.	2000	20000	2 1/2 W	2 1/2 W		
Sage.	800	10000	1 1/2 W	1 1/2 W		
Seg. Belcher.	150	15000	1 1/2 W	1 1/2 W		
Seg. Caledonia.	1000	10000	1 1/2 W	1 1/2 W		
Seg. Rock Island.	2000	20000	2 1/2 W	2 1/2 W		
Senator.	2000	20000	2 1/2 W	2 1/2 W		
Sierra Nevada.	2000	20000	2 1/2 W	2 1/2 W		
Silver Hill.	2000	20000	2 1/2 W	2 1/2 W		
South Comstock.	2000	20000	2 1/2 W	2 1/2 W		
South Overman.	2000	20000	2 1/2 W	2 1/2 W		
Succor M. & M.	2000	20000	2 1/2 W	2 1/2 W		
Sure.	2000	20000	2 1/2 W	2 1/2 W		
Trench.	2000	20000	2 1/2 W	2 1/2 W		
Tyler.	2200	30000	1 1/2 W	1 1/2 W		
Union Con.	800	20000	1 1/2 W	1 1/2 W		
Utah.	2000	20000	2 1/2 W	2 1/2 W		
Woodville.	1400	28000	2 1/2 W	2 1/2 W		
Yellow Jacket.	1200	24000	2 1/2 W	2 1/2 W		
YAVAPAI.						
Adams Hill.	5000	50000	40C	40C		
Alps.	800	30000	40C	40C		
Amador Tunnel.	3000	30000	40C	40C		
American Flag M. & M.	300	3000	40C	40C		
Assens.	300	3000	40C	40C		
Belmont.	2000	20000	40C	40C		
Bowers.	2000	20000	40C	40C		
Chollar M. & M.	1000	30000	1 1/2 W	1 1/2 W		
Chief of the Hill.	3000	30000	1 1/2 W	1 1/2 W		
Chief East Extension.	3000	30000	1 1/2 W	1 1/2 W		
Colombus M. & M.	10000	50000	1 1/2 W	1 1/2 W		
Ondor.	2000	20000	1 1/2 W	1 1/2 W		
El Dorado South.	2000	20000	1 1/2 W	1 1/2 W		
Eureka Con.	5000	50000	1 1/2 W	1 1/2 W		
Excelsior.	1000	10000	1 1/2 W	1 1/2 W		
Harper.	1000	10000	1 1/2 W	1 1/2 W		
Heyes.	1000	10000	1 1/2 W	1 1/2 W		
Hermes.	1000	10000	1 1/2 W	1 1/2 W		
Horn Ticket.	3600	30000	1 1/2 W	1 1/2 W		
Huhn & Hunt.	1000	10000	1 1/2 W	1 1/2 W		
Ingomar.	1000	10000	1 1/2 W	1 1/2 W		
Inganoe.	1000	10000	1 1/2 W	1 1/2 W		
Jackson.	1000	10000	1 1/2 W	1 1/2 W		
Josephine.	5000	50000	1 1/2 W	1 1/2 W		
Juniper Con.	5000	50000	1 1/2 W	1 1/2 W		
K. & C. Con.	1000	10000	1 1/2 W	1 1/2 W		
Kentucky.	1000	10000	1 1/2 W	1 1/2 W		
Kintan.	1000	10000	1 1/2 W	1 1/2 W		
Lehigh.	1000	10000	1 1/2 W	1 1/2 W		
Lill. Hill.	1000	10000	1 1/2 W	1 1/2 W		
Louis.	2400	24000	1 1/2 W	1 1/2 W		
McMahon.	1000	10000	1 1/2 W	1 1/2 W		
Marion.	3000	30000	1 1/2 W	1 1/2 W		
McDonough Valley.	2000	20000	1 1/2 W	1 1/2 W		
Mocking-Bird.	1200	12000	1 1/2 W	1 1/2 W		
Monitor-Belmont.	2000	20000	1 1/2 W	1 1/2 W		
Murphy.	2000	20000	1 1/2 W	1 1/2 W		
N. & C. Con.	800	30000	1 1/2 W	1 1/2 W		
Pacific Tunnel.	2000	20000	1 1/2 W	1 1/2 W		
Pace & Panca.	2400	40000	2 1/2 W	2 1/2 W		
Paving.	1000	10000	1 1/2 W	1 1/2 W		
Pheasant.	1000	10000	1 1/2 W	1 1/2 W		
Pioche.	1000	10000	1 1/2 W	1 1/2 W		
Pioche West Ex.	3000	30000	1 1/2 W	1 1/2 W		
Pioche-Phoenix.	4000	40000	1 1/2 W	1 1/2 W		
Portland.	6000	60000	1 1/2 W	1 1/2 W		
Raymond & Ely.	6000	30000	1 1/2 W	1 1/2 W		
Rye Patch.	2000	20000	1 1/2 W	1 1/2 W		
Silver Peak.	2000	20000	1 1/2 W	1 1/2 W		
Silver West Con.	2000	20000	1 1/2 W	1 1/2 W		
Standard M. & M.	18000	50000	1 1/2 W	1 1/2 W		
Star Con.	2000	20000	1 1/2 W	1 1/2 W		
Star Con.	2000	20000	1 1/2 W	1 1/2 W		
Sterling.	3000	30000	1 1/2 W	1 1/2 W		
Spring Mount.	3000	30000	1 1/2 W	1 1/2 W		
Spring Mt. Tunnel.	2000	20000	1 1/2 W	1 1/2 W		
W. & B. Con.	200	2000	2 1/2 W	2 1/2 W		
Washington & Creole.	200	2000	2 1/2 W	2 1/2 W		
Watson.	2000	20000	1 1/2 W	1 1/2 W		
Yellowstone.	2000	20000	1 1/2 W	1 1/2 W		
CALIFORNIA.						
Alpine.	1200	12000	1 1/2 W	1 1/2 W		
Bellevue.	8000	20000	1 1/2 W	1 1/2 W		
Calaveras.	3200	20000	1 1/2 W	1 1/2 W		
Chollar.	2000	20000	1 1/2 W	1 1/2 W		
Chollar Mill.	2000	20000	1 1/2 W	1 1/2 W		
Con. Amador.	20000	20000	1 1/2 W	1 1/2 W		
Cottonwood.	2000	20000	1 1/2 W	1 1/2 W		
Cottonwood M. & M.	2000	20000	1 1/2 W	1 1/2 W		
El Dorado.	1600	20000	1 1/2 W	1 1/2 W		
Eureka.	1600	20000	1 1/2 W	1 1/2 W		
Excelsior.	1600	20000	1 1/2 W	1 1/2 W		
Independent.	1600	20000	1 1/2 W	1 1/2 W		
Keystone.	1600	20000	1 1/2 W	1 1/2 W		
St. Lawrence.	1600	20000	1 1/2 W	1 1/2 W		
St. Patrick.	1600	20000	1 1/2 W	1 1/2 W		
Tecumseh.	3000	30000	1 1/2 W	1 1/2 W		
Yuba (Gravel).	400	10000	1 1/2 W	1 1/2 W		
IDAHO.						
Empire.	2500	25000	1 1/2 W	1 1/2 W		
Golden Chariot.	150	30000	1 1/2 W	1 1/2 W		
Idaho.	1500	15000	1 1/2 W	1 1/2 W		
Malaga.	720	10000	1 1/2 W	1 1/2 W		
Red Jacket.	500	20000	1 1/2 W	1 1/2 W		
South Chariot.	500	20000	1 1/2 W	1 1/2 W		
W. & B. Con.	1000	10000	1 1/2 W	1 1/2 W		
WHITE PINE.						
General Lee.	1000	20000	1 1/2 W	1 1/2 W		
Mammoth.	1500	30000	1 1/2 W	1 1/2 W		
Yielday.	1000	20000	1 1/2 W	1 1/2 W		
Orig. Hidden Treas.	800	21000	1 1/2 W	1 1/2 W		
Silver Wave.	2000	20000	1 1/2 W	1 1/2 W		
Ward Beecher.	2000	20000	1 1/2 W	1 1/2 W		
UTAH.						
Deseret Con.	2400	30000	1 1/2 W	1 1/2 W		
Wellington.	2000	20000	1 1/2 W	1 1/2 W		
OREGON.						
Virtue.	2500	20000	1 1/2 W	1 1/2 W		

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Delinq't.	Sale.	Secretary.	Place of Business.
Alpha Gold M. & M. Co.	Amador Co Cal	6 1 00	Mar 10	April 14	May 7	J. F. Lightner
Alpine Gold M. & M. Co.	Cal	6 1 00	Mar 10	April 14	May 7	J. F. Lightner
Arizona and Utah M. Co.	Gold Hill	8 75	Mar 11	April 16	May 4	J. Maguire
Alps M. Co.	Ely District	7 25	Apr 23	May 29	June 25	C. F. Balcan
Chief of the Hill	Ely District	2 50	Mar 9	April 15	May 7	C. S. Neal
Danely & S. M. Co.	Washoe	9 50	Mar 31	May 4	May 26	G. R. Spinney
Empire M. Co.	Idaho	6 1 50	Apr 18	May 22	June 13	W. Willis
Globe M. Co.	Gold Hill	6 75	Mar 11	April 16	May 4	J. Maguire
Gould & Curry S. M. Co.	Washoe	22 2 00	Mar 26	Apr 30	May 20	A. K. Lumbrow
Indus G. & S. M. Co.	Nevada	10 10	Mar 19	April 20	May 11	David Wilder
Justice M. Co.	Washoe	9 1 50	Apr 18	May 20	June 10	F. Swift
Lady Bryan M. Co.	Nev	2 50	Mar 31	Apr 13	May 4	F. Swift
Mammoth S. M. Co.	White Pine	1 10	Mar 3	Apr 13	May 4	F. Swift
Newark S. M. Co.	Kly District	7 2 00	Apr 20	May 29	June 19	D. T. Bagley
North Belmont M. Co.	Nevada	1 10	Mar 17	Apr 18	May 5	D. L. Thomas
Princeton Gold M. & S. M. Co.	Cal	1 50	Mar 11	Apr 24	May 14	V. M. Helman
Pace & Panca S. M. Co.	Kly District	6 1 00	Apr 13	May 20	June 10	C. A. Sankey
Pheasant S. M. Co.	Kureka, Nev	14 25	Apr 21	May 26	June 19	J. Maguire
Picton M. Co.	Washoe	5 25	Apr 20	May 23	June 10	S. Phillips
Portland S. M. Co.	Ely District	4 25	Apr 13	May 20	June 15	H. C. Kinke
Quintero M. Co.	Nevada	1 10	Mar 7	Apr 18	May 5	H. C. Kinke
Silver Cloud G. & S. M. Co.	Gold Hill	1 25	Mar 19	Apr 22	May 11	A. Noel
Succor Overman S. M. Co.	Washoe	1 50	Apr 4	May 22	June 23	D. Wilder
St. Patrick M. Co.	Cal	1 00	Apr 21	May 27	June 19	J. M. Verdonal
Succor M. & M. Co.	Washoe	8 1 00	Apr 10	May 15	June 6	W. H. Watson

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR COUNTY.

ANOTHER QUICKSILVER DISCOVERY.—*Dispatch*, April 25: Another quicksilver ledge has just been discovered, within the past few days, about one mile from Stower's ranch and about four miles from Jackson. Of course the extent or richness of the mine is not yet positively known, but sufficient prospecting has been done to prove that the ledge is over six feet wide, and if it proves to be as rich and extensive as the present indications warrant us in believing, it will be one of the most valuable mines that has yet been discovered in this section of the State. The discovery has created quite a mercurial stir among our people, and a number of claims have already been taken up in the immediate vicinity.

RICHER THAN EVER.—The Amador quicksilver mine still continues to get richer and better as the work of development progresses. The ledge is now about three and a half feet wide, at the depth of eight feet, and the rock is richer than ever.

HEAVY STRIKE.—*Ledger*, April 25: We have just learned that very valuable diggings have been discovered near Volcano, and not far from the Marklee mine. We were unable to learn whether the discovery was in a gulch or on a hill, but the claim is said to be marvelously rich in heavy coarse gold, one piece having been found among a host of smaller ones, of the value of \$250. The fortunate discoverers are Messrs. Rogers & Co., the discoverers and owners of the Rodgers quartz lode in the same neighborhood.

Prospecting along the gravel range of hills north and east of the Mountain Spring House, is progressing favorably; a large amount of ground has been located for mining purposes; a number of tunnels begun, and as work advances, very flattering prospects are obtained. Present appearances indicate that this vicinity will prove, ere long, to be a very valuable mining neighborhood.

Miners and prospecting, we are informed, is being vigorously prosecuted in the vicinity of the Amador discovery, with some very fair additional prospects. Mr. A. Caminetti, of Jackson, has located an extension on the south of the Amador claims, and as far as labor has been expended, very rich float ore has been obtained. A mining district has been established, and on Monday last a district Recorder was duly elected. A large number of miners will be engaged in thoroughly prospecting the district and whose labor may result in valuable mineral discoveries.

CALAVERAS COUNTY.

RETURNS FROM SAN BRUNO—SIXTY POUNDS OF GOLD.—*Chronicle*, April 25: At different times for several weeks past, we have detailed operations at the San Bruno mine, at Mosquito gulch, and ventured the opinion that when the rock taken from it was crushed, we should be able to chronicle the largest clean-up ever made in the upper country. The result more than verifies all our prognostications respecting the mine, and places it among the foremost in the county, if not the peer of any in the State. Two hundred and twenty tons of rock yielded \$12,200, an average of \$55.50 per ton. When it is considered that the ore was unassorted, taken just as it was mined from the ledge, a proper appreciation of the remarkable yield can be obtained. The lower tunnel is now run in the pay chute a distance of 125 feet, with no indication of reaching the terminus of the rich rock, with an opportunity of stopping to the height of 140 feet in the same character of ore.

WEST POINT DISTRICT.—The dump of the Zacatero is rapidly accumulating large quantities of excellent ore, from the south level, which has somewhat improved in richness. No stopping will be done until the new mill is near completion. The temporary improvements of the Pascoe mine are complete. The texture of the quartz resembles that of the Idaho mine near Grass valley. The new discovery on the Woodhouse is gaining in proportions. Some 40 tons of high-grade ore on the dump. The water in Stevenson & Co.'s mine drove out the miners. The mine will probably be idle for some time, as the machinery and pumps are insufficient. The ore on the dump looks well and shows free gold.

EL DORADO COUNTY.

THE ROSE.—*Republican*, April 23: Work is being vigorously prosecuted on this ledge. The south shaft is down 100 ft. and a drift is now being run east. The last crushing of rock (90 tons) went \$48 to the ton, and there are many hundred tons of it in sight.

THE GROSS.—There are now out 40 tons of rock that assays \$600 to the ton, besides a large amount of low grade rock that would pay well to mill on the ground. The mine is situated in a difficult place to get the rock to any of our mills, having to be packed on mules, but a number of tons have been got out in this way, and have paid as high as from four to five hundred dollars per ton.

KERN COUNTY.

Courier, April 23: Several of the mines in this county seem to be working very prosperously for the owners. The old mill at the Blue Lead, Kernville, is running night and day; the indi-

cations in the Havilah tunnel are of a very pleasing character, and the Long Tom mine has about completed its lower level, developing the richest body of ore ever struck in the mine, which is now ready for stopping out.

LAKE COUNTY.

QUICKSILVER.—*See*, April 23: John R. Taylor found a few days since rich specimens of cinabar somewhere on the north fork of Cache creek, ten miles below Bartlett Springs.

SILVER MINE.—Work has been vigorously prosecuted on the old Snisnn mine, northeast of the lake, within the last ten days by a company organized at Upper Lake. They are working the mine for quicksilver.

NAPA COUNTY.

QUICKSILVER.—*Reporter*, April 25: The Manhattan has shipped through here thirty-five flasks of quicksilver to Virginia city this week, and the Reed mine eighty, to Sacramento.

NEVADA COUNTY.

COPPER.—*Union*, April 22: The San Francisco Copper Mining Company, location of works near Spencerville, in this county, shipped yesterday to San Francisco 3 tons of copper matte. This copper mine is bound to prove a great success under the intelligent and energetic management of Mr. G. P. Deethin. The lead is 74 ft. wide, and contains about 8 per cent. of copper. The company will soon incorporate, and will soon also put up a larger furnace than is now used.

MAONETA.—*Tidings*, April 25: One hundred tons of ore taken from the larger ledge of the two in this mine—not considered the best—were crushed not long since and the result, in the shape of gold bullion worth nearly \$2,000, was to be seen at Findley's bank early this week. This was exclusive of the sulphurets, which are known to be rich. This is good paying ore, but it is thought that it can be made to pay better in a mill provided with pans, and a lot of 100 tons is soon to be put through the Empire mill, which is more complete in its reducing capacity.

CALIFORNIA CONSOLIDATED.—This company now own and work the old Gold Tunnel property, one of the oldest gold mines in the State, and the Illinois and California mine, on Deer creek, near Nevada City. They have 6,900 ft. on the ledge; own two mills and a fine hoisting works; are working at present about 40 men, which force will be increased as soon as the new mill is running.

PLUMAS COUNTY.

THE NEW YORK MILL.—*National*, April 18: Mr. M. B. Bransford, of Crescent Mills, informs us that Superintendent Smith has received instructions to remove the New York mill to the mouth of Dixon cañon, where it will be used to crush rock from the Green Mountain ledge. The work will be commenced immediately.

TUOLUMNE COUNTY.

MANGANESE.—*Stockton Independent*, April 25: Some time ago, about 100 tons of the mixture of iron and manganese, found in Tuolumne county, were sent forward to Baltimore for reduction and test, but the result has not, so far as we are aware, been made generally known. That it amounted to sufficient to warrant another trial of the material is apparent from the fact that another lot is to be sent forward to the same destination. Last Saturday, 17 car-loads, or about 170 tons, were landed at the water front for shipment to San Francisco, there to be re-shipped to Baltimore. The lot is consigned to Kruse & Enler. The proportions of iron and other metals the material contains, we have no means of knowing.

RICH POCKETS.—*Democrat*, April 25: We are informed that Blas Radowich & Co., Austrian miners, found and took out two rich pockets in Bald mountain this week. Also, that N. & P. Bauli have found good pay in their claim, getting \$5 to a pan. Bald mountain has yielded a large amount of gold and is hardly prospected yet.

THE CRAIG CLAIM ON SULLIVAN'S DRY ARROYA, is yielding better and better; it has got to 6 ounces a day. And yet there are those who say our mines are worked out.

Nevada.

WASHOE DISTRICT.

SIERRA NEVADA.—*Gold Hill News*, April 23: The new shaft is down 370 feet, the bottom in good sinking ground. The drain tunnel to connect with the shaft 160 feet from the surface was connected with the shaft this morning. The heavy stone foundation with anchor bolts for the machinery is being completed as fast as the nature of the work will allow. The sluice tunnel will be completed by to-morrow, and as soon as the necessary material can be got on the ground the hydraulic works will be erected and the sluicing commenced. There is no change to report of the ore producing section of the mine. Daily yield, 65 tons of ore. This ore is crushed at the company's mill, which is kept steadily running.

CONSOLIDATED VIRGINIA.—The main shaft is completed and timbered to the 1,500-foot level, and a sump is being sunk 25 feet below the level. As soon as the sump is finished, opening the 1,500-foot station will be commenced. The main south drift from the shaft, on the 1,400-foot level, is still pushed ahead to connect with the north drift on the same level from the north winze. This connection when completed will give a fine circulation of pure air and facilitate prospecting operations. The east cross-cut, on the 1,400-foot level, from the north winze, has penetrated the ore body 51 feet, the face still in solid ore of a fine quality. The heat becoming so intense this cross-cut has been discontinued until better ventilation is secured. The ore breasts on the 1,200 and

1,300-foot levels are all looking and yielding splendidly as usual. The mills are all running and the prospects of the mine grow brighter every day.

SUTRO.—Owing to the tapping of a large body of water the company have been compelled to cease the sinking of their shaft. Having secured the privilege, they have decided to extend the old Utah tunnel to their ledge, and thus cut it about 100 feet below the bottom of their shaft, or 260 feet below the surface, draining the water entirely and allowing them to work their mine to the best possible advantage and develop the excellent prospects already obtained by their shaft. This tunnel is already in 550 feet, and less than 700 feet extension will carry it into the Sutro ledge. Clearing out the tunnel was commenced this morning, under the supervision of Samuel Owen. This will take about three days, when the work of extension will be commenced.

HALE & NOKONOS.—The west cross-cut from the main north drift, on the 1,300-ft. level, is in 40 feet, passing during the week through alternate strata of clay, quartz and porphyry, with occasional stringers of ore five and six inches in width, that will assay \$40 or \$50 per ton.

SUTRO TUNNEL.—Header of main tunnel to-day in 5,821 feet, with the face in good blasting ground. Shaft No. 2 was completed last week to the tunnel level, a depth of 1,040 feet from the surface, having been two years in sinking.

IMPERIAL-EMPIRE.—The main drift east on the 1,850-foot level has penetrated the west wall of the ledge, and to-day is just entering a fine quartz formation, but has not penetrated this body far enough to yet determine anything in regard to its real value.

GLOBE CONSOLIDATED.—The main west drift is still pushed steadily ahead, the rock in the face gradually softening and showing evident indications of a near approach to the ore vein. Sinking the main incline is progressing as usual. The cross drift in the new ore body that is now being opened above the old tunnel level, shows the body of ore to be much more extensive than was at first anticipated.

GOULD & CURRY.—The main east drift, on 1,500-ft. level, is still slowly carried forward in a mixture of quartz and porphyry, the flow of water from the face gradually though slowly decreasing. The face of the main east drift, on the 1,700-ft. level, is in a mixture of clay, quartz and porphyry. This drift is not yet far enough east to cut the east ore vein, as developed on the levels above. Sinking the double winze, below the 1,700-ft. level, is making steady progress. Repairing the north compartment of the main shaft is completed. All the machinery is in good running order, and prospecting throughout the entire mine is being pushed with all the vigor possible.

OPHIR.—A very favorable and promising ore development has been made during the past two days in cross-cut No. 2 east, on the 1,300-ft. level. A drift has been started south from this cross-cut which is still in good ore. The bottom of the south winze being sunk in cross-cut No. 1, on this level, is also in good ore. The main south drift, on the 1,700-ft. level, is still being driven vigorously ahead to connect with the winze from the level above at the earliest possible moment.

CROWN POINT.—The north ore breasts on the 1,000-ft. level have shown a steady improvement during the past week and promise a fine yield of good ore. The ore breasts on the 1,200, 1,300 and 1,400-ft. levels are all looking well and yielding the usual amount of milling ore. Daily yield, 550 tons of ore. The east ore body on the 1,400-ft. level is opening out finely and of excellent quality.

DAYTON.—The mine is looking splendid throughout; the ore stopes on both the second and third station levels continue to yield the usual amount of good milling ore, keeping both Woodward's and Brigg's mills steadily running, crushing ore from the mine.

UTAH.—The main south drift, from the west tunnel, is still making good progress, running through barren quartz with spots of clay and porphyry mixed. Cross-cuts both east and west have been started from this drift to more thoroughly prospect and determine the value of the ore vein. The up-raise from the west drift on the 400-ft. level, has made connection with the old upper works, greatly benefitting the air circulation.

SILVER HILL.—The machinery is all working finely, and everything in and about the mine in excellent working condition. The flow of water from the south drift on the second station level is steadily decreasing, and work has again been resumed in the face of the drift. A raise has been commenced from the second station drift to tap the old St. Louis chimney, and some good developments from that quarter may be looked for soon.

CALERONIA.—Raising up on the third compartment and re-timbering the shaft between the third and fourth station levels is making steady progress.

SATAGE.—The face of the main west cross-cut on the 1,900-ft. level is still in hard quartz giving low assays. The west cross-cut from the main south drift on this level is still being driven energetically ahead, the face in hard blasting porphyry. This drift is not yet far enough to reach the ore vein. Sinking the main incline for opening the 2,000-ft. level is making rapid progress.

PHIL. SHERIDAN.—The new working shaft is fairly commenced and during the week good progress was made in sinking. It consists of three compartments, and will open and develop the ledge at a great depth. The grading for the

hoisting works is about approaching completion. **SECRETORIA ROCK ISLAND.**—The north drift from the main west tunnel is still driven vigorously ahead following the east wall of the ledge. Some very fine ore was found yesterday next to the east, or hanging wall. The ledge shows great improvement as the work progresses to the northward.

CALIFORNIA.—As soon as the 1,400-ft. station of the Virginia Consolidated shaft is finished, another drift north will be started to open and prospect that level.

McMEANS.—Driving the main west tunnel is making excellent progress, the rock in the face presenting a much softer, broken and jumbled up appearance than heretofore, with occasional streaks of quartz, some of which is five or six inches in thickness and gives low assays.

BECKER.—Daily yield, 550 tons of ore, from the 1,000, 1,200, 1,300 and 1,400-ft. levels. The main incline is down 185 feet below the 1,400-ft. level. The winze, starting from the same level, is down 100 feet. The 1,400-ft. station drift is in 200 feet, in good working ground. The mine is looking remarkably well in every part.

OVERMAN.—Sinking the winze, from the 1,000 ft. level, is making steady progress without change of interest to record. The south drift, from the 200-ft. station, in the winze, is still driven ahead, following the west wall of the ledge.

CHOLLAR-POTOSI.—Daily yield, 100 tons of ore, assaying \$31 per ton. The ore bodies on the upper levels show a little improvement in the quality of the ore extracted.

LEO.—Main tunnel still driving ahead into the hill, following the vein. The rich ore streak still holds out about the same width—20 inches—as last week, and is of the same quality. The ore is being carefully sacked up and taken care of.

WOODVILLE.—The main incline is down 40 ft. below the 300-ft. level in fair sinking ground.

KNICKERBOCKER.—Sinking the shaft is making steady progress. Repairing the main west drift at the 400-ft. level is completed a distance of 550 feet, and there is still 150 feet more necessary to complete the work.

LADY BRYAN.—New shaft down 110 feet and in good working ground. The main building over the shaft, blacksmith shop and other out-buildings, is about completed, and the hoisting machinery is being placed in position.

YELLOW JACKET.—The main incline is down fifty feet below the 1,640-ft. level, the sinking making steady progress.

BUCKEYE.—The streak of ore developed in the south drift at the 450-ft. station still continues, but of not quite so good a quality.

SUCCOR.—The new shaft is down 441 ft., the bottom in extremely hard blasting granite rock.

BALTIMORE CONSOLIDATED.—Sinking the shaft is making slow though steady headway.

NEW YORK CONSOLIDATED.—Repairing the shaft is completed, the new machinery in place, and draining the water from the shaft preparatory to resume sinking, is making rapid headway.

KOSKUTH.—The north drift from the main tunnel at the 200-ft. level has developed some fine ore during the past week.

JULIA.—Work progressing at all points as usual.

ROCK ISLAND.—The shaft is down 80 feet in good sinking ground, the sinking making excellent headway. Excavating pits for the new engine beds has been commenced.

UNION CONSOLIDATED.—The main drift north on the 1,300-ft. level, following the west wall of the ledge, is making fair progress and shows some excellent ore indications.

SOUTH COMSTOCK.—Incline down 28 feet below the 150-ft. level. Ground works well, and no water interferes. Sinking at present in a mixture of gypsum and quartz.

NEVADA.—The ore in the south drift still continues to widen and improve in quality, showing evident indications of the forming of another fine chimney.

ALHAMBRA.—The new hoisting works are about completed, the machinery in place and everything will be in readiness to start up in two or three days more.

EUROPA.—Sinking the winze in the north cross-cut from the main west tunnel is making steady headway, the bottom still in very favorable vein matter.

GENESSEE No. 2.—The sinking of the new shaft progresses at a very satisfactory rate, it being down to the depth of 82 ft. to-day. Rock looking finely.

LADY WASHINGTON.—The erection of the new pumping machinery is rapidly approaching completion.

SOUTH STAR.—New shaft down nearly 100 ft. The ore improves in quality, giving better assays. Will erect hoisting works shortly.

TYLER.—The shaft is down 82 ft. below the 200-ft. level in good sinking ground.

MINT.—The new machinery is all working finely, and the water being drained from the shaft preparatory to resume sinking.

SENATOR.—The new reels are in place and everything in readiness to resume sinking the shaft.

PICTOR.—Main tunnel driving ahead, with porphyry and stringers of quartz in the face.

A BLAST of seven hundred kegs of powder was put off in the Golden Gate claim, at Forest Hill, one day this week, doing good execution. The discharge was made by electricity.

CITIZENS of San José have discovered good indications of quicksilver in the southern portions of Santa Clara valley.

The Weaverville Ditch and Mine.

The *Trinity Journal* says: Last Saturday we took a little walk up Oregon Gulch mountain, in company with Mr. Simpson, of Cerro Gordo, Inyo county, J. E. Spencer, of Lodi, San Joaquin, and Capt. Geo. H. Atkins and P. Paulsen, of Weaverville. Arriving at the seat of operations, we found that the Weaverville Ditch and Hydraulic Mining Company had not been idle, but that half a mile of the prettiest ditch we ever saw was completed and another half mile was nearly graded. The ditch is four feet wide on the bottom, six and one-half feet on top, three feet deep, and runs on a grade of 11.20 feet to the mile. It will carry 2,500 inches of water this season, and after becoming settled will carry 3,000 inches or more. The line is graded seven and one-half feet wide and the excavation made close into the bank, leaving not less than a foot of solid earth on the outside, which greatly strengthens the ditch and will do much to prevent breaks and other damage. Thus far the ground has been of a character easily worked, much of it such that it could be spaded. Most of the rock is of a rotten, seamy character, easily worked, and but little blasting has therefore to be done. Mr. Loveridge, the company's engineer, tells us that the ground already worked is a fair example of that which is to come, as near as he can judge. No fluming will be required on the line, which, when completed, will be nearly four miles in length, and all ditch. We were somewhat surprised to find oyster shells along the line and, supposing them to be indigenous to the soil, made inquiry and were informed that Jimmy Landis and the other boys didn't go to camp at noon but lunched on the ditch.

Returning about noon to the company's camp at the Mountain House, our party did ample justice—and more, too—to a square meal which was set before them, and which was fully appreciated. Feeling greatly refreshed, we again started out, this time in company with Mr. D. W. George, superintendent of the work, to visit the mining property belonging to the company.

Near the top of the divide they are engaged in running a cut; from this they will tunnel a short distance, raise a shaft, and sluice out a hole for a reservoir. The site is an excellent one, and the extent to which a reservoir may be made is very great. From this reservoir it is intended to run the water down a ravine and take it up in a pipe a short distance above the claim now being worked by Jas. Ward, this being the place where the company intend doing their first mining. Eleven hundred feet of 15-inch iron pipe will be required to convey the water on the claim, and 250 feet pressure will be needed. Much more pressure can be secured if needed, but the bank being easy to cut, 250 feet is considered all sufficient. A four-foot flume, of forty boxes, will be put in here, and the dirt dumped and redumped, and run through three six-foot flumes, of four boxes each, before it reaches the head of gulch several hundred feet below. Under-currents and all other improvements and appliances for saving gold will be used extensively. So much for the proposed manner of working.

The gravel deposit forming the Oregon Gulch mountain, we are free to assert, is not equalled by anything of the kind in the State. The reservoir cut, on the top of the hill, is in gravel of similar character and prospects equally as well as that being worked by Mr. Ward some nine hundred feet below the summit. The slate bed-rock is more than a hundred feet lower than the level on which Ward is working and gravel is of the same character and quality. If this bed-rock goes on a level, as it undoubtedly does, we have here a gravel deposit of not less than one thousand feet in depth, of unknown bounds—but very extensive—and which prospects very rich wherever it has been tried. As to the prospects, from six to ten cents is frequently found in a shovelful of the gravel, and it is a rare occurrence to wash a shovelful without obtaining several colors. The hole, from which Mr. Ward has taken some ten thousand dollars, is not so large but that it could be worked in ten days with a Little Giant and a good head of water. On the bed-rock below, Mr. Dyer has this winter been running a claim—using Ward's water—has already taken \$600 from his flume, and will probably get as much more in cleaning the bed-rock. The piece of ground he has sluiced off is about equal to half-a-day's work with a good rig and plenty of water. It may seem like exaggeration when we say that the amount of ground these men have moved was so small and paid so largely, but such are the facts, known to all who are conversant with the matter. And they did not get a very large proportion of the gold at that. Desiring to know how much fine gold he lost, Mr. Ward last summer washed sixty buckets of his tailings, in a rocker, and realized five dollars. Eight cents to the bucket, in tailings, is pretty good itself. This shows that the gold is certainly there, and Mr. George says he is going after it, and has no fears as to the result. We have never heard him speculate upon the probable amount of pay, but with a good rigging and plenty of water it cannot fall much below five hundred dollars per day, and is liable to go to a thousand or even higher.

It is probable that after this season the company will find it necessary to work this immense deposit in three or four benches, as it

will be an utter impossibility to work a 1,000 ft. gravel bank from the bed-rock. As to how this immense bed or channel of aeriferous gravel was deposited there, much speculation is indulged in, but it certainly seems that in ages long ago Oregon Gulch was the natural outlet of Weaver Basin. On this head we had intended to say something in this article, but having already made it longer than we intended, shall have to drop the subject here and continue it at another time.

State Mineral Lands.

We give below the full text of McKusick's bill for regulating the sale of State mineral lands:

An Act regulating the sale of Mineral Lands belonging to the State. Approved March 28, 1874.

SECTION 1. Any person desiring to purchase from this State any portion of any sixteenth or thirty-sixth section that shall have been designated by United States survey as of a mineral character, or which is so in fact, shall make an affidavit before some officer authorized to administer oaths, that he or she is a citizen of the United States, or, if a foreigner, that he has filed his intention to become a citizen of the United States, that he or she is of lawful age, and desires to purchase said land, giving descriptions thereof by legal subdivisions; that he or she has not entered any portion of such mineral lands, which, together with that applied for in such affidavit, will exceed forty acres; that there is no occupation of said land adverse to that which he or she holds, or, if there be any adverse occupation thereof, then he or she must state the name of such adverse occupant, together with the fact that the plat of the township has been on file six months or over, and that such adverse occupant has been in occupation six months or over.

SEC. 2. Any person that shall be in actual possession of any of the said lands described in section one, at the time of the survey thereof by the United States, "or at the time of the passage of this Act," shall be considered a preferred purchaser thereof; provided, he or she make his or her application for the purchase of the same within six months after the filing of the plat of such survey in the United States Land-office, or within ten months after the passage of this Act.

SEC. 3. When a contest shall arise as to the mineral character of the lands applied for, or from any other cause, and either party shall demand a trial in the Courts of the State, the Surveyor-general, or the Register before whom the contest is made, must, within thirty days after the adverse application is filed, unless sooner referred at the request of either claimant, make an order referring such contest to the District Court of the county within which the land is situated, and must enter such order in the proper book of his office, and forward a copy thereof to the clerk of the Court to which the reference is made. Upon the filing of a copy of such order with the clerk of the Court, either party may commence an action in said Court to determine the conflict, and the Court shall have full and complete jurisdiction to hear and determine the same. Unless an action shall be commenced within ninety days after the copy of the order of reference shall have been filed with the clerk of the Court, the party making such demand, or the adverse claimant, if the case is referred without demand, shall be deemed to have waived and surrendered his or her right to purchase, and the Surveyor-general or Register shall proceed as though his or her application had not been made.

SEC. 4. All lands sold under the provision of this Act shall be sold for the sum of two dollars and fifty cents per acre, in United States gold coin, payable to the Treasurer of the county in which the lands are situated, within fifty days from the date of the approval by the Surveyor-general; and in case said payment is not made within said fifty days, the land described in the location shall revert to the State without quit, and said location shall be and become null and void. All payments made to the County Treasurer, as above provided, shall be paid over and accounted for as other moneys received for State lands are required to be paid over and accounted for.

SEC. 5. The Surveyor-general and Register shall, in the matter of approving locations, issuing certificates of purchase or patents, or in other proceedings relating to the sale of lands of a mineral character, which proceedings are not provided for in this Act, proceed in the same manner as is now provided for the sale of sixteenth and thirty-sixth sections which are not of a mineral character.

SEC. 6. All patents issued by the State to any portion of any sixteenth or thirty-sixth sections shall be subject to any vested and accrued water-rights, ditches and reservoirs used in connection therewith, acquired by priority of possession under local customs and the decisions of the Courts, and the right of way for the construction of ditches and canals for mining and other purposes over all of the sixteenth and thirty-sixth sections owned by the State is hereby granted and confirmed.

SEC. 7. After the passage of this Act no patent shall be issued by the State for any of the lands described in this Act upon which, at the time of application therefor, there was and still is any actual *bona fide* mining claim, except to the person who is the owner of such mining claim under local mining customs, and not to such owner in excess of forty acres. And when an applicant for such lands, not owning such mining claim, shall have paid the purchase-

money therefor, in whole or in part, he may present his certificate of purchase, and receive in exchange therefor from the Register a certificate showing the whole amount paid, and the Controller, upon the surrender of such certificate, must draw his warrant in favor of the person surrendering such certificate, for the amount therein specified, on the Treasurer of the State, who must pay the same out of the fund into which the purchase-money was paid; provided that the owner of such mining claim under such mining customs shall apply to purchase the same within six months after the plat of the township containing such land shall have been filed in the local United States Land Office, or within ten months after the passage of this Act; and provided further, that any owner of a *bona fide* mining claim who shall have entered into an agreement with the applicant for any portion of the sixteenth or thirty-sixth sections, upon which said mining claim is situated, for the procurement of a title for the same, shall not avail himself of the provisions of this section. The Governor of the State shall not sign any patent contrary to the provisions of this Act.

SEC. 8. All Acts or parts of Acts in conflict with this Act are hereby repealed.

SEC. 9. This act shall take effect and be in force from and after its passage.

Free Gold Coinage at the Mints.

The Lower House of Congress has just passed an amendment to the coinage Acts of February 12, 1873, which make the coinage of gold free at all the mints. The amendment reads as follows:

That no charge shall hereafter be made for the coinage of gold, and the charge for converting silver into gold dollars, for melting, for refining when bullion is below standard, for lengthening when metals are contained in the bullion which render it unfit for coinage, for separating the gold or silver when those metals exist together in the bullion, and for the preparation of bars, shall be fixed from time to time by the Director of the Mint, with the concurrence of the Secretary of the Treasury, so as to equal, but not exceed, in their judgment, the average cost at each mint and assay office of the material, labor, wastage and use of machinery employed in each of the cases aforementioned.

The English system is practically adopted by this amendment. It was estimated that the Government receives for gold coinage, under the old law, from sixty thousand to eighty thousand dollars a year. But this sum it collects chiefly from miners, and gold produces this sum.

The spirit of the debate on the amendment is well illustrated in the following:

Mr. Randall—Then we are to understand that the Mints are in future to coin the bullion without cost to those who make the deposit of the bullion?

Mr. Hooper—Without any charge for coinage; the depositors will still have to pay other expenses.

Mr. Randall—I am not asking these questions in any spirit of opposition to the bill, for I have long believed the policy of the Government should be to do what is provided for by this bill. It proposes what, I believe, is the English system.

Mr. Hooper—This is the English system, and that of most if not all the continental countries.

Mr. Hale, of Maine—How much does the Government now receive at its different mints from this source, and which will be cut off if this bill passes?

Mr. Hooper—From sixty to eighty thousand dollars a year.

Mr. Hale, of Maine—So that will make a difference against the Government of from sixty to eighty thousand dollars a year?

Mr. Hooper—Yes sir, and a gain to the miner and a gain to the public and a gain in point of principle, because it makes the inducement stronger to coin gold in this country instead of sending it abroad to be coined.

Mr. Hale, of Maine—But undoubtedly next year, in keeping up the Mint establishments, we shall be obliged to appropriate from sixty to eighty thousand dollars more for this branch of the public service than we do at present.

Mr. Hooper—I should doubt if it would have precisely that effect, because the business of the Mint will be increased, and the charges on the other operations, such as assaying, purifying, etc., I think would nearly make up the loss.

Mr. Hale, of Maine—That must be something problematical.

Mr. Randall—That its effect will be to keep gold in the country is, however, almost a certain proposition.

Mr. Holman—Is the effect of this amendment that the coinage of gold is to be relieved of the charge of one-fifth of one per cent.?

Mr. Hooper—That is all.

VALUES.—One ton (2,000 pounds avoirdupois) of gold or silver contains 29,163 Troy ounces, and, therefore, the value of a ton of pure gold is \$602,799.21, and of a ton of silver, \$37,704.84. A cubic foot of pure gold weighs 1,218.75 pounds avoirdupois; a cubic foot of pure silver weighs 656.25 pounds avoirdupois. One million dollars gold coin weighs 3,658.8 pounds avoirdupois; one million dollars silver coin weighs 58,925.9 pounds avoirdupois. If there is one per cent. of gold or silver in one ton of ore, it contains 291.63 ounces Troy, of either of these metals. The average fineness of the Colorado gold is 781 in 1,000 and the natural alloy: gold 781, silver 209, copper 10; total 1,000. The calculations at the mint are made on the basis that 43 ounces of standard gold, or 900 fine (coin) are worth \$800, and 11 ounces of silver 900 fine (coin) are worth \$12.80.

The Mineral Hill Mines.

The London correspondent of the *N.Y. World*, writing under date of Mar. 26th, says: A case tried yesterday in the Vice-Chancellor's Court throws a fine light upon the manner in which certain things are done in London. In the latter part of 1871 an American gentleman, Mr. Ashbury Harpending, came to England for the purpose of selling certain mines in Nevada. He called these treasures "the Mineral Hill Mines," and he represented that they were so rich that more than £200,000 worth of silver ore lay on the top of the ground.

A Mr. F. Doulton introduced Mr. Harpending to Mr. Albert Grant—he who now is Berou Grant, M.P. for Kidderminster, and Lord of Leicester Square. Mr. Grant agreed to do the business, and he formed a company called the California Mining Company, with a nominal capital of £1,000,000. But the only shareholders and directors in this company were seven clerks in the employment of Mr. Grant. One was the President, another the Secretary, a third the Treasurer, and the other four were directors. This great company was duly registered, and on the 14th of May, 1871, an agreement was entered into between it and Mr. Harpending for the purchase of the Mineral Hill mines for the sum of £230,000, which was very cheap considering that silver to the value of £200,000 was on the top of the ground, and probably millions more below it. This sale was dated back to the 20th of February.

Mr. Grant then formed another company, called the Mineral Hill Silver Mining Company, for the purchase and working of the property which the California Mining Company had thus acquired. On the 21st of June the property, which had been purchased on the 14th of May for £230,000, was sold to this second company for £480,000—one-half in cash and one-half in fully paid-up shares. Mining engineers had been sent out, who reported that the mines were rich; but they soon turned out to be worthless, and the company is now being wound up. But Mr. Doulton had been promised by Mr. Grant a reward for introducing Mr. Harpending to him, and Mr. Doulton in his turn had promised to give to a Mr. Thomas Smith one-half of what he got from Mr. Grant over £4,000. Mr. Grant paid Doulton £5,000, then £3,000, and then gave him 1,000 shares in Mineral Hill; but meanwhile Doulton and Smith had quarrelled, and Smith served Grant with a notice that one-half of these last payments belonged to him. The notice was served before the money was paid, but Grant disregarded it. Doulton now died, and Smith sued Grant for the money.

The Vice-Chancellor ruled that the claim was a good one, and that Grant must pay the money over again—£1,750, with interest at four per cent. The point which is worthy of your attention is the peculiar manner in which such financing as this is done. To buy a worthless piece of property for £230,000, and to sell it again for £480,000 within five weeks, is not a bad thing, except for the buyers.

MCWAYNE'S ONE-TRACE RAILROAD.—Chandler McWayne patented, October 22d, 1861, a device for an elevated railway, which is now attracting attention in Colfax, California. His model track is several hundred feet in length, resting upon upright standards. The car is balanced over the track "saddle-fashion," partly above and partly lower than the track. Side friction wheels are employed to steady its motion, and grip-pulleys will assist the locomotive to ascend steep grades. We can not, without further demonstration, recommend his device, but wish that it may be worked up to a successful California invention, and therefore call attention to it.

INCLINE MACHINERY.—The Crown Point Mining Company are laying the foundations for some powerful machinery to be used in hauling ore up the incline. The engine will have a 20-inch cylinder, 3½-foot stroke. The capacity of the ore-car used on the incline will be 10 tons.—News.

THREE tons of copper matte were shipped this week from the newly located mine near Spencerville, Nevada county. The lead, according to the Grass Valley Union, is 74 feet wide, and contains about eight per cent of copper.

TRUCKEE is busy supplying charcoal to the smelting works in Utah, as the Government has forbidden the cutting of wood and manufacture of charcoal on the public lands of Utah.

THE Hoosac Smelting Works, says the *Eureka Cupel*, are being overhauled and repaired, preparatory to a speedy beginning of the business of extracting plumbiferous silver from argentiferous ore.

THE New York mill in Plumas county is about to be removed to the mouth of the Dixie cañon, to crush rock from the Green mountain ledge.

A COMPANY has been formed to prospect a coal vein, near Wheatland. A shaft has been sunk 50 feet.

ALL the mills in Gold Cañon and Silver City are running up to their full capacity.

SILVER CITY mining operations are being prosecuted vigorously.

USEFUL INFORMATION.

Sugar and Salt, Pickles and Peppers.

The following is from a paper furnished by Dr. Wetherbee to the *Hearth and Home*:

Sugar and its kindred substances, molasses, honey, etc., are very liable to abuse; still they are very useful as a portion of our daily food, on account of the carbon which they contain, and which has been termed "the food of respiration." On this account aged persons and those who habitually suffer from a feeling of cold, by reason of a low temperature of the blood, require much more of the saccharine principle than the young or middle aged. It is also considered a good remedy for those who are afflicted with lung and throat complaints. Those who are daily employed in various branches of sugar refining, the manufacture of confectionery and its kindred branches, are seldom attacked with consumption, and are generally remarkable for the plump, smooth appearance of the flesh and skin.

Sugar when in solution, and exposed to the oxidizing influence of the atmosphere or otherwise, first passes into the vinous fermentation, by which alcohol is generated; and afterward by further oxidation, or by the acetone fermentation, produces vinegar, or acetic acid, the qualities of which will hereafter be discussed. The sources of sugar are very numerous, but the greater proportion in use is derived from the sugar cane, the beet-root and the ssp of the sugar-maple. Molasses is the liquid uncrystallizable portion which is drained from the sugar, and on account of its various impurities, is sometimes apt to cause bowel complaints, if used in too great quantities. Besides these sources, sugar may be obtained by a chemical process, from linen rags, paper, etc., but of course this method is too expensive to be employed except as scientific experiments.

Salt preserves animal and vegetable substances from decay through its strong attraction for water, depriving them of their greater portion, so that a sufficient quantity does not remain to induce putrefaction. Its use to the animal economy is to furnish hydrochloric acid, an ingredient in the gastric juice; also soda to the bile. But it is doubtless used among us in by far too great excess, for while its proper use is to preserve from decay, its action when taken in excess in the system is to impair digestion, and to produce an excess of its elements, resulting in the disease known as scurvy.

The inhabitants of some of the South Sea Islands employ no salt in their food, and salted fish is to them even more disgusting and sickening than its entire absence in animal food is to us, thus proving that the habit of using it is only an acquired one. Even among us, we find persons who can never use it in any perceptible quantity without symptoms of violent fever, which sometimes lasts for several hours.

Vinegar, or, as it is termed in chemical parlance, diluted acetic acid, is one of the most efficacious antidotes against the injurious results of the excessive use of salt. Its direct action is to convert the substance of the salt into the acetate of soda, thus producing a gentle alterative effect upon the bowels, and a cooling, anti-febrile effect upon the blood. When too strong, or when taken in too great quantities, it may produce an acid reaction in the system, or corrode the coats of the stomach, and therefore should be used, like all other condiments, in moderation.

Its usual adulteration is with sulphuric acid, a substance which, though it is occasionally useful as a medicine, should not be employed as a general article of diet. Acids of all kinds affect the digestive organs in various ways, though they do not directly contribute to the nourishment of the system.

Pickles may to a certain extent be nourishing, since the vegetables of which they are composed frequently possess more or less nutriment, but they should be used sparingly. The most dangerous adulteration of pickles, especially when it is desirable to have them of a bright green color, is verdigris, or other salts of copper, all of which are highly poisonous. Even when the vinegar is boiled in a copper or brass vessel, it acts upon the metal, producing an acetate of copper, or verdigris. Glazed earthen-ware is also improper for holding vinegar, as the glazing is a compound of lead, which is soluble in vegetable acids, in which state it gives rise to colics and other dangerous symptoms.

As an anti-scurbutic, or preventative and cure for scurvy, pickles should form a part of all army and marine stores; and in mining districts where salted provisions constitute the greater part of the animal food in use, their value is so much appreciated that almost fabulous prices have been paid for a single gherkin, or for a pickled onion not bigger than a walnut. During the past few years the tomato has become a popular fruit for pickling, and is, no doubt, quite as wholesome as any other.

Spices mostly act as stimulants to the coats of the stomach, on account of the essential oil which they contain, and they form an important class in the list of useful medicines. Used in excess, they are apt to heat the blood.

Allepice, in small quantities, is a very powerful adjunct to medicines for the cure of dyspepsia, etc., and the essential oil, as well as that of clove, etc., is often used to allay toothache.

Ginger is also used as a stimulant in food,

and as a remedy against colds, colics and vomiting, and has been found to be an excellent antidote against sea-sickness.

Black pepper is sometimes employed with good success as a cure for nausea, dyspepsia, certain forms of gonorrhea, or as a stimulant in paralysis. In India it is much used as a remedy for vomiting, in cholera morbus, and in some localities, when mixed with spirit and water, it is a popular preventive against the return of a paroxysm of intermittent fever. In this country it has often been known to relieve a sudden attack of bilious colic, when taken in doses of half a teaspoonful or more in a glass of hot brandy and water.

Many of the most expensive spices are adulterated to an enormous extent. A single firm of druggists in the city of New York recently sold in one year many thousands dollars' worth of black pepper, from which the oil, and the peculiar principle called piperin had previously been extracted; and the refuse portions of other spices yielding essential oils are dried, ground, and mixed with the genuine articles, for which they are invariably sold to the unsuspecting public.

Cobalt.

In its review of metals at the Vienna Exposition, *Engineering* has the following concerning cobalt: We have next to say a few words on the representation of cobalt, to which metal we have frequently alluded in our previous notes. Nickel and cobalt are in fact always so closely associated, that it will hardly be possible to find an ore of the one which does not at least contain at least traces of the other. The cobalt works, which produce oxide of cobalt and blue silicate of cobalt or "smalt," have had much to suffer from the manufacture of ultramarine blue, or artificial lapis lazuli; of late, however, they seem to have recovered, and their oxides find a profitable market as a fine blue color for china and Wedgwood wares.

In the German section at Vienna we found samples of oxide of cobalt shown by Fleitmann and Witte, of Iserlohn, the Victoria Nickel Works of Naumburg, in Silesia, and the Saxon Cobalt Company, of Schneeberg, which we have previously mentioned, and whose annual production of smalt and oxide is about 800,000 lbs., worth about £150,000. Austria annually produces preparations of cobalt, containing about 2,500 lbs. of metal, at her nickel works in Salzburg and Styria, and Hungary, preparations containing about 50,000 lbs. of cobalt at Dobosban, while the Kolba Metallic Mine Company, at Libthen, is also a producer of about 36,000 lbs. per annum of that metal. Cobalt ore was also exhibited from Dobsina, by Martin Sonntag.

The Swedish cobalt mines of Vena, in Nerike, and of Tunaberg, seem to be at a standstill, while the cobalt works of Skutumpah and Modum, in Norway, which are the property of the Saxon Cobalt Company, have been started again with success. The ore is there cobalt-glance and arsenical cobalt pyrites, and is found more or less intimately mixed in a metalliferous band or zone of mica-schist, varying from a few to over 100 fathoms in thickness, and dipping almost vertically. The ore is stamped and washed, carefully calcined in order to drive out its sulphur and arsenic, and then either melted for blue smalt glass, or refined for black oxide. We have finally to notice again Josef Wharton, of Philadelphia, for his excellent exhibits of oxide, sulphate and metallic cobalt, the latter being smelted in a furnace of particular construction, probably on the Deville system.

FUEL.—With equal weights, that which contains most hydrogen ought, in its combustion, to produce the greatest volume of flame where each kind is exposed under like advantageous circumstances. Thus, pine wood is preferable to hard wood, and bituminous to anthracite coal. When wood is employed as a fuel, it should be as dry as practicable. To produce the greatest quantity of heat, it should be dried by the direct application of heat; as usually employed, it has about twenty-five per cent. of water mechanically combined with it, the heat necessary for the evaporation of which is lost. Different fuels require different volumes of oxygen; for the different kinds of coal it varies from 1.87 to three pounds for each pound of coal. Sixty cubic feet of air are necessary to furnish one pound of oxygen; and, making a due allowance for loss, nearly 90 cubic feet of air are required in the furnace of a boiler for each pound of oxygen applied to the combustion.—*Coal Trade Journal*.

COMPOSITION FOR CASKS.—The object of a newly-patented process is to render casks and other vessels air-tight and water-tight, and prevent their becoming mouldy, sour or stinking, and thus better suited for keeping their contents in a sound condition. The improved composition consists of gum eucalypti or colophony, either alone or mixed with gum eucalypti, or other resin capable of being dissolved in spirits, to which is added for the purpose of giving body and hardness either carbon, calcined ochre, or burnt clay, or a mixture of these in a pulverised state. The composition is applied to the heated cask or vessel with a brush, after which the spirit is blazed off and the cask or vessel again heated, until the preparation has thoroughly penetrated the fibers of the wood; or the composition may be applied in a heated state.

GOOD HEALTH.

A Neglected Source of Food.

Agos ago when our fore-fathers were worshippers of Odin and the rest of the dead divinities of Northern Europe, horse flesh was accounted a delicacy fit for the gods. When a warrior died, the "funeral baked meats" were carved from his slain charger; and in all religious celebrations the horse figured, as the bullock did in the sacrificial feasts of other nations. The horse flesh and paganism were found to be inseparable when the Germanic and Scandinavian tribes were christianized by royal proselitation. The new made christian could not begin a dinner at which his favorite meat appeared without relapsing to his ancestral religion and going through the entire round of pagan rites with which horse flesh had been so long associated. As a natural consequence horse flesh became not only synonymous with paganism, but one of its defenses, we should have said bulwarks if the sound had permitted. Against it the bulls of the church were hurled, and its use was prohibited under pain of eternal damnation. Gradually, as christianity gained ascendancy, the obnoxious meat passed out of use, and in process of time it became to be regarded by Europeans as "long pig" was by the christianized descendants of man-eating Fiji islanders, with an abhorrence as intense as the original liking had been.

Subsequent generations have inherited the prejudice and forgot its origin. To-day the multitude stand ready "to cry unclean" the moment horse flesh is mentioned as an article of food, though it would puzzle them to give one substantial reason for so regarding it.

The truth is that no meat can be cleaner. The horse is one of the nicest of feeders, and as choice in his drinking as in his diet; and, as has been abundantly proved by the experience of modern Europe, where horse flesh has lately become an important element in the food, supply, the meat which we reject is at once wholesome, nutritious, and nearly, if not quite, as savory as beef. As we are no longer in danger of relapsing into paganism with the taste of it, the only sanitary reason, moral or otherwise, for avoiding it is done away with.

There remains the economical reason for its disuse arising from the fact that good horses are worth more for other purposes. But the time comes when the best of horses cease to be profitable for service. What then?

Occasionally a favorite animal is provided for in his old age, and allowed to end his days in all the comfort that nature will permit. The majority, however, are turned over to the tender mercies of the cruel to be used up, more or less speedily, in rough and ill requited labor. To guard their favorites from this unhappy end, it is becoming a common practice among considerate people to shoot their horses when no longer fit for the carriage, though they may still be far from worn out. Of the nine million horses in the United States, a million might fitly be disposed of in that way every year, to make room for younger and more serviceable animals. In other words, our food supply might be augmented by something like a thousand million pounds of good meat annually. We throw it away—for a prejudice.

That this prejudice will be overcome in time, we have not the slightest doubt. The tendency of our civilization is to multiply food consumers while lessening the relative number of producers. As a natural consequence we must be more and more careful to avoid unnecessary waste. Every available source of wholesome food must be husbanded, and this among them. Unfortunately those who would be most directly benefitted by the addition of horseflesh to our lists of meats are just those whose prejudice against it is most intense. Here, as in Europe, it must first gain a place on the tables of the well-to-do.

Perhaps as simple a plan as any for effecting this would be the following: We have noticed the growing custom of shooting horses when their term of profitable service has come to an end by age or accident. Instead of burying the carcasses or giving them to the renderer to be converted into soap grease and fertilizers, the flesh might be properly dressed and distributed among those who, from curiosity or conviction of its wholesomeness, might desire to give it a trial. If pains were taken to announce this intention before hand, and to prove to intending eaters that the horses were in good condition and free from disease, there would be little difficulty, we imagine, in disposing of the choicest cuts. All that is required is a beginning, and this course would ensure it with the least amount of trouble and cost.—*Scientific American*.

HOW THE EYE IS SWEEPED AND WASHED.—For us to be able to see objects clearly and distinctly, it is necessary that the eye should be kept clean. For this purpose it is furnished with a little gland, from which flows a watery fluid (tears) which is spread over the eye by the lid, and it is afterwards swept off by it, and run through a hole in the bone to the under surface of the nose, where the warm air passing over it while breathing, evaporates it. It is remarkable that no such gland can be found in the eyes of fish, as the element in which they live answers the same purpose.

If the eye had not been furnished with a liq-

nid to wash it, and a lid to sweep it off, things would appear as they do when you look through a dusty glass. Along the edges of the eyelids there are a great number of little tubes or glands, from which flows an oily substance which spreads over the surface of the skin, and thus prevents the edges from being sore or irritated, and it also helps to keep tears within the lid. There are also six little muscles attached to the eye which enable us to move it in every direction; and when we consider the different motions they are capable of giving to the eye, we cannot but admire the goodness of Him who formed them, and thus saved us the trouble of turning our heads every time we wish to view an object.—*Ez.*

Torturing the Human Foot.

Science, in its comprehensive range of subjects, has at last condescended to direct attention to promoting the comfort of the human foot—to pointing out the deformities of the shoe we wear. Mechanical ingenuity has exhausted itself in the construction of machines which turn out shoes automatically, their whole object being rapidity of production after rigid models, to which the foot is compelled by painful experience to conform itself, corns and bunions to the contrary notwithstanding. Civilized communities wear the worst-fitting shoes and suffer the most from them. The Indian undergoes no suffering from his loosely made moccasins, nor does the Oriental cultivate corns in his sandals. But the hard, rigid, tight-fitting shoe of the European and American has, from time immemorial, held its place as an instrument of torture. Yet, when compared with the shoes in use a century ago, those of modern manufacture when made by hand do give evidence of some amelioration, though the best of them are still deficient in what the comfort of the foot requires. Dr. Hermann Mopor, a Swiss philosopher of the humanitarian school, has taken the subject in hand, and presents some considerations deserving attention from intelligent men at the head of great American shoe factories. He denounces the workman who produces a shoe that will pinch, and demands the production of one which will afford to a foot distorted by the pinching it has already undergone, a fair chance of returning to its proper shape, and the full possession of its power for carrying the body forward. He places great emphasis on the proper accommodation of the great toe, alleging that it is of prime importance to keep it free from all constriction or distortion. Upon this toe, in walking, the weight of the whole body turns at every step in a natural foot; therefore, in such a foot it is in a straight line with the heel. The doctor ascertains that a central straight line drawn from the point of the great toe to the middle of its root, if continued, would pass very exactly to the middle of the heel. But our modern misfitting shoes destroy this natural anatomical arrangement, so distorting it as to force the point of the toe inward and the root outward. No shoe, for a foot already injured by wearing such as are ill-fitting or constrictive, should ever be made of the exact size of the injured foot.—*Ez.*

What the Microscope Reveals—With a Moral.

Lewenbeck tells us of insects soon with the microscope, of which 27,000,000 would only equal a mite.

Insects of various kinds may be seen in the cavities of grains of sand.

Mold is a forest of beautiful trees, with branches, leaves and fruit.

Butterflies are fully feathered.

Hairs are hollow tubes.

The surface of our bodies is covered with scales like a fish; a grain of sand would cover one hundred and fifty of these scales, and yet a scale covers five hundred pores. Through their narrow openings the sweat forces itself like water through a sieve.

The mites make five hundred steps a second.

Each drop of stagnant water contains a world of animated beings, swimming with as much liberty as whales in the sea.

MORAL.

Have care as to the air you breathe, the food you eat, and water you drink.—*Hearth and Home*.

INTERMITTING LAMENESS.—The *Doctor* remarks: "A very curious thing has been described by Dr. Sabourin, namely, that lameness may ensue from obliteration of arteries. Horse lameness is often so obscure that any light proves desirable. It is not, however, confined to the horse, but extends also to man. The cause, as observed, is owing to obliteration of the aorta and iliac arteries. Commonly, in previous good health, the subject begins to limp, in one or two limbs to tremble, and finally to fall. Rest is commonly productive of relief. MM. Bouley and Goubaux long ago pointed out the nature of the affection in horses, while M. Charcot first pointed out its occurrence, comparatively rare, in man. Arteritis has been supposed to be the occasion in horses, owing to the violent efforts they have to make, and embolism in men. In any case, the occurrence affords a favorable illustration of the advantages of the study of comparative pathology."

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BURNED OUT OF CHURCH AND HOME.—At the
recent fire in Colfax, Rev. J. J. Cleveland, a
Methodist clergyman, lost his valuable library
and household furniture, saving but one trunk
full of articles which he was alone able to drag
through the fiery street to a place of safety.
The Union church, at which he preached, the
only Protestant place of worship in town, was
destroyed. Mrs. Cleveland, an invalid, who
had for days been confined to her couch, was
hardly able to reach shelter by her own exertions.
Mr. Cleveland has labored faithfully
and humbly for over 13 years, exclusively in
the cause of christianity on this Coast. In an
hour made penniless among friends of similar
misfortune, they should be kindly remembered
by their friends and brethren elsewhere who
know them worthily.

REDUCING DUTY ON STEEL.—The Ways and
Means Committee are considering the reduction
of the steel duty. This is on an application by
manufacturers, representing one hundred mil-
lions of capital and 50,000 workmen, who say
American steel is nureliable in burnished and
edged tools. As they are compelled to use the
foreign article, they urge that the duty is unne-
cessary to protect American steel, and only
compels manufacturers to pay a higher price
for the foreign. They ask a reduction of
duties and a specific assessment. The Penn-
sylvania steel producers oppose this, and ask
10 per cent. increase.

THE SUTRO TUNNEL can now be worked on
three faces at once, shaft No. 2 having reached
the tunnel level. The header of the main tun-
nel is enlarged from 8x8 to 8x12 feet in size, to
accommodate the Burleigh drills they have
adopted.

A NEW 20-stamp mill is to be erected at the
mouth of the old tunnel of the Globe Consoli-
dated Company's mine. This will be so situ-
ated as to save all cost of transportation of
ores, and enable them to reduce ores at a
greater profit.

DURING the year 1873, ending November,
there were 1,313 recorded train accidents in
the United States, by which 302 persons were
killed and 1,262 injured.

ANTIMONY is selling in England at £51 to
£52 per ton for French Star.

Vein Systems of the Sierra Nevada— Formation and Strike.

[Written for this Press by AMOS BOWMAN.]

The geography of the auriferous slates and
of the granitas, with the relative position of the
axes of elevation and depression bounding
them on the east and west, and the actual posi-
tion of the veins in this golden basin of the
Mesozoic sea, which is now the western slope of
the Sierra Nevada—all instrumentally located,
plotted and presented to a vision undimmed
by any fogs of hypothesis, as in the accompa-
nying map—affords us the first definite idea of
the geological relations of our famous gold
mines.

A zone of extreme flexure, and breakage, of
the auriferous slates, displayed in the mother
lode and its continuations, is shown by the ac-
companying map, to be as near as can be, mid-
way between the axis of greatest uplift of the
main or central summit, and the axis of greatest
depression evinced in the drainage bed of
Sacramento valley, the river itself.

On plotting the veins in their true geo-
graphical position and relation to the mother
lode south, and to the Nevada county and
Sierra county quartz lodes to the northward of
the Amador mine, we see, besides the gen-
eral connection and relationship of worked
veins, a forking of the vein system, which is
displayed alike in the direction of the veins,
and in the geographical position of the vein
regions, where the veins have proved rich
enough to be worked.

The figures on the map designate the mines
which are similarly numbered in the printed
reference list.

As the Sierra Nevada range itself continues
to the northward in two different directions,
northward in the Warner range and Cascade
Mountains of Oregon, and northward in the
La Sen & Shasta Butte culminations, the
forking of the vein-belt and predominating di-
rections of the veins themselves, as here de-
veloped, is not remarkable, nor otherwise than
might be expected.

The diagram in the upper right hand corner
was constructed by laying some tracing paper
over the map, and drawing on it outlines which
included all of the veins that are plotted. By
cutting this out and laying it over that, it will
be found to cover nearly every vein I have lo-
cated, including every vein mine that could be
crowded into the space, for which a United
States mineral survey and patent were, up to
date of plotting, recorded in the office of the
United States Surveyor General, at San Fran-
cisco.

The strike of the slates is, in the main, re-
presented by the general direction of the two
formations printed black, or shaded. Both in
the map, and in the small diagram in the right,
the preponderance of veins keeping company
with the "mother lode" in the same general
direction is made apparent. Several of the
characteristic variations in direction are re-
peated in the little diagram, by way of sugges-
tion as to the probable dynamical cause, or
causes.

The age or origin of these different systems
of fissures, cannot have been precisely the
same. The dynamical cause of one series was
not the same as that of another series. In
general those parallel to each other were formed
at the same time.

The filing of the fissures, with a variety of
minerals, such as we find in the veins, varies
accordingly. Probably the time will come
when the observations of miners touching the
different contents of cross veins, and of geolo-
gists touching the order of uplift,—the longitu-
dinal fractures, the twists and the transverse
fractures of the slates, as they were experi-
enced in different portions of the Mesozoic
basin since it became dry land,—may make out
clearly the priority and exact relations of the
several systems.

The longitudinal fractures represented by
the mother lode were probably the oldest—
telling the story of the uplift of the Sierra.
The twist and transverse fractures which evince
a certain relationship to the northerly and
north westerly trends of the Sierra, will have
to be studied either in connection with the
history of the volcanic peaks, the uplift of the
Cascade Mountains, or the plateau mountains
of Nevada. The mines belonging to these
different systems can be tabulated from the ac-
companying printed list by the miner himself,
and studied to suit his locality.

Classification According to Earth Movement, as Shown by Mountain Uplift.

The totals below show about the proportion
of veins occurring in each system; except, per-
haps, in regard to system No. 5. That might,
to be subdivided, as it represents double the
sweep of horizon of either of the other systems,
including the veins intermediate between the
others in course; both the (a) northeasterly
twists and (b) northwesterly twist fractures.

1.—NORTHEASTERLY FRACTURES, or veins within 15
degrees of the general trend of the Sierra—N16W to N45W
average N30W; embracing a sweep of 30 degrees: 2,
Potts; 3, Kelsey; 7, Arden; 8, Grey Eagle; 15, North-
ern Light; 21, Salathiel; 35, Galena; 38, Sebastopol;
43, Penon Blanco; 49, Greenwood; 52, Oneida; 62, Key-
stone; 66, Spring Hill & Geneva; 87, Newtown; 88, S.
Bright; 89, St. Lawrence; 90, Cedarberg; 114, Rocky
Bend; 126, Geyer; 130, Tecumseh; 136, Wisconsin; 172,
Union; 194, Eureka; 201, Copp; 202, Secret Canon; 212,
El Dorado; 214, Coyote Hill; 215, Talcott; 217, Green-
wood; 233, Cosumnes; 243, Last Chance; 260, Marietta;
268, Empire; 292, Sulphurett; 294, Mahoney; Total, 35.

2.—NORTH-WESTERLY TRANSVERSE FRACTURES, or veins
within 15 degrees of a right angle to the trend of the
Sierra; N45E to N75E; average N60E: 14, Kelly; 23, Ris-

ing Sun; 50, Spring Hill; 97, Noramhaqua; 193, Eclipse;
199, Keystone; 209, Chauleur; 315, Old Pioneer. Total,
8.

3.—NORTHERLY FRACTURES, or veins within 15 degs. of
a northerly trend—N15W to N15E, embracing a sweep of
30 degrees: 22, Norridgegock; 30, Spring Valley; 31,
Venus; 32, Stanton & Allison; 34, Aurora Star; 44,
Rough & Ready; 65, Original Amador; 73, Dry Co.; 74,
Stanislaus; 80, Hancock & Tibbets; 112, Nisbet; 115,
Lone Jack; 120, Stiger; 134, Everlasting; 173, Poorman;
182, Oarson; 184, Wolvstine; 195, Confidence; 198, Yel-
low Jacket; 203, N. Confidence; 211, Shores; 233,
Cosumnes; 242, North Rock; 277, Fort Yuma; 305,
R. Hill; 319, Uncle Sam. Total, 92.

4.—NORTHERLY TRANSVERSE FRACTURES, or veins with
in 15 degrees of a right angle to the northerly trending
axes of uplift; N75E to S75E; embracing a sweep of 30
degrees: 3 & 4, Oaks & Reese, Jones; 39, Epperson; 54,
Slate Ledge; 91, Union; 132, Tyson; 191, Keystone; 226,
Wet Gulch; 233, Ophir; 295, Hancock & Watson,
Total, 16.

5.—TWIST FRACTURES, or veins running from N15E
to N45E (30 deg.); and N45W to N75W (30 deg.); em-
bracing in all a horizon of 60 deg., or as much as 1 and
3 together, the veins of which are neither parallel nor
transverse to either of the principal axes of uplift:
9, Schofield; 45, Eureka; 84, Enterprise; 93, N. Y. Hill;
116, Moorehouse; 124, Eureka; 128, Calaveras; 131,
Bobby Independence; 165, Lincoln; 175,
Sticker; 189, St. John; 204, Butcher Boy; 208, O. Baker;
210, Waters; 219, Green Water; 233, Cosumnes; 249,
Bovee; 251, Crusus; 303, Mammoth; 320, Dr. Hill.
Total, 22.

Contents of Veins in Gold, Silver and Copper.

There are three well defined mineral belts
represented in the veins of the Sierra Nevada,
yielding respectively copper, gold and silver.
For want of space I will not enter into further
details concerning their relations at this time.

Relations to Wealth and Gold.

Not only the largest number of mines, but many
of the great dividend paying gold mines of
California are located in system No. 1. The
Amador paid in 1870 \$341,000, or at the rate of
\$3,410,000 in ten years. The Keystone paid
\$300,000, or \$3,000,000 in ten years. The
Eureka, at Grass valley, belongs to system No.
5. It yielded in 1870 \$672,000, or at the rate
of \$6,720,000 in ten years. The Sierra Buttes
yielded in 1870 \$200,000, or at the rate of
\$2,000,000 in ten years.

Claims Shown on the Map.

The following are references to gold quartz
veins, etc., located by U. S. Mining Patents, in
the U. S. Surveyor-General's office, for
California. The numbers which are shown
on the accompanying map are those of
the patents, having been attached in the order
the mines were patented. The name of claim,
name of patentee and course of vein are given:

- 2 Potts Gold—L. L. Robinson & Hall McAllister, N45W
- 3, 4 Oaks, Reese & Jones—L. L. Robinson & H. McAllister
- 5 Kelsey—Kelsey Co., S120E & S26W
- 7 Arden—P. Superville, A. Gen., N30W
- 8 Grey Eagle—John M. Walker, N45W
- 9 Schofield—W. H. Schofield, N56W
- 13 Kate Kearny—Jas. Johnson, N59W
- 14 Kelly—C. C. Kelly, S57W
- 15 Northern Light—N. Y. Hill, S29W
- 21 Salathiel—Salathiel Co., S9E
- 22 Norridgegock—Norridgegock Co., S124E
- 23 Rising Sun—Rising Sun Co., N74E
- 30 Spring Valley—John M. Walker, S12E
- 31 Venus—Wm. Burling, N12E
- 32 Stanton & Allison—Wm. Watt, N9E
- 34 Aurora Star—Aurora Star Co., N3E
- 35 Galena—R. H. Galena, N12W
- 38 Sebastopol—Wm. Watt, N43W
- 39 Epperson—H. G. Conard, E8W
- 40 Rough & Ready—Rough & Ready Co., S10E
- 43 Eureka—J. D. Treat, N28W
- 49 Penon Blanco—J. T. McLean, S77E
- 49 Greenwood—Greenwood Co., S38E
- 50 Spring Hill & Geneva—A. E. Hill, N5E
- 52 Oneida—C. O. Hill, S12E
- 62 Slate Ledge—Slate Ledge Co., S88E
- 66 Keystone—Keystone Consolidated Co., N2W
- 66 Original Amador—J. H. B. B. Co., N4W
- 66 Spring Hill & Geneva—Spring Hill & Geneva's on. Co., N8W
- 73 Dry Co.—Otto Walter, N2W
- 74 Stanislaus—Gab. E. St. Lawrence, S10E
- 80 Hancock & Tibbets—Geo. Hancock, N2W
- 84 Enterprise—Enterprise Co., N W W
- 85 Newtown Copper—J. McAllister, N27W
- 88 Bright—Samuel Bright, N43W
- 89 St. Lawrence—Robert Doran, N15W
- 90 Cedarberg—John A. Cedarberg, N15W
- 91 Union—Abram Shear, N23E
- 97 Noramhaqua—J. H. B. B. Co., NE
- 99 N. Y. Hill—A. Delano, N5W
- 112 Nisbet—Nisbet Co., NEW
- 114 Rocky Bend—J. H. Rogers, N3W
- 115 Lone Jack—O. W. Wheel, NE
- 116 Moorehouse—Alphonzo Moorehouse, N18E
- 120 Stiger—Geo. W. Simpers, N
- 124 Bangham—Wendell Bangham, N60W N37W
- 128 Calaveras—B. F. Richter, N14W
- 128 Calaveras—Calaveras Co., N18W
- 130 Tecumseh Silver and Copper—Tecumseh Co., N2W
- 131 Bobby Independence—Bobby Independence Co., N2W
- 132 Tyson Iron and Copper—Jas. W. Tyson, N75W
- 134 Everlasting—A. S. Clelland, N30W N11W
- 135 Wisconsin—Wisconsin Co., S20E
- 135 Independence—Independence Co., N65W
- 135 Lucas—D. B. Rodman, N16E
- 172 Union Copper—W. T. Glidden, N45W
- 173 Poorman—E. A. Lewis, N1E
- 175 Sticker—Sticker Co., N45W
- 175 Finnegun—Finnegun Co., S7E
- 182 Oarson—J. C. Scribner, N84W
- 184 Wolvstine—S. O. Putnam, N45W
- 189 St. John—F. J. C. St. John, N31W
- 191 San Bruno—J. F. Siegler, N88E
- 193 Eclipse—E. L. Bradley, N6E
- 194 Eureka—J. D. Treat, N28W
- 195 Confidence—Confidence Co., N14W
- 198 Yellow Jacket—Jos. Treneh, N2W
- 199 Keystone—Keystone Co., N54E
- 201 Copp—Geo. M. Toten, N27W
- 202 Secret Canon—Michael McBride, N21E
- 203 N. Y. Hill—North Confidence Co., N8W
- 204 Butcher Boy—M. Dodsworth, N8W
- 208 O. Baker—O. Baker, N8W
- 209 Chauleur—F. A. Wilson, N51E
- 210 Waters—Wm. P. Waters, N84W
- 211 Shores—L. M. Fink, N3W
- 212 El Dorado—C. B. Thompson, N21E
- 214 Coyote Hill—C. B. Thompson, N19W
- 215 Salsig—M. Dodsworth, N99W
- 217 Greenwood—Thos. Smith, N36W
- 219 Green Water—W. E. Kirby, N75W
- 226 Wet Gulch—J. Bandman, N82W
- 228 Maryland Q. M.—Wm. Jones, N24W
- 233 Cosumnes—Cosumnes Co., N45W N6W & N4E
- 233 Ophir—Ophir Co., N6W, N6W N76W
- 243 La Chance Copper—Last Chance Co., N23W
- 249 Portmouth Rock—J. H. Barlow, N
- 249 Bovee—Bovee Co., N43W
- 261 Crusus—Wm. Gwynn, N56W
- 260 Marietta—G. A. S. Marietta Co., N26W
- 277 Fort Yuma—M. M. Staples, N7E
- 283 Empire—J. H. B. B. Co., N43W
- 283 Sulphurett—Marietta Co., N15W
- 294 Mahoney—J. Mahoney, N43W
- 298 Hancock & Watson—H. Dewey, N88W
- 303 Mammoth—H. H. Kirby, N65W
- 303 R. Hill—R. Demachais, N
- 313 Old Pioneer—R. C. Downs, N41E
- 319 Uncle Sam—E. Fowler, N9E
- 320 Dr. Hill—J. S. Doe, N8E

THE 1,400-foot level of the Consolidated
Virginia is looking better as work is prosecuted.
This mine is expected to begin paying dividends
this month.

Economy in the Use of Quicksilver.

In our issue of April 18th we published an
article on the "Use of Quicksilver in Hy-
draulic Mining," in which we called attention
to experiments recently made by Mr. Hoskin,
of Dutch Flat, with amalgamated lead balls, in
place of quicksilver, in the sluices, thereby
preventing the great loss always incurred by
the latter mode, and which in these days of
famine prices of the metal, is a very serious
one. Referring to this article, we received a
letter this week from Louis Blanding, of the
Cañon Creek gold mine, Nevada county, Cal.,
who says that he was prepared to hear Mr.
Hoskin's experiments gave satisfactory results,
from his own experience and from experiments
lately made by him to test the plan invented by
Mr. Rutherford, of San Francisco, last fall, and
just now perfected by him. It is somewhat
similar in principle to Mr. Hoskin's mode,
although different in application, Mr. Ruther-
ford using amalgamated copper balls in quartz
mills, not flattened, but round, for the reason at
once apparent in the description given below of
the apparatus.

Mr. Rutherford places these amalgamated
copper balls in trays, four or six in number, hav-
ing perforated or screen bottoms; these trays
are fitted in a box, one above another, with a
small space of half an inch or so between the
trays, and are arranged so as to be readily
got at for inspection and cleaning up. Several
of the boxes—two or four or as many
as may be necessary—are placed in position so
that the pulp from the batteries will flow down
through them from one to another, in a suc-
cession of steps. A vibratory motion is given
to the boxes, and therefore to the balls con-
tained in and covering the perforated bottoms
of the trays. The pulp is found to flow readily
over the constantly changing surface of the
amalgamating balls and through the meshes of
the screen without packing or choking; this im-
portant result being due to the stir and agita-
tion of the motion of the balls.

An immense increase of amalgamated sur-
face, with which the gold particles are made to
come in contact, is thus secured by most simple
means, in most compact form, and in an ex-
cellent mode to guarantee saving of the gold.
Very fine gold and floured quicksilver can be
saved in this way, as the surfaces of the balls
are always kept bright by their own attrition,
and free from foreign incrustation or film—so
deleterious, as all mill men know, to amalga-
mation. Mr. Blanding states that one of Mr.
Rutherford's machines for the Cañon Creek
mill has been ordered and shipped and will
soon be in operation.

To test Mr. Rutherford's plan Mr. Blanding
informs us that he has tried experiments with
lead and copper balls and also with balls con-
taining varying proportions of copper and tin—
from four to thirteen per cent. of tin. He
found the best to consist of ninety five (95)
parts of copper and five (5) parts of tin. He
adopted this alloy for the sake of better wear-
ing surface, being sufficiently hard for the pur-
pose, and found no loss in amalgamating ef-
ficiency. Then experiments were made at the
Cañon Creek mill in Nevada county three and
a half months ago and have been repeated with
results far beyond Mr. Blanding's expecta-
tion.

In concluding his letter Mr. Blanding says:
"I entirely agree with you that an exchange of
thoughts among men engaged in the same pur-
suit is always desirable, simply because pro-
vocative of new suggestions and ideas, whence
come all progress and improvement with their
attendant commercial success. This is espe-
cially true of the arts and sciences."

We hope that others of our mill men and
hydraulic miners who have given this subject
much attention, as they all should, will favor
us with any novel plans or methods which
they have found efficient in practical opera-
tions.

THE SIERRA NEVADA MACHINERY.—In speak-
ing of the preparations for erecting the hoist-
ing machinery, etc., for the Sierra Nevada
mine on the Comstock, the *News* states that the
foundation, when finished, will contain 1,700
perch of stone, and the anchor bolts alone will
weigh ten tons, and are so connected and bound
together at the bottom with heavy iron plates
and bars, that no part or section of the work
can give without the whole going together.
The new machinery is arriving by the car-load
daily, and as soon as the necessary timbers can
be got down from the mills, in the mountains,
for the hoisting works building, the erection of
the whole will be commenced and pushed to
completion with all the vigor possible.

A BRILLIANT STUCCO WHITEWASH.—In answer
to an enquiry for a receipt for an improved
whitewash, we are able to give the following,
which is said to be used extensively in Paris
and other parts of France. If tried in this
climate, we should like to hear the result:

Take clean lumps of well burnt lime, slack
in hot water in a small tub, and cover it to keep
in the steam; it should then be passed through
a fine sieve in a fluid form, to obtain the flour
of lime. Add a quarter of a pound of whiting
or burnt alum; two pounds of sugar; three
pints of rice flour, made into a thin, well-hoiled
paste; and one pound of glue dissolved over a
slow fire. It is said to be more brilliant than
plaster of Paris, white, and will last fifty years.
It should be put on with a paint brush.



The BLACK represents slates predominating and granite in spots. The LIGHT SHADING represents granites predominating and slates in spots.
NOTE.--This map shows the location and course, by instrumental survey, of 200 gold mines in the Jurassic, etc., slates of California, to which U. S. Land Patents have been granted.

Diagram of VEIN ZONES and VEIN SYSTEMS.

Quicksilver at Vienna.

In a review of "Metals at the Vienna Exposition," *Engineering* speaks as follows of the exhibits of quicksilver:

The exhibits of mercury were not numerous. In the department of Spain we met with a good mineral collection from the mines of Almaden, and of their metallurgical products by Francisco de Avila, of Madrid. The district of Almaden, near Ciudad Real, consists of the Silurian formation, containing hard sandstones with bituminous clay slates and beds of limestone and greywacke, with numerous fossils in its upper section. The bituminous slates or shales are traversed by three lodes, the known length of which is over 100 fathoms. Their width is on an average 21 feet, but in some instances increases to 40 feet. The two lodes, San Francisco and San Nicholas, approach to within three feet or four feet of each other for some distance, and are then worked together. The rock is rather weak, and the mines must be secured to a great extent by arches of stone or bricks, of which one, at a depth of 800 feet, has a span of 67.5 feet. The annual produce of these mines is equal to 32,000 hotties, or about 2,432,000 pounds of mercury. The raw ore is mixed with carbonate of lime, quartz and clay slate, and is hand-picked into four classes, containing about 50, 30, 15 and eight per cent. of metallic mercury. It is introduced in vertical kilns, closed on the top, and heated from underneath for 20 hours with brushwood, when the metallic mercury passes off through openings in the sides into condensing pipes, made of clay, and at last into condensing chambers. Each charge is finished after three days, when the mercury is collected and drawn off from the condensing pipes. This operation was illustrated at Vienna by models of the furnaces and samples of ore, mercury and slags.

From Italy

We found samples of mercury ore or cinnabar, shown by Dominico Paradisi, from the mines of Siale, near Siena, and from those of Vallalta, near Agordo, in Lombardy. The latter ore is an intimate mixture of clay slate, porphyry and bituminous clay, containing from one to 60 per cent. of mercury, imbedded in an irregular form in graphitic clay slate of the lower carboniferous period. The ore is heated in kilns with a wood fire, and the vapors of mercury are condensed and collected in wooden laundries. The annual produce is about 35,000 pounds; 136 men being employed.

France

Also exhibited samples of cinnabar from Mimoun and Raaz-el-Maa, in the province of Constantine, and Austria, from Knapouse and Idria, in Caruiola, from which latter place, in 1872, 766,600 pounds of mercury were produced.

The Mines of Idria

Were discovered in 1497, and still give employment to 553 miners, and over 200 men at the dressing and smelting works. The principal ore deposit is again a black, bituminous, almost graphitic slate of the lower carboniferous formation, varying from 10 to 30 fathoms in thickness; it rests upon limestone, and is covered by a limestone conglomerate, bituminous shale and sandstone, the latter of Triassic age. The ore bed is explored for 400 fathoms in length, and 146 fathoms in depth, and in 1867 was estimated to hold nearly half a million hundredweights of mercury within 156,000 cubic fathoms of ore ground, the average being two per cent. The mines are opened by five shafts, with pumping and drawing machinery, driven by steam and water-power. The ore is carefully hand-picked, and classified into rich ore, with 10 per cent., and into lumps and smalls, with 1.5 per cent. of quicksilver. The former is subjected to a distilling process from closed retorts, the latter to such an operation in kilns and in reverberatory furnaces, with admission of air. The metallic fumes are condensed in condensing pipes and chambers, and a great part of the metal is reconverted into cinnabar by amalgamating it with pure sulphur in rotating casks. The sulphide of mercury thus obtained is subjected to a process of sublimation, which yields crystalline cinnabar, with a beautiful vermilion color, after being ground to a fine powder. The Idria Works exhibited a collection of minerals, fossils, ores and metallurgical products, including an iron basin containing 15,000 pounds of quicksilver, and the mines and smelting works were also suitably illustrated by geological maps and drawings, showing the improvements that had been introduced of late years, principally for a better condensation of the fumes.

In the exhibition of Turkey we noticed a sample of cinnabar from the vilayet of Janina, and in the collection of Professor Kustel a specimen of metacinnabarite, from Redington mine, in California, while the other great quicksilver mine of California, viz., New Almaden, New Idria, Lake mine, Guadalupe and others, which produce about 3,500,000 pounds annually, were entirely unrepresented, and the once-celebrated mine of Santa Barbara, at Huancavelica, in Peru, which formerly yielded the greater part of the mercury which was used in amalgamating silver ores in South America and Mexico, appears to have been quite abandoned since the discovery of the mines in Upper California. There is no doubt that this discovery was a cause of paramount importance for the rapidly-increasing production of precious metals, and the consequent colonisation of the west coast of America.

Lancha Plana Coal Mines.

The principal coal mine in the vicinity of Lancha Plana is the one owned and worked by Waddell & Murray, residents of Lancha Plana. This mine is situated about one mile north of Lancha Plana, and is in a tract of land containing 160 acres, belonging to the parties mentioned above. On the tract there are three distinct seams of coal, and up to the present time the width of these veins has not been determined, for although drifts have been run a long distance on each side of the tunnel, there is no appearance of the veins giving out. The manner in which this mine has been worked is as follows: A tunnel has been driven a distance of 280 feet in length, which, for some distance, has an incline of one foot in four, for the purpose of intersecting the different veins up to the present time found in the tract. The first vein, which is seven feet in thickness, was struck one foot from the mouth of the tunnel. After driving through this vein a layer of sandstone was penetrated some eight feet thick, and upon going through this the second vein was found. This vein proved to contain a better quality of coal than the first, and was eight feet in thickness. Between this vein and the third one there is another layer of sandstone seven feet thick. At present the thickness of this vein has not been determined, as from this point the tunnel was run the remaining distance on a level. The probability is, that if the quality of this vein improves in the same ratio as the former ones, the coal derived therefrom will prove to be the finest yet found in the State. The coal found in this mine has been proved to be excellent material for blacksmithing purposes. It burns well, and makes steam as quickly as the best wood.

About one and a half miles north of the Waddell claim, Mason has discovered, by means of boring, a large body of coal, proving that the Waddell claim is a permanent and extensive mine. Between the Mason and Waddell claims is a place called China Gulch, situated on the Waddell tract, and about a quarter of a mile from the mouth of the tunnel. In this gulch some very fine ore has been discovered, and as the company intend to sink a shaft in the gulch some very interesting developments can be reasonably expected. From all appearances, the formation in this locality is older than the veins in the tunnel, while the surface boring exhibits coal very hard and firm. It is maintained by practical coal miners that the Lancha Plana is darker, harder and more free from dirt than the Lone coal. The residents around Lancha Plana are very anxious for the building of the Stockton and Lone Railroad; for until that enterprise is consummated these extensive coal fields will be comparatively worthless.—*Sutter Creek Independent*.

Raymond & Ely.

The *Pioche Record* of a late date speaks as follows of the Raymond & Ely mine: Yesterday there were a number of assays made from rich ore taken from the old Pioche-Phoenix claim, but of course one swallow does not make a summer, and a good many assays of rich ore would neither make a large or a profitable vein. In the workings of the past week, the 1,200-ft. level is advanced to 73 feet. The tenth level is looking somewhat better. The ledge in the face, though not large, shows some extremely rich ore, but yet there is not enough of it to warrant any particular felicitation. Nevertheless, in spite of all the discouraging events of the past few weeks, the condition of the Raymond and Ely is full of anticipations for improvement. The ledge struck in the Page & Panaca is certainly an extension of the old Raymond & Ely vein, and shows that despite of cross-head and interposing ravine, and all other sources of disturbance, that it was still there. This is one of the most charming indications now revealed by the condition of the mines as is known. In the 1,200-ft. level the cross-cut is being pushed as rapidly as possible. It is now in 73 feet and is expected to cut the ledge in about 125 or 130 feet from the shaft. This is just on the water level and many prophecies are made of the condition of the vein when reached. Of course no one knows what that will be, and probably one's hopes are father to the thought, but still if the Raymond & Ely vein shows big, this same Pioche of ours will have a good time.

MEXICAN MINES.—A correspondent of the *Bulletin*, writing from Mazatlan, speaks of business in that town being very much paralyzed on account of the ravages of small-pox. He says that under these circumstances the only mining interests are kept alive, much machinery being sent to the interior and ore being shipped in large quantities. The statistical report from Durango mentions that during last year 162 mines were denounced in said State; that 81 more were registered, and 119 mines were taken possession of to be regularly worked. In most of the other Mexican States, a similar activity is visible; and besides gold and silver, much attention has lately been paid to other minerals. Quicksilver, copper, iron, coal, marble and alabaster, the latter being principally explored in the State of Puebla, where a company has been formed, extracting among other fossils also the beautiful Teacah, or Mexican onyx, so much appreciated in Europe. Large quantities of the splendid Mexican opal, have also been brought to the City of Mexico.

WORKS for the smelting of zinc and the manufacture of fire-brick and fire-clay retorts have been established at Cherokee, Kansas. The capital invested came from Chicago.

Borax in California.

The *Inyo Independent* has the following of this product of our State:

Quite an excitement was created some months since by the discovery of reported extensive borax deposits in the southern borders of this county. Something like a hundred and fifty quarter sections of borax lands were located, but subsequently most of them were abandoned, it appearing that the quantity of crude material obtainable was not sufficient to justify further prosecution of this industry. But little has been heard of the business in that section since, and it has been deemed of little promise.

But notwithstanding all this, a number of lucky and enterprising locators have been all the time quietly at work, and with rude and most temporary facilities have been producing on the average about half a ton per day of the best quality of borax. Right in the midst of a lake bed of Slate Range, thirty-five miles west of Indian Wells, there are some seven quarter sections of land where the horate of soda (not lime) is found in inexhaustible quantities, while the ground to a depth of a foot or more is so full of the horate as to be spoken of and considered as a bed of horax a foot thick.

The marketable article is obtained in three ways: By evaporation of the water heavily impregnated with it, by working the earth containing the horate of soda, and from extensive deposits of the pure article. After the surface of the ground has been scraped clean, another deposit soon takes place, and altogether these borax mines are considered practically inexhaustible.

Wednesday last two gentlemen, J. W. Searles and J. D. Creigh, as company representatives, made application to the Land Office here for four different United States patents, covering 160 acres of these lands. From these gentlemen we learn that work is to be henceforth prosecuted at their works on a scale equal to six tons per day. Besides a few white men, they are now employing eight Chinamen and expect to increase the number.

The San Francisco market price of borax is twelve cents per pound, and as the freights are comparatively cheap from Slate Range, quite a handsome income will be derived from its production, especially at the rate of five or six tons per day. We are indebted to these gentlemen for specimens of the manufactured article and also of natural crystals of equal size, scarcely distinguishable one from the other. These gentlemen feel confident that the business of their mine is going to be an item of no small importance in the commerce of Southern California, and we do not doubt it in the least.

CO-OPERATIVE SHIP-BUILDING TO BE TESTED.—The *Vallejo Chronicle* details the following as the result of the movement to commence ship-building by co-operation in Vallejo: This morning ten or twelve of our best mechanics met together to discuss the proposition of forming an association to build a vessel. The matter was thoroughly canvassed, and the most feasible means of carrying out the enterprise well considered. The universal opinion was that it was eminently practicable; and the determination was made to form an organization and commence work. The system of operation agreed upon is as follows: The association will be composed of about a dozen of the best workmen, who will assume all the responsibilities, and be the real builders of the vessel. These men will, of course, stick by the work of construction until the vessel is built, whatever may occur. This association will, however, employ such other workmen as the necessities of the work may require; the workmen thus employed agreeing to wait for their pay until the vessel has been sold. The assurance was conveyed to those present at the meeting that there were business men here who would furnish all the materials necessary for a vessel and wait until its sale for their money. The description of the vessel to be built was fully discussed; some favoring the construction of a ship, so great was their confidence in the success of the enterprise. The general disposition, however, seemed to favor the construction of an outside schooner of about 300 tons burden. As the present enterprise is a trial experiment, the latter design seems to be a trial well as safest. An agreement was then drawn up by those present, setting forth that the subscribers would build a vessel at Vallejo, the character and dimensions thereof to be hereafter decided. The members are now engaged in inspecting the beach to determine the best location for the construction of the contemplated vessel.

EUREKA MINES.—The *Sentinel*, of April 12th, speaks of the mines of Eureka district, of the Richmond in particular, as follows: The specie production of the States and Territories of the Pacific coast during the past year is, in round figures, \$72,700,000. Of this large amount, Nevada alone yielded \$35,350,000, or nearly one-half, while California gave only \$18,225,000, thus falling short of the yield of the previous year by \$1,000,000, while the product of Nevada was augmented \$10,000,000. To this vast increase Eureka district has most grandly contributed. The Richmond alone has produced the astonishing amount of 600,000 ounces of silver, 32,000 ounces of gold, in addition to 5,000 tons of lead; footing up, probably, about \$2,000,000 altogether, while the product of the remaining four lullion-producing companies would most likely not fall far short of \$3,000,000 more, or \$5,000,000.

Gold Hill and Virginia City.

Virginia City and Gold Hill, whose unification is now well nigh completed, continue, taken together, one of the most remarkable boroughs to be found anywhere on the continent. The many novel sights to be witnessed on the streets and thoroughfares of our cosmopolitan abiding place are a never-failing source of wonderment to the chance visitor. The lengthy procession of quartz teams, consisting of from 12 to 18 animals each, driven by a single muleteer, wending their way to the music of bells from the mines to the mills, with their heavy loads; the moon-eyed Celestials, hawking wood about the streets by the donkey-back load; Indian mahales, strolling along with their papposes closely ensclosed in willow baskets of ancient style of manufacture; next, a Broadway 'bus or a 'prairie schooner'; then great crowds of miners, hurrying to their work, armed with well-filled dinner-buckets and dangerous-looking candlesticks—all these sights, and many others which we have no time to enumerate, constitute objects of interest to a tourist. Ours, too, is a busy community. Day and night, week-days and Sundays, the noise from hoisting-works and quartz-mills is heard perpetually; while over the somber-looking city hovers the smoke and steam generated by huge furnaces required to move machinery of herculean proportions. Creeping up the steepgrade leading to our mountain home are to be seen trains of cars, constantly arriving. From the summit of the Sierras, water, distilled from snow, is brought to our midst across a valley and up a steep mountain, a distance of 30 miles, by means of an inverted mammoth siphon. Everywhere about us are to be seen traces of a heroic conflict of man with nature—roads built in apparently impassible localities, mountains removed, and millions upon millions of treasure wrested from the bowels of the earth. Virginia and Gold Hill can boast a cosmopolitan population. In the mines, along the sidewalks, and in places of public resort, are to be found, indulging in Babylonish jargon, representatives of all nations. The shadows from Mount Davidson at evening rest upon a queenly city, a more prosperous one than which, considering its size, is not to be found elsewhere in the Union.—*Gold Hill News*.

THE GUIANA MINING BUBBLE.—We received a call yesterday from Mr. L. C. Kerrick, who returned to Salt Lake yesterday, one of the victims of the exploded Guiana bubble. He left this city January 1st, and sailed from Salem on the 10th. A twenty days' journey by sea brought him to the South American Ophir, where the golden sands were to be found of fabulous richness. Twenty miles from the seaport, he, with anxious miners, arrived at the placer mines. The oppressive humidity of the atmosphere quite unfit the white man for work; all mining industry is performed by coolies. A very brief experience revealed to all these fortune hunters that they had been egregiously sold. The pay dirt, where found, yielded seven cents to the pan; the coolies would not work diligently, provisions and supplies were enormously high, health gave way under the noxious climate, and homesickness took possession of all. Mr. Kerrick tells us that about seventy-five of our Utah boys were tempted from the rich mines of our Territory to follow after this Will-o'-the-Wisp; the larger proportion of whom had used the precaution to take means with them to bring them back in case of disappointment. It required but a few weeks to sicken them of their new field of labor, and one by one they folded their tents like the Arab and silently stole away. A bird in the hand is worth a whole covey in the bush.—*Salt Lake Tribune*.

COKE.—Col. Lewis, of the Pancake coal mine, arrived in town last evening, bringing with him specimens of coal from the mine, which had been converted into coke. The piece examined by us appears the same as produced in other places, and will doubtless meet the requirements of the furnace. If a sufficient quantity of coal, from which the extraneous matter can be extracted by charring, is obtainable from this mine, the Pancake company will prove a very profitable enterprise, both to the owners and the mine, as the freight would be considerably decreased, amounting to almost nothing, when compared to railroad and teaming charges on the supply coming from Pittsburg, San Francisco and other places. The mine is at present 225 feet down and the water level not yet reached. Coal of a superior quality is now being extracted. The new and powerful machinery recently erected is in working order, and everything pertaining to the successful development of the mine progresses finely.—*Eureka Sentinel*.

RICH GRAVEL DIGGINGS DISCOVERED.—We are informed that a very extensive body of rich gravel has lately been discovered under the hills between this place and the Mountain Spring House, and that a tunnel is now being run in under the toll road, a short distance this side of the last named place, by some parties who have already struck the gravel bed, which is reported to be very rich. The full extent of the bed is not positively known, but if it extends under the whole ridge, as is generally believed, it will be one of the most valuable "strikes" that has been made in this county since the flush days of '49.—*Amador Dispatch*, April 18th.

THE hardy sons of toil composing the Virginia Miners' Union will have a grand picnic to Washoe valley on the 8th day of August next.

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Our long experience in obtaining patents for Inventors on this Coast has familiarized us with the character of most of the inventions already patented; hence we are frequently able to save our patrons the cost of a fruitless application by pointing them to the same thing already covered by a patent. We are always free to advise applicants of any knowledge we have of previous applications which will interfere with their obtaining a patent.

We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents, or purchasers of patented articles, can often receive advice of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money, but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency. The principal portion of the patent business of this coast has been done, and is still being done, through our agency. We are familiar with, and have full records, of all former cases, and can more directly judge of the value and patentability of inventions discovered here than any other agents.

Situated so remote from the seat of government, delays are even more dangerous to the inventors of the Pacific Coast than to applicants in the Eastern States. Valuable patents may be lost by the extra time consumed in transmitting specifications from Eastern agencies back to this coast for the signature of the inventor.

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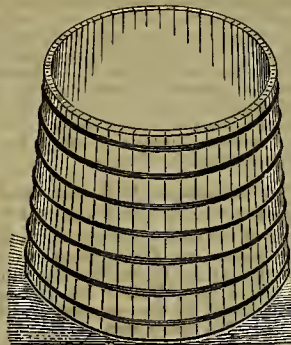
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24v22-3m JOSEPH MOORE, Superintendent.

The Mining Committee in Congress.

The opinion was expressed in our last issue that Senator Jones, of Nevada, recently appointed on the Committee of Mines and Mining, in Congress, should not have been placed on that Committee, in view of the personal interest he had in the issue of the Mining Bills now being considered by the Committee. That the point was well taken is proven by subsequent developments. A dispatch to the daily papers, dated Washington, April 27th, says:

The Senate Committee on Mines and Mining held a meeting to-day for the purpose of further considering the so-called Sutro Tunnel amendments, which were attached by the House of Representatives to the supplemental Mining Bill. Sutro and his counsel, Judge Jeremiah Black, were present. Sutro, having obtained permission to address some questions first to members of the Committee, inquired of Senator Jones whether he (Jones) had not a personal pecuniary interest in a decision of the matter in controversy, and Jones frankly admitted that as a part owner of the Comstock Lode he had such an interest. Sutro next obtained from Sargent a candid admission that he (Sargent) had heretofore formed and expressed an opinion hostile to Sutro, and proposed amendments to the bill. Sutro then suggested that the Mining Committee should refer the matter to some other committee of the Senate, composed entirely of unbiased Senators. The Committee having cleared the room for private consultation, decided by a vote of 4 to 3 to comply with the suggestion, and accordingly referred the bill, with the amendments, to the Senate Judiciary Committee for advice as to the proper decision of the legal questions involved.

On the next day the Senate Committee on Mines and Mining reported back the Mineral Land Patent Bill, with the amendments, requesting to be discharged from a further consideration of the matter, and desiring that the bill be referred to the Judiciary Committee. No objections were made. Senator Sargent simply stated that the Mining Committee should have reported the merits of the bill, but he hoped the Judiciary Committee would report on the facts as well as the law.

On the motion to refer the bill back to the Senate, Messrs. Tipton, Harvey, Goldthwaite and Alcorn voted in the affirmative, and Hamilton, Sargent and Jones in the negative. Senator Sargent's representation as having been very indignant at the action of the Committee, while Jones was compelled to acknowledge that he was interested.

We can see no impropriety in the action whatever. Senator Jones was so directly interested that he would have been unable to give an unbiased opinion of the matter, which is important to others as well as himself. The amendments should be discussed dispassionately by people who have no direct personal interest in the issue, in order that justice should be done to all parties. There are two sides to a question, and in this particularly there is a great difference of opinion between the rich and the poor men. If the rich men are to decide it, they will decide it their way, and if the poor men are to decide it, they will decide it their way. Therefore people not directly interested ought to judge more calmly what is best for the majority.

The views expressed by us in our last issue were those of the miners owning mines to the eastward of the big mines on the Comstock, and the common miners generally. It is unnecessary for us to repeat the remarks made in the previous article, but we are happy to see that our position was the correct one, more especially as our cotemporaries who mentioned the matter spoke of Senator Jones as the best man for the place, not thinking of his being so much interested in a matter being considered by his committee. The mining bills will shortly be settled, one way or another; but we hope that no mining laws will work hardship to the common miners of the Coast.

A VALUABLE MINERAL SPRING.—The *West Coast Star*, of Mendocino City, reports the discovery of a mineral spring, near Little Lake, which is thought to possess valuable medicinal qualities. It is claimed that important benefits have already been derived from the use of its waters, in several cases of chronic diseases, skin diseases, bilious cramps, neuralgia, dyspepsia, etc. The spring is owned by Mr. H. L. Norton, who is about to erect buildings for the accommodation of visitors and invalids, and such as with its natural attractions will make it a desirable watering place. Dr. L. Lanzweert has furnished the following report on a sample of the water sent him for analysis.

The water contains 99.28 grains of solid matter to the gallon, consisting of Chloride of sodium, 62.00; borate of soda, 11.76; carbonate of lime, 7.20; carbonate of iron, 2.08; silica, alumina, 2.64; organic matter, traces; free boracic acid, 10.00.

NEW SMELTING WORKS.—The Sacramento smelting works are completed, and actual operations will be commenced in them on Saturday, the 6th. The President, Secretary and Superintendent of the company have gone on a visit to the mining districts of Nevada and Utah, to purchase ore and establish ore purchasing agencies. They are supplied with a large amount of capital for this purpose.

PATENTS & INVENTIONS.

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[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., April 28, 1874.

FOR WEEK ENDING April 14, 1874.

LEATHER SHAVER.—Augustus H. Beschormann, S. F., Cal.

REFLECTING LAMP.—Emil Boesch, S. F., Cal.

MACHINE FOR RIVING SHINGLES.—Daniel Shankland, Watsonville, Cal.

ORE CONCENTRATOR AND WASHER.—Jonas' B. Wilder, Sonora, Cal.

CAR COUPLING.—Alexander Wonderly, Palisade, Nevada.

MACHINE FOR BLUESTONING SEED GRAIN.—John Wilkie, Yuba City, Cal.

WINDMILL.—Corydon A. Fargo, Modesto, Cal.

AUXILIARY HEATER FOR STEAM FIRE-ENGINE.—Absalom B. Hallock, Portland, Oregon.

STEAM MINING PUMP.—Andrew M. Rogers, Central City, Colorado.

SHAFT COUPLING.—Wm. J. Silver, Salt Lake City, Utah.

PUMP VALVE BOX.—Wm. J. Silver, Salt Lake City, Utah.

The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest time possible.

SUTRO TUNNEL.—On the 18 ult. shaft No 2 of the Sutro tunnel was finished to the tunnel level. Its depth is 1,040 feet. It has been sunk 227 feet from the eighth of January, besides cutting a 10x10 station 35 feet long with the excavation of ground for a tank 16x12. The *News* says that in a short time a header will be started from the bottom of this shaft in both an easterly and westerly direction. A powerful pumping engine, of sufficient capacity to raise thirty inches of water every twenty-four hours, will be placed at the bottom of this shaft.

ILLUSTRATE YOUR INVENTIONS.—It is hardly possible to introduce successfully an improvement in machinery of any class without the aid of a good engraving. It not only serves to show at a glance the valuable features of the machine more effectually than the longest verbal description can do, but it also constitutes the very best method of advertising an invention, its attractive appearance securing the attention of the reader, while a column of reading matter, without illustration, might be overlooked. —*National Car Builder.*

ARCTIC EXPEDITION.—It is announced that the American Geographical Society will be represented at the Millian celebration in Iceland by Dr. Hayes, the distinguished Arctic explorer. He will sail for England about the first of June, and leave Dundee for Iceland in a vessel chartered for that purpose, about June 20th. He will explore parts of Iceland never before visited, and be accompanied by several Professors.

TEMPERING DRILLS.—It is stated that Mr. Knecht, the engineer of the St. Gothard tunnel, has discovered a means of tempering drills for rock-boring machinery, by which they are rendered as hard as diamond, whilst at the same time they do not become brittle. The invention, it is believed, will result in the St. Gothard tunnel being pierced a year or two in advance of the expected date.

ARIZONA MINES.—Prospecting parties are constantly leaving Tucson for the mountains, and the new discoveries and rich specimens that are coming in indicate that the opinion of those who have been most sanguine of the mineral wealth of Arizona will be more than realized.

BULLION SHIPMENTS.—Wells, Fargo & Co. shipped last week, says the *Battle Mountain Measure for Measure*, thirty-seven bars of silver bullion from Austin, valued at \$48,000, and seven bars from Belmont, valued at \$8,000, making a total shipment of forty-four bars, with a total value of \$56,000.

CHEAPER WATER WANTED.—The miners of Moore's Flat, Nevada county, have struck for a reduction in the price of water. They want water at 8 cents per inch. The price heretofore has been 12½ cents.

LAND COMMISSIONER.—The President has nominated Samuel S. B. Brndett, of Missouri, Commissioner of the General Land Office, vice Drummond, resigned.

The Yuba and Feather rivers are very full, the warm weather lately having caused the snow in the mountains to melt rapidly.

The Abbot Quicksilver Co. has removed its principal place of business to Colusa from this city.

GUERNEVILLE, Sonoma county, is very much excited on the subject of quicksilver mining. A district has been formed called the Guerneville Mining District, and N. E. Manning elected Recorder. The excitement is so great that the hands at the saw-mill all left and went prospecting, so the mill was shut down.

The Carson *Appeal* says the town of Empire is busy in every department. The mills have all the ore they can reduce, and all the water and wood they want, and are running at full capacity. The Carson river is yet in its banks.

The mills are all in full blast along the Carson river and on all the cañons. As yet, the wagon-roads are not in first-rate order, but the teamsters manage to haul sufficient ore to the outside mills to keep them in operation.

The Mechanics' Institute Fair building will shortly be commenced. The bids were opened on Friday and the contracts will be awarded on Monday, so that work on the building will be started immediately.

STRATTON BROS. are engaged in raising by hydraulic power a four story brick building on California street. The building has a frontage of 40 feet, and is being raised so that the cellarage will be available for business purposes.

The imports of silver ore into Liverpool in March amounted to 360 tons, and of silver-lead ore about 130 tons.

TWO HUNDRED and twenty-two tons of rock recently crushed at the San Bruno mine, Calaveras county, yielded \$55.50 per ton.



Each issue contains sixteen well filled pages, Original and Choice Engravings, Editorials on Home Industries, On various kinds of Stock-rearing, On Horticulture and Gardening, Correspondence from Farming Districts, Answers and hints to Correspondents about Local Farming, Good Health and Useful Information, Reports from Granges and Farming Clubs, Mechanical and Scientific progress, Agricultural Notes from all quarters, Domestic Produce Markets, Home Circle, Domestic Economy, Mechanical Hints and Domestic Receipts, Home and Farm Matters. Affording, in all, more of real instructive and profitable matter for general readers than any other weekly on this side of the Continent.

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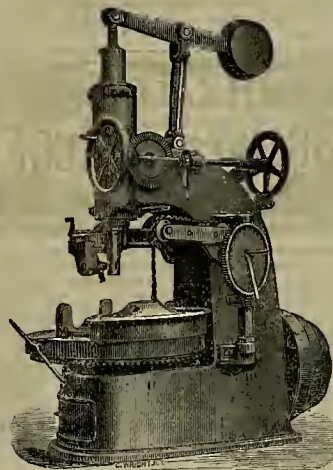
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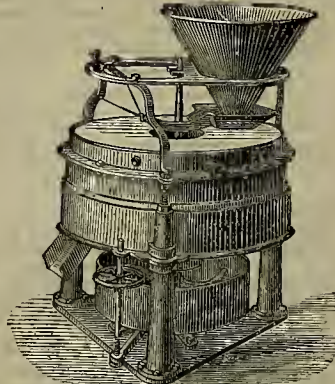
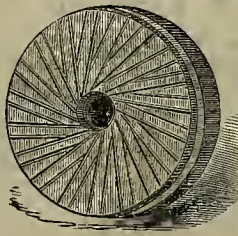
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Mill Picks, Mill Picks Dressed, Mill Stones Re-paired and Rebuilt.

Mill Stones Balanced with FELLENEAUM'S PATENT BALANCE, of which I am sole proprietor for California, Oregon, and Washington Territory.



SAN FRANCISCO METAL MARKET.

WEDNESDAY M., April 29, 1874.

Quicksilver is quoted at \$1.35 in this market. The advance was made on receipt of news that the price in New York was ruling at \$1.50.

Scotch Pig Iron, 10 tons.....	\$2 00	—
White Pig, 10 tons.....	\$2 00	—
Sheet, No. 10 to 12.....	—	3 1/2
Refined Bar, good assortment, 10 tons.....	—	4
Boiler, No. 1 to 4.....	—	5 1/2
Plate, No. 10 to 12.....	—	5 1/2
Sheet, No. 10 to 12.....	—	5 1/2
Sheet, No. 14 to 20.....	—	5 1/2
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The Ward mining bill, which was first referred to the Committee on Public Lands, and afterwards to the Committee on Mines and Mining in Congress, is still in the hands of the latter committee. It is to be hoped that the bill will be killed when again brought before the House; and no doubt the Pacific Coast delegation will do their best to give it a quietus.

More mining will be done this year in West Point District, Calaveras county, than in the last ten years. The success attending deep excavations has given a permanent impetus to quartz mining in that section.

The Crown Point 1,400 foot level is opening out splendidly and the fine ore body recently developed by the east drift is now nearly 60 feet wide, being twice as wide as on the level above, and no east wall reached as yet.

A FORTY-TON furnace has been put up on the Buena Vista mine, San Luis Obispo county, and three tanks of quicksilver produced at the first run.

Five hydraulic claims are at present working in the vicinity of Mokelumne Hill and are paying well.

CINNABAR City is the name of a new town near the Amador quicksilver mine, El Dorado county.

The Summit shaft of the Meadow Valley mine at Pioche is down 1,014 feet.

MINERS are beginning to migrate from the various northern towns of Oregon.

BULLION shipments from the Raymond & Ely mine on April account aggregate \$62,400.

A MUSTARD plaster is the latest and instant cure for poison oak.

The Silver Hill hoisting and pumping works are again in full blast.

The busy season at Eureka is now fairly inaugurated.

CONCENTRATION WORKS are to be erected at Granite, Colorado.

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BY CUIDO KUSTEL, MINING ENGINEER AND METALLURGIST.

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This rare book on the treatment of gold and silver ores without quicksilver, is liberally illustrated and contains full of facts. It gives short and concise descriptions of various processes and apparatus employed in this country and in Europe, and explains the why and wherefore.

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LOCK FACTORY AND MACHINE SHOP,

No. 20 Fremont street, near Market, S. F.

Manufacture all kinds of Brass Goods, Brass Castings, Babbit Metal and Brass Ship Work, Ship Locks, Brass Padlocks, with Cylinder Keys, Railroad and Express Locks. Locks of every description made on receipt of Sample Key. All orders attended to with promptness, and satisfaction guaranteed. 14v7-1f

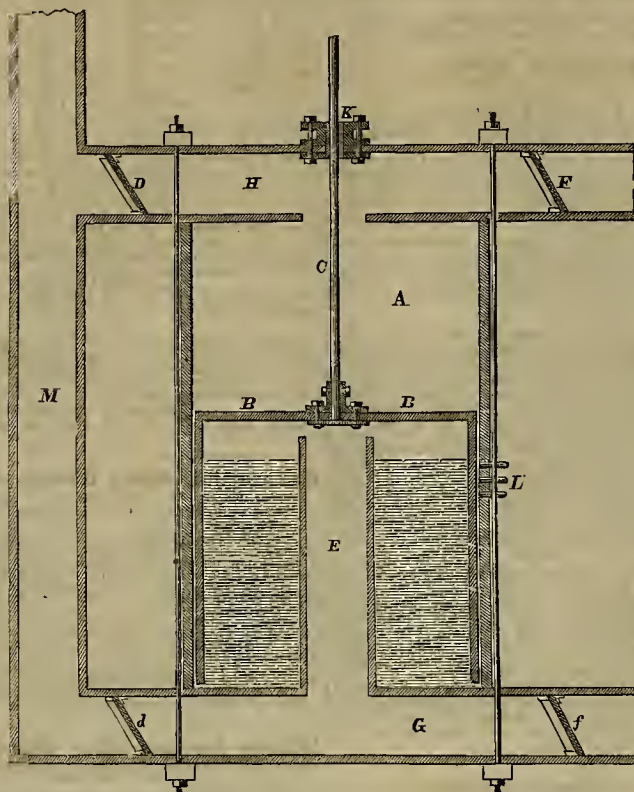
Miners' Foundry and Machine Works,

CO-OPERATIVE,

First Street, bet. Howard and Folsom, SAN FRANCISCO
Machinery and Castings of all kinds.

Williams' Swimming Air Machine.

IT CAN BE PLACED AT ANY REQUIRED DEPTH IN A MINE, AND AT THE SAME TIME RECEIVE ITS SUPPLY OF FRESH AIR FROM THE SURFACE.



The cut represents a model of Williams' Swimming Air Machine for Ventilating Mines and Deep Shafts, etc. NO GREASE OR OIL IS USED, thus preserving the air in its pure State.

The Smallest Machine, with a 6-foot stroke, will deliver 3,732,480 cubic inches of cool condensed air in one minute.

In consequence of the swimming of the machine in water, a small amount of power will work it. The inventor is a practical Mining Engineer, and understands the injury to health and strength of miners resulting from hot and impure air, as well as the GREAT ECONOMY of thorough ventilation in mines.

A working model can be seen at No. 13 Drumm street. Mines ventilated, inspected and reported on the most reasonable terms by the undersigned.

Rights to use this machine will be sold on reasonable terms. Address,

WILLIAM WILLIAMS,

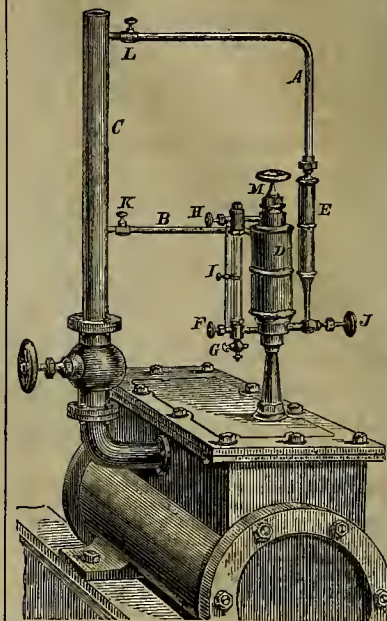
P. O. Box 520, San Francisco.

Caveat filed 17th day of January, 1874.

THE MACHINE IS DOUBLE-ACTING, THEREBY FURNISHING A STEADY, UNIFORM CURRENT OF AIR—PUMPED, MOISTENED AND COOLED BY CONTACT WITH WATER SURFACE.

Machinery.

N. Seibert's Eureka Lubricators.



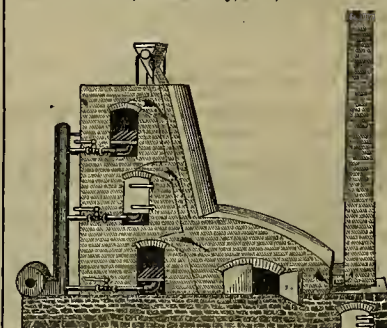
THE HIGHEST PREMIUM

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stops; H, F, valves to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Manufactured by California Brass Works, 126 First street, S. F. 24v231f

EAGLE IMPROVED CHLORINIZING AND DESULPHURIZING FURNACE.

(Patented July, 1873.)



The Cheapest and Most effective Furnace now in use. Parties desirous of building above furnace, or for any information on same, address,

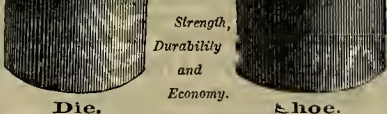
I. T. MILLIKEN,

No. 302 Montgomery at., room No. 14, S. F.

STEEL SHOES AND DIES

FOR QUARTZ MILLS,

Made by our improved process after many years of patient research and experiment. We have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for



Will wear three times longer than any iron Shoes.

BUILDERS AND CONTRACTORS

Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and general Mining Machinery in all its details and furnishes of Mining Supplies.

All orders promptly filled.

MOREY & SPERRY,

Liberty St., N. Y.

Examination solicited. 9v28-1y

THEODORE KALLENBERG.

MACHINIST,

and Maker of Models for Inventors. All kinds of Dies Stamps and Punches made. Also, all kinds of Small Gears Cut.

Repairing done on very Reasonable Terms and in the best manner. No. 32 Fremont street, S. F. 19v23-3m

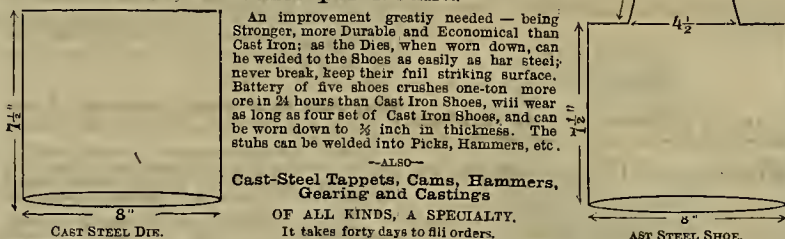
MILLMEN.

Boss' Quicksilver Pump saves labor and waste of metal. Address, M. P. BOSS, Bullionville, Nev. 15v7-5m

CAST STEEL SHOE AND DIE COMPANY,

OFFICE—Room 28, Hayward's Building, 419 California St., S. F.
Patented CAST STEEL SHOES & DIES for Quartz Mills.

Price, 20 cents per Pound.



An improvement greatly needed—being Stronger, more Durable and Economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as bar steel; never break, keep their full striking surface. Battery of five shoes crushes one-ton more ore in 24 hours than Cast Iron Shoes, will wear as long as four sets of Cast Iron Shoes, and can be worn down to 1/8 inch in thickness. The stubs can be welded into Picks, Hammers, etc.

—ALSO—
Cast-Steel Tappets, Cams, Hammers, Gearing and Castings

OF ALL KINDS, A SPECIALTY.

It takes forty days to fill orders.

CALIFORNIA BRASS FOUNDRY,

No. 125 First street, opposite Minna,
SAN FRANCISCO.

ALL KINDS of Brass, Composition Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Knicker Braces, Hinges, Ship and Steamboat Bells and Gongs of superlative tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch
J. H. WEED, V. KINGWELL

VULCAN IRON WORKS,

MANUFACTURERS OF

MACHINERY OF EVERY DESCRIPTION.

SOLE MANUFACTURERS OF

MOORE'S PATENT STORE HOIST.

N. D. ARNOT, Manager,

15v28-3m 135 and 137 Fremont Street.

THOMPSON BROTHERS,

EUREKA FOUNDRY,

129 and 131 Beala street, between Mission and Howard,
San Francisco.

LIGHT AND HEAVY CASTINGS,

of every description, manufactured. 24v16-9

Diamond Drill Co.

The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for this IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

A. J. SEVERANCE & CO.

Office, No. 315 California street, Rooms 16 and 17. 24v25-1f

BUY BARBER'S BIT BRACE.

LONDON ASSURANCE CORPORATION.



The Oldest and Wealthiest

Fire Insurance Company doing business in America.

Risks taken at current rates.

CROSS & CO., General Agents,

316 California Street, S. F. fehl4-eow-bp

L. & J.W. FEUCHTWANGER

CHEMISTS & IMPORTERS.

Address 55 CEDAR ST. NEW YORK

SOLUBLE GLASS & SILICATES,

OXIDE OF MANGANESE FOR STEEL,

GLASS & PATENT DRYERS,

FLUORSPAR, FELSPAR, FLINT,

NICKEL-SALTS, ASBESTOS,

BLACK LEAD, METALS, & C. & C.

PUBLISHERS OF TREATISES ON "GEMS,"

"SILEX" AND "FERMENTED LIQUORS."

10v28-3m

THE SELDEN

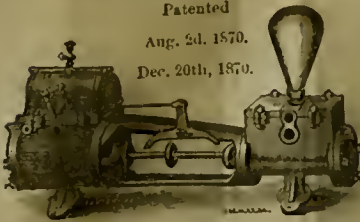
DIRECT-ACTING STEAM PUMP,

A. CARR, Manufacturer & Proprietor.

Patented

Aug. 2d, 1870.

Dec. 20th, 1870.



Combining simplicity and durability to a remarkable degree. Its parts are easy of access, and it is adapted to all purposes for which Steam Pumps are used.

As a Mining Pump it is Unsurpassed.

STEAM, GAS & WATER PIPE, BRASS WORK, STEAM & WATER GAUGES, FITTINGS, ETC.

CARR PATENT STEAM RADIATOR.

Send for Price List and Circulars. Address,

A. CARR,

10v28-ly 43 Courtland Street, New York.

THE

AMERICAN TURBINE WATER WHEEL.



Recently improved and submitted to thorough scientific tests by James Emerson, showing the following useful effect of the power of the water utilized, being

THE HIGHEST RESULTS EVER KNOWN.

Percentage of part gate, $\frac{1}{2}$ 50.08; $\frac{3}{4}$ 69.64; $\frac{5}{8}$ 78.73; $\frac{1}{4}$ 82.53; $\frac{1}{2}$ 82.90. Percentage of whole gate, 83.14.

Mr. Emerson says: "These are the best average results ever given by any Turbine Wheel in my experience."

A splendidly illustrated descriptive catalogue, or any further information desired, furnished on application to


TREADWELL & CO.,

SAN FRANCISCO, CAL.

Sole Agents for the Pacific States and Territories.

ap25-4f

TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

All persons infringing on either of these patents WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under CRAIG's, Rice's, Macey's and Hoskin's patents.

I Guarantee Full Indemnity to all my Customers.

Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an improved LITTLE GIANT.

For further particulars apply to

R. HOSKIN, Dutch Flat,

Or R. R. & J. CRAIG,

Room 6, 240 Montgomery st., S. F.

WILLIAMSON & CORY, Marysville. Agents

Dutch Flat, August 10, 1873.

6v27-2m


STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

10v27f J. HENDY, No. 32 Fremont Street.

CROCKER'S PATENT

TRIP HAMMER QUARTZ BATTERY.



This machine, complete, weighs 1,500 lbs. Has an iron frame, five steel arms with stamps weighing 17 lbs. each, which strike 20 blows per minute, in a mortar provided with screens on both sides, and crushes 750 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$700.

G. D. CROCKER,

17v26-4f 315 California street, San Francisco.

Metallurgy and Ores.

JOHN TAYLOR & CO.,

IMPORTERS OF AND DEALERS IN

ASSAYERS' MATERIALS

Chemical Apparatus and Chemicals.

Druggists' Glassware and Sundries,

PHOTOGRAPHIC GOODS, ETC.,

512 and 514 Washington street, SAN FRANCISCO

We would call the special attention of Assayers, Chemists, Mining Companies, Milling Companies, Prospectors, etc., to our large and well adapted stock of

ASSAYERS' MATERIALS

—AND—

Chemical Apparatus,

Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.

Our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for computation of assays in Grains Grammes, will be sent free upon application.


7v25-4f JOHN TAYLOR & CO.

CALIFORNIA

Quartz Crushing & Ore Sampling

MILLS.

Nos. 413 & 415 Mission st., bet. First & Fremont, S. F.



Ours is the OLDEST, LARGEST and MOST EXTENSIVELY KNOWN establishment of this kind on the Coast.

Our mills are under the direct supervision of one of the most experienced Samplers and Millmen in the country, and we purpose carrying on the business upon a scale commensurate with the wants of the mining public.

We have the best facilities for Crushing, Sampling and Pulverizing all classes of Gold, Silver, Copper and Lead Ores and other minerals.

We also crush and pulverize all kinds of Marble, Fire-Clay, Bricks, Coke, Cement, etc., upon the shortest notice, for which we have special mills.

Reliable information furnished to miners and ore dealers concerning shipments, freights, prices, etc.

Prompt execution of all orders. Faithful attention to business entrusted to us.

Abundant storage room without extra charge.

ja31-4f "JIM" WHITLATCH, Sup't.

Important to Miners and Mill Men.

Silver-Plated Copper Amalgamating Plates, for Saving Gold.

Of all sizes and in any quantity, furnished to order. Full instructions sent for operating. Particular attention given to plating goods for Builders, Plumbers, etc. Hotel and Restaurant work replated.

SAN FRANCISCO GOLD AND SILVER PLATING WORKS,

655 Mission street, San Francisco.

2v25-3m E. G. DENNISTON, Proprietor.

RODGERS, MEYER & CO.,

COMMISSION MERCHANTS,

ADVANCES MADE

On all kinds of Ores, and particular attention

PAID TO

CONSIGNMENTS OF GOODS.

4v16-3m

Richardson & Co., Copper Ore Wharves, SWANSEA.

RICHARDSON & CO. have been for thirty years established in Swansea as Agents for the preparation, Sampling, Assaying and sale of Copper, Silver, Gold, Lead, Zinc, and all other Ores and Metals, for which they have extensive Warehouses and Wharves under cover, 1,000 feet of Quay Frontage with the Floating Dock, and the most complete Machinery and Appliances. They are also prepared to make advances against Ores in anticipation of realization, and to guarantee all payments when required.

2v24-4y

Varney's Patent Amalgamator.

These Machines Stand Unrivaled.

For rapidly pulverizing and amalgamating ores, they have no equal. No effort has been, or will be spared to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits.

They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows.

The pan being filled, the motion of the muller forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular flow between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.

Settlers made on the same principle excel all others. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed.

Mill-men are invited to examine these pans and settlers for themselves, at the office, 229 Fremont Street, San Francisco.

E. N. RIOTTE, JAS. L. BEYEA, S. O. BROWN.

AUBURN MILL COMPANY,

Reno, Nevada.

Purchase Silver Ores in quantities of ten tons and upward, delivered on board the cars at San Francisco or Oakland at the annexed Net Rates, WITH NO CHARGE FOR SAMPLING OR REDUCTION. On lots of less than 10 tons, freight to Reno will be deducted.

Special Rates for Gold Ores.

On Gold contained in Silver Ores to the amount of \$30 and upwards, 63 per cent. will be paid. When less than \$30, and above \$10, the amount will be added to the Silver value. Sacks promptly returned free of charge. Ores assayed by Battery or Sampling Mill as shipped may elect, and returns made promptly by cheque on San Francisco.

Rates:

Assay	Per Cent.	Value.	Assay	Per Cent.	Value.	Assay	Per Cent.	Value.	Assay	Per Cent.	Value.
60	25	\$90	38	125	47	\$166	57	\$250	66	\$450	76
68	27	\$95	39	128	48	175	58	263	67	500	77
70	28	\$95	40	133	50	183	59	275	68	500	78
73	30	\$98	41	137	51	200	61	283	70	700	79
76	31	100	42	142	52	216	62	300	71	800	81
80	33	107	43	146	53	230	63	350	72	900	82
83	35	112	44	150	54	239	64	475	74	1000	83
88	37	119	45	158	56	240	65	400	75	2000	84

And on intermediate values in proportion.

C. A. LUCKHARDT, Agent.

21 First St., San Francisco.

S. O. BROWN, Manager,

Reno, Nevada.

3v28-6m

Nevada Metallurgical Works,

21 First street.....San Francisco.

Ores worked by any process.

Ores sampled.

Assaying in all its branches.

Analysis of Ores, Minerals, Waters, etc.

Plans furnished for the most suitable process for working Ores.

Special attention paid to the Mining and Metallurgy of Quicksilver.

E. N. RIOTTE,

C. A. LUCKHARDT,

Mining Engineers and Metallurgists.

Morris' Settler and Amalgamator.

PATENTED MARCH 25, 1873.

An important improvement in milling. Cheap, light, efficient and durable. Gains Quicksilver on working tailings. Is discharged from the surface in the center instead of the side, by means of a Syphon which extends to near the center of the Settler. Heaviest casting weighs only 135 pounds. The sides and bottom of the Settler are made of wood, as also Mullers, placed vertically—the friction of which brightens the quicksilver. One of these machines is in daily operation at No. 616 Merchant street, (basement), San Francisco. Parties desiring information as to rights of use, purchase, etc., can address,

FREDERICK MORRIS,

616 Merchant St., S. F.

Ores Assayed and Amalgamated. 8v28-3m

ORE BAGS FOR SALE

IN QUANTITIES TO SUIT.

Apply to

CROSS & CO.,

315 California street, San Francisco.

G. W. STRONG, W. L. STRONG.

STRONG & CO.,

Metallurgical Works,

No. 10 Stevenson Street, near First, SAN FRANCISCO.

We purchase high grade Gold and Silver Ores, Bullion, Etc. Ores worked and tested with care; also, Ore Assays of Gold, Silver, Copper, Lead, Tin, Iron, Manganese, Cinnabar, Nickel, Etc.

PLATINUM

Vessals, Apparatus, Sheet, Wires, Etc., Etc.

For all Laboratory and Manufacturing Purposes

H. M. RAYNOR,

35 E. Market Street, New York.

Platinum Scrap and Native Platinum purchased.

Quicksilver.

Parties working Quicksilver Ores can obtain the right to use highly successful patented improvements for condensing fumes and working scot, by addressing

F. FIEDLER,

New Almaden,

13v28-3m

CHARLES F. KIRCHNER,

Sampler and Crusher of Ores,

NO. 11 DRUMM STREET,

San Francisco.

LEOPOLD KUH,

(Formerly of the U. S. Branch Mint, S. F.)

Assayer and Metallurgical

CHEMIST,

No. 611 Commercial Street.

(Opposite the U. S. Branch Mint.

SAN FRANCISCO CAL.

7v21-3m


PACIFIC LAMP MANUFACTORY.

EMILE BOESCH,

PATENTEE AND MANUFACTURER OF

LAMPS, LANTERNS AND REFLECTORS,

802 MONTGOMERY STREET, SAN FRANCISCO.



New Mining & Mill Lights.

21v27-cow-3m

The California Powder Works

No. 314 CALIFORNIA STREET.

SAN FRANCISCO.

Manufacturers and have constant on hand

SPORTING,

MINING,

And BLASTING

POWDER,

Of SUPERIOR QUALITY, FRESH FROM THE MILLS. It being constantly received and transported into the interior, is delivered to the consumer within a few days of the time of its manufacture, and is in every way superior to any other Powder in Market.

We have been awarded successively

Three Gold Medals

By the MECHANICS' INSTITUTE and the STATE AGRICULTURAL SOCIETY for the superiority of our products over all others.

We also call attention to our

HERCULES POWDER.

Which combines all the force of other strong explosive now in use, and the lifting force of the BEST BLASTING POWDER, thus making it vastly superior to any other compound now in use.

A circular containing a full description of this Powder can be obtained on application to our Office.

16v20-3m JOHN F. LOHSE, Secretary.

FRANCIS SMITH & CO.,

MANUFACTURERS OF

HYDRAULIC PIPE

AND

Artesian Well Pipe.

Having the Latest Improved Machinery, we can make it an object to

Mining & Water Companies

OR

WATER WORKS,

TO CONTRACT WITH US FOR

SHEET IRON PIPE.

ALL SIZES MADE AND ALL WORK GUARANTEED

OFFICE AT 112 BATTERY ST.,

SAN FRANCISCO.

ja3-4f

The Phelps' Manufacturing Co.,

(Late S. F. Screw Bolt Works.)

MANUFACTURERS OF ALL KINDS OF

Machins Bolts, Bridges Bolts, and Ship or Band Bolts.

13, 15 and 17 Drumm Street, San Francisco. 4v241y

Steam Boiler Manufactory

—OF—

JAMES H. SHANLEY, Successor to D. McDonald,

Oregon street, below Front, San Francisco.

All Sorts of Steam Boilers Made to Order and Repaired.

Also, all kinds of Sheet Iron Work done promptly, and at prices to suit the times.

1v27

Brittan, Holbrook & Co., Importers of

Stoves and Metals, Tinners' Goods, Tools and Machinery;

111 and 117 California St., 17 and 19 Davis St., San Francisco, and 178 J St., Sacramento.

mar-1y

THE KNOX & OSBORN QUICKSILVER FURNACE.

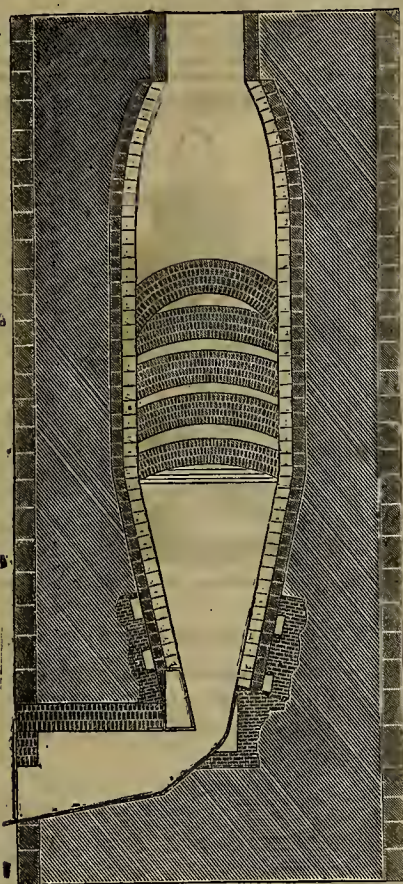


Fig. 1.—Cross Section of Furnace, Walls and Vapor Way Arches.

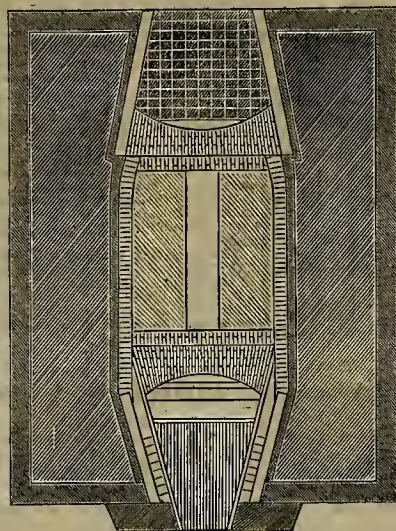


Fig. 3.—Horizontal Section at Fire-Grate Level.

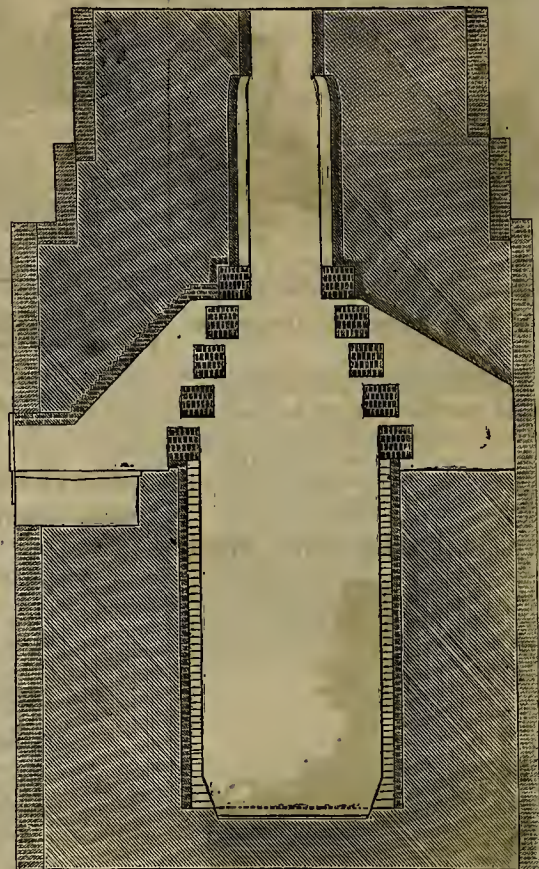


Fig. 2.—Cut Transversely from Fig. 1.

THIS FURNACE REDUCES CINNABAR, AND

WORKS CLOSER TO AN ASSAY

And at LESS COST per ton than any other furnace. It will work continuously Twelve to Twenty-four months without stopping.

No Man Has Ever Been Salivated

Or otherwise affected by the mercury about the furnace, either in operating it or making repairs. For full particulars, plans, etc., apply at

19 AND 21 FIRST STREET, SAN FRANCISCO.

TO KNOX & OSBORN.

W. T. GARRATT & CO.
CITY
Brass and Bell Founder,
Corner Natoma and Fremont Streets,
MANUFACTURERS OF
Brass, Zinc and Anti-Friction or Babbet Metal
CASTINGS,
Church and Steamboat Bells,
TAVERN AND LAND BELLS, GONGS,
FIRE ENGINES, FORCE AND LIFT PUMPS.
Steam, Lignor, Soda, Oil, Water and Flange Cocks,
and Valves of all descriptions, made and repaired.
Hose and all other Joints, Spelter, Solder and Copper
Rivets, etc. Gauge Cocks, Cylinder Cocks, Oil
Globes, Steam Whistles. HYDRAULIC PIPES AND
NOZZLES for mining purposes. Iron Steam Pipe furnished
with Fittings, etc. Coupling Joints of all sizes.
Particular attention paid to Distillery Work. Manufacturer
of "Garratt's Patent Improved Journal Metal."
Highest Market Price paid for OLD BELLS, COPPER
AND BRASS. 6-11
W. T. GARRATT, JAMES HILLMAN, W. T. LITTLE.

N. W. SPAULDING,
Saw Smithing and Repairing
ESTABLISHMENT.

Nos. 17 and 19 Fremont Street, near Market.

MANUFACTURER OF
SPAULDING'S
Patent Tooth Circular Saws.
They have proved to be the most durable and economical
Saws in the World.
Each Saw is Warranted in every respect.
Particular attention paid to construction of
Portable & Stationary Saw Mills.
MILLS FURNISHED AT SHORT NOTICE
At the lowest Market Prices.

THE ONE-PLUNGER JIG,
Delivered on R. R. Car at Denver, Col.,
or St. Louis, Mo.,
Separates in one and the same operation—1. galena
and sulphide of silver; 2. pyrites or blende; 3. tailings,
containing no valuable parts; or, 1. gold; 2. pyrites; 3.
tailings (quartz, etc.) containing no valuable parts; or,
1. copper; 2. tailings, containing no valuable parts.
The One-Plunger Jig can be combined with existing
stamp-mills with highly important advantages, as after
amalgamation it will recover completely all fine metal
and all base ores and all mercury out of tailings. It
concentrates all fine metal ores to such cleanliness that
low grade ores can be shipped, after concentration, as
first-class ores. Its feed and discharge are automatic.
Its construction offers better guarantee against loss and
repairs than any other apparatus in use. For particulars,
apply to the inventor,
F. CAZIN,
Mining and Civil Engineer, Denver City, Col.
L. Box 2225, 13v28-1y

GIANT POWDER.

Patented May 26, 1868.

THE ONLY SAFE BLASTING POWDER IN USE.

GIANT POWDER, NO. 1.

For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

GIANT POWDER, NO. 2.

For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.
Its EXCLUSIVE use saves from 30 to 60 per cent. in expenses, besides doing the work in half the time
required for black powder.

The only Blasting Powder used in Europe and the Eastern States.

v22-3m16p

BANDMANN, NIELSEN & CO.,
General Agents, No. 210 Front Street.

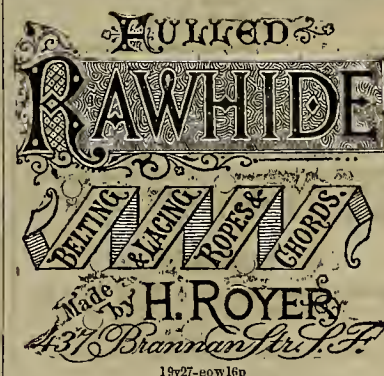
THE PACIFIC REDUCTION WORKS,
GUIDO KUSTEL, - - - Superintendent,
WILL PURCHASE

Gold and Silver Bearing Ores, Cupiferous Silver Ores,
GOLD SULPHURETS, ETC., AT THE HIGHEST RATES,
OR WORK THE SAME FOR OWNERS' ACCOUNT.

The works will commence operations on or about the 1st of April. Sampling, Assaying of all kinds of Ore,
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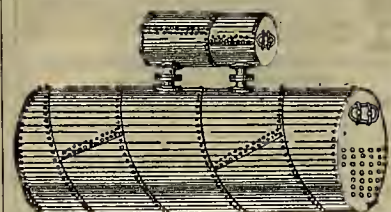
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MINING AND SCIENTIFIC PRESS

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SAN FRANCISCO, SATURDAY, MAY 9, 1874.

VOLUME XXVIII
Number 19.

Society of Engineers of California.

The Society of California Engineers held its first ordinary meeting on Tuesday evening, at the Third District Court Room, Mechanics' Institute. Cards of invitation having been issued by the members, the attendance was composed principally of the proprietors and experimenters of the various foundries and machine shops in the city. The President, Mr. G. F. Allardt, addressed the Society briefly in relation to the field for research open to it, and its prospects for the future. He enumerated the different subjects of local interest which it would be well for the members to touch upon in their investigations, and took occasion to suggest that the Society should be careful in selecting new members, choosing only those who were worthy of being admitted, as experts in some special branch.

Mr. J. Spiers, M. E., of McAffee & Spier's Boiler Works, read a highly interesting paper on the subject of "Boiler Pressure." Mr. Spiers is a practical boiler maker, and his views were listened to attentively by those present. His paper was quite exhaustive, and was filed for future publication. There was some little discussion on the conclusion of the reading of the paper, which was engaged in by Messrs. Dickie, Hanscom and Spiers.

Col. W. J. Lewis, C. E., then read a paper "On the Calculation of Earthwork," illustrating his remarks with wooden models of the various forms of which he spoke. His paper was rather abstruse, and as frequent reference was made to letters and figures on the models which could not be seen by the audience, it was difficult to follow him in his line of argument. A blackboard will, however, be furnished by the next meeting, when such subjects can be better explained by means of figures.

The following papers are announced as being in preparation for the society: "On Compound Engines," by Mr. G. W. Dickie, mechanical engineer, of the Risdon Iron Works; "On Quartz Mining Machinery," by Irving M. Scott, of the Union Iron works, mechanical engineer; "On the Mechanical Condensation of Vapors," by James R. Smedberg, consulting engineer of the San Francisco Gas Light Co. "On Sea Diving," by Mr. C. H. Longee, submarine explorer.

The society has made a good start, and is composed of the right sort of men to undertake and carry on such an organization. The present members are: G. F. Allardt, civil engineer; G. W. Dickie, Risdon Iron Works, naval engineer; Melville Atwood, mining engineer; C. H. Longee, submarine explorer; A. V. Ojeda, engineer of steam marine; Samuel H. Wheeler, mechanical engineer; James R. Smedberg, gas engineer; Irving M. Scott, Union Iron Works; W. A. Goodyear, mining engineer, late of the geological survey; Joseph Moore, Risdon Iron Works, mechanical engineer; William J. Lewis, civil engineer; A. C. Dithmar, mechanical engineer; W. A. Phillips, engineer of steam marine; W. W. Hanscom, Etna Iron Works; James Spiers, mechanical engineer; J. Bermingham, mechanical engineer; A. S. Hellidie, President Mechanics' Institute; William R. Eckart, Marysville Foundry; David Stoddard, mechanical engineer.

The officers are as follows: President, Geo. F. Allardt, C. E., Engineer Tide Land Commission; Vice-President, W. W. Hanscom, proprietor Etna Iron Works; Treasurer, Geo. W. Dickie, Risdon Iron Works, Mechanical Engineer; Secretary, Jas. R. Smedberg, Consulting Engineer S. F. Gas Light Co.

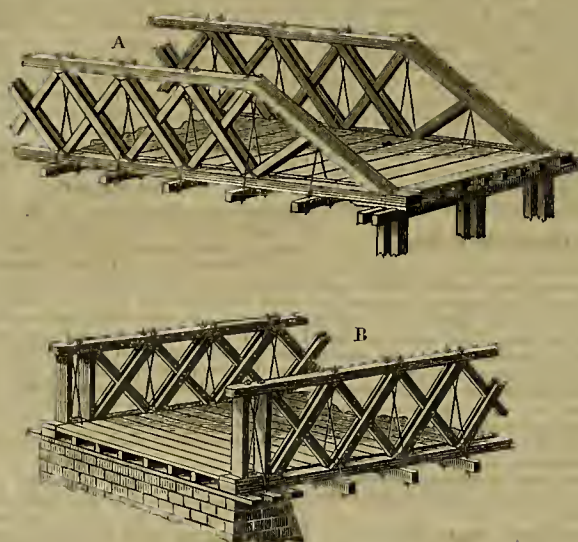
Applications for membership should be addressed to James R. Smedberg, Secretary Society of Engineers of California, Gas Office, San Francisco.

SIEBERT VS. GARRATT.—The long contested infringement case of Siebert vs. Garratt, which involved the ownership of an invention claimed by both parties, for an improved lubricator for steam engines, has recently been decided by the Supreme Court of the United States in favor of Siebert. Another suit is now pending in the U. S. Circuit Court in this city, wherein Siebert, as plaintiff, demands that Garratt's patent be declared void. The real question at issue, however, is settled by the decision of the Supreme Court and the new suit is merely a matter of form to clear the illegally issued patent from the records.

Improved Truss for Bridges.

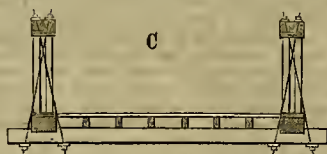
Benjamin F. Graham, of San José, Santa Clara county, California, has recently patented through the Agency connected with this office, an improvement in trusses for bridges. The improvement consists mainly in a novel combination of braces, placed angularly to each other, and transversely to the length of the bridge, by which the inventor is enabled to do away with the outside struts or braces ordinarily employed to steady the trusses from each side. He is also enabled by the use of these rods to straighten and set up any truss which may have become inclined or bent by reason of weakness in the top chord.

The accompanying cuts show the general



GRAHAM'S IMPROVED BRACE FOR TRUSS BRIDGES.

design of the improved truss. A and B represent two perspective views, showing an ordinary truss bridge to which these rods have been applied. C is a transverse section. The rods which unite the upper and lower chord and pass through the sills are set at an angle, so that each pair cross each other, as shown. The



Section Showing Braces.

upper and lower ends may pass vertically through the chords, as the incline will be very slight in a truss of ordinary height, and the rods will easily spring sufficiently to cross each other as desired. When everything is in place, the nuts at top and bottom are screwed up, thus holding the whole truss vertically.

If an old truss has become inclined to one side or the other, the nuts may be loosened, and those upon one side or the other may be screwed up until the truss assumes an upright position, after which all the nuts can be set up tight. In cases where the upper chord proves weak and shows a tendency to buckle, these cross-rods and nuts offer a ready means of straightening it and preserving it in line; and, on new work, all the braces which are usually placed outside the truss and at right angles with the length of the bridge, can be dispensed with, the rods making the whole sufficiently stiff.

There is not a shadow of truth in the story lately published to the effect that 1,000 additional miners were to be set to work in the Belcher mine. They have all the men they can work.

California Earthen and Stone Ware.

The articles coming under this head form a class which it is very essential to have included in our home productions, their bulk and liability to breakage making them objectionable as articles of transportation. This want has been well supplied by the Pacific Pottery, whose advertisement will be found in our columns. The manufactory is at Sacramento, and is the oldest pottery in the State. It has been in the hands of the present company over ten years, and they have certainly achieved marked success. Their ware is not excelled by any of Eastern manufacture, and can be bought at rates quite as low, exclusive of transportation.

We were led to examine the condition of this

Litigation Among the Powder Companies.

The consumption of powder on this coast in mining operations alone is very great, and since bank blasting on the gravel mines has been commenced, this consumption has increased largely. There are several powder companies and agencies on this coast, all of which are doing a remunerative business in supplying this heavy demand, and there is now likely to be trouble among them. The use of nitro-glycerine for blasting and kindred purposes has become very prevalent, but in all cases this article is combined with other substances, to render it less dangerous to handle. Experiments were tried, in order to render it safe, by mixing it with common black powder, chalk, cotton and other substances, but the most effective one tried has been infusorial earth. With most of the other substances, the nitro-glycerine, under certain temperatures and conditions, exudes from the package and again becomes as dangerous as before.

The two companies in this city making compounds of nitro-glycerine and other substances as an explosive, are the Giant Powder company and the California Powder company, the latter of which manufactures what is known as Hercules Powder. Both of these brands of powder are used extensively in the mining regions of this coast. The Giant Powder company of this city and the Atlantic Giant Powder company of New York, own a number of patents for the manufacture of the article, which they obtained from the inventor, Mr. Nobel. These companies now claim that the California Powder company are manufacturing the Hercules Powder in the same manner that Giant Powder is made, and are infringing on the Nobel patents, which the Giant Powder company own.

The invention of Nobel rendered nitro-glycerine a safe compound to handle and the patents are therefore of great value. The two Giant Powder companies have accordingly entered suit against the California Powder company, J. H. Baird, J. B. Haggin, and others of this city. In the east the firm of Bakewell, Christy & Kerr, of Pittsburgh, and S. S. Fisher of New York, late Commissioner of Patents, have been retained, while here Hall McAllister, Alfred Rix, M. A. Wheaton, and J. F. Cowdery have been employed. It is stated that other suits against the consumers of what is known as Hercules Powder will be commenced immediately in each State and Territory this side of the Rocky Mountains, and on the other side a like series of actions is being instituted. The representatives of the California Powder company claim that they are not infringing upon the patents of the Giant Powder company, but are making their powder in a way of their own. Preparations for this suit have been going on for some time, but it is only this week that active measures have been taken. The California Powder company desires to state that they are willing to give a full guarantee to consumers and dealers against all damages from these suits.

RICH ORE.—We recently received a specimen of silver ore from the claims of Dorr, Hunt & Arnold, in Loebner district, 15 miles south of Helena, M. T. In appearance it strongly resembles the mixed colored sulphuret ore of the Comstock. The company own a tunnel right of 3,000 feet on the east side of Red mountain, a mill site and 200 acres of pasture. They claim four veins with galena ores assaying from \$100 to \$500 per ton. Mr. Lewis Dorr, of Yuba City, California, one of the proprietors, intends leaving for the mine this spring.

YAKIMA MINES.—A private letter received in Portland from the Yakima mines states that some very flattering prospects had been obtained at each of the two camps on the main river, as well as those originally discovered at Swauk creek, and the miners are of the opinion that fair wages can be realized throughout the present season.

The Eureka Consolidated Mining Company paid a dividend of \$1 per share this month, amounting to \$50,000, the first paid since last September.

particular market by enquiries from parties wishing to purchase drain-tile. For their information we have obtained from Mr. Owens, the agent in this city, the following list of prices of the articles referred to: Three sizes of drain-tile are made by them—2, 3 and 4 inches—the prices being \$6, \$8 and \$12.50, respectively, per hundred feet.

The variety of articles made by this company is extensive, embracing all that is requisite in this line for housekeeping, draining, manufacturing, gardening and agricultural purposes. The merits of their sewerage pipe have been tested and endorsed by the leading architects and owners of real estate in this city; while their fire brick has been pronounced superior to that imported from England.

This company is now making improved irrigation pipes—their own patent—which will undoubtedly prove an efficient aid in this important department of California farming.

Mr. J. B. Owens has for three years been the San Francisco agent for the Pacific Pottery, and by his business tact and reliability has secured for the establishment an extensive trade and one that is rapidly increasing. To San Franciscans a compliment to Mr. Owens would be superfluous; but we would assure our readers generally, that any business which they may wish to transact with him will be done in a fair, prompt and courteous manner.

MINING DECISION.—Secretary Delano has decided the case of the adverse claimant against the application for a patent to 600 feet on the "Bell-wether" lode, in Colorado Territory. The principal points decided were that sixty days must elapse between the first and last publication of the notice in a newspaper; a publication once a week for nine consecutive weeks was not sufficient. It is decided that notwithstanding the absence of protest, yet, under the Act of 1874, the adverse claimants can show the failure of the applicants to comply with the statute.

CORRESPONDENCE.

Notes of Travel in Colorado Territory.

[By Our Traveling Correspondent.]

EDITORS PRESS:—Colorado Territory, geographically, is the most symmetrically shaped of any of the States or Territories. It runs exactly on the lines of latitude and longitude. It is bounded on the north by Wyoming and Nebraska Territories; on the east by Kansas; on the south by New Mexico, and on the west by Utah Territory; it extends from 37° to 41° north, and from 102° to 109° west. It embraces 100,800 square miles, and contains about 125,000 inhabitants. It is divided into twenty-one counties—Denver, the capital of the Territory is also the county seat of Arapahoe Co., and located near the center of the Territory east and west, and about 100 miles south of the northern boundary; and distant 110 miles from Cheyenne, Wyoming Territory, the point of divergence from the line of the U.P.R.R.

Denver, Colorado,

Contains about 15,000 inhabitants. It is situated at an elevation of 5,317 feet above the level of the sea. The climate is very salubrious, and by many that I conversed with who went there afflicted with asthma this atmosphere is considered a remedy for that disease. It is also very beneficial for pulmonary affections; but to those afflicted with catarrh I would advise to give that country a wide berth, as that climate will certainly aggravate the malady. Denver supports four dailies, and some ten weekly periodicals; of the dailies the *Tribune* and *Times* are evening, and the *News* and *World* are morning publications. There are in the city four banks; and a branch of the U.S. mint is also there. Commercially it has its proportion of mercantile houses, hotels, etc. The principal hotels are the Grand Central, American House, and Inter-ocean. Their charges are from \$2.50 to \$4.00 per day.

The interests of Denver at this writing are neither agricultural nor mining; but being the center for supplies, to the mining districts, and grazing districts of the south and north valleys, its commercial interests are first. However, the real support of Denver at this time is its invalids, every third house being a hotel or boarding house.

Colorado Altitudes.

As your readers may be interested in knowing the altitude of the prominent places in the Territory, I append a short list: Denver is 5,317 feet above sea level; St. Vrain's, 5,256; Greeley, 4,779; Boulder, 5,536; Cheyenne, 6,041; Golden City, 6,226; Colorado City, 6,342; San Luis valley, 6,400; Mt. Vernon, 6,421; Plum Creek, 6,840; Estes Park, 7,528; Divide, 7,554; Idaho, 7,800; Central City, 8,300; Georgetown, 8,452; Twin Lakes, 9,442; Pike's Peak, 14,216; Long's Peak, 14,056; Mount Lincoln, 14,190; Grey's Peak, 14,245; Colorado Springs, 5,975.

How to Reach Colorado from the East.

Tourists can reach Colorado from Boston, New York, Baltimore or Philadelphia, by way of Chicago or St. Louis to Kansas City. Thence take the Kansas Pacific Railway to Denver; distance from Kansas City, 639 miles. At Denver, the tourist connects with the Denver and Rio Grande Railway for Colorado Springs, 76 miles south, passing along some of the noblest mountain scenery in the north, along Plum creek and the Monument valley to Colorado Springs, at the base of Pike's Peak. From Colorado Springs to Pueblo the distance is 43 miles, reached by the Denver and Rio Grande Railway. From Pueblo, stages run south daily, connecting with all important points in Southern Colorado, Old and New Mexico. From Colorado Springs to Cañon City, 86 miles. From this point tourists can visit the famous cañon of the Arkansas, the Iron mountain, Salt Springs, Twin Lakes, Mountain valley, San Luis valley, and other points of interest. At Colorado Springs, 76 miles south of Denver, tourists can visit the famous Cheyenne cañon, which exceeds in grandeur and magnificence both the Weber and the Echo cañon, having a waterfall estimated at 300 feet.

Railroads of Colorado.

The Kansas Pacific railway company, of which E. S. Bowen is general superintendent at Kansas City, and B. W. Fisher is assistant superintendent at Denver, Colorado, own 639 miles of railway between Kansas City and Denver, and are operating the Denver Pacific railroad, with all its branches, under lease (for 99 years), aggregating some 160 miles more. The Denver Pacific railway is located between Cheyenne, Wyoming Territory, and Boulder City and Denver.

The Denver and Rio Grande railroad runs south from Denver to the Cañon City coal mines, distant 155 miles, with as much more projected railway. This company own, and are at the present time working, one of the finest coal mines in the Territory, situated at Cañon City.

The Colorado Central railroad company, of which H. M. Teller is President; Oliver Ames, Vice-President, and P. J. Nichols, Superintendent, are operating the following lines of railway, with distances and officers as follows:

Denver branch, 17 miles; Golden and Julesburg, completed to Longmont—42 miles.

Golden to Black Hawk, 20½ miles. Golden to Floyd Hill, 17½ miles. Total—97½ miles. Golden and Kalston railroad is just starting, and is seven miles long.

Golden and South Platte railroad is nearly finished and is 20 miles long.

This officers of the Golden City and South Platte railroad are C. C. Welch, President, E. D. Bertrand, Secretary and Engineer.

Golden and Kalston railroad—President, E. D. Bertrand; Secretary and Treasurer, L. J. Smith.

Coal Mines at Golden City.

There is now quite an extensive coal mine being opened by the Golden Gats Mineral & Land Compny. There are two veins, making eleven feet of solid coal in all; depth of shaft, 140 feet; course of vein, north 48 west, then North; quality of coal, excellent; free from sulphur. It is used for locomotives, stoves, smelting works and blacksmithing, (ore vein); amount raised per day, seventy-five tons; price of coal at shaft, \$4.50 per ton. Three more shafts are preparing to raise 200 tons per day.

The St. Vrain's Coal Mine

Is on the Julesburg railroad, twenty-five miles from Denver; twelve feet horizontal vein. The shaft is sixty-two feet deep. Coal about the same quality as Cañon City coal; company incorporated in Denver; capital stock, \$200,000.

Value of Colorado Ores.

The following information concerning average assays of different classes of ores of Gilpin county, was kindly furnished me by J. Alden Smith, Territorial Geologist, of Central City, Colorado: Average yield of 370 assays of stamp rock, from Gilpin county ores—gold, \$18.76; silver, \$15.34—coin value per ton of 2,000 pounds. Total, \$34.10. Average yield of 100 assays of smelting ore, from same locality—gold, \$85.90; silver, \$38.22. Total, \$124.62, per ton of 2,000 pounds. Average result of 100 assays of stamp mill tailings—gold, \$20.74; silver, \$5.50. Total, \$26.25, per ton of 2,000 pounds. Average result of 50 copper assays, from the same mines, 12.55 per cent. Average result of 125 assays from Gregory lode—gold, \$43.82; silver, \$13.42. Average result of 25 assays from Bohalt lode, gold, \$66.32; silver, \$9.85. Average result of 50 assays from Kansas lode, gold, \$80.89; silver, \$15.20. Average result of 50 assays from Burroughs lode, gold, \$50.12; silver, \$9.70. Average result of 50 assays from Illinois lode, gold, \$40.60; silver, \$20.92. Average result of 20 assays from Prize lode, gold, \$50.64; silver, \$16.42. Average result of 20 assays from Missouri lode, gold, \$50.12; silver, \$11.01. Average result of 150 assays from Guenell lode, gold, \$40.31; silver, \$10.26.

The Consolidated Gregory

Is a mining property owned by T. J. Richman Esq., and at present being worked under lease by H. Haniugton. This property is located on the southeast, and in the vicinity of Central City, Colorado Territory. The lode or ore body runs southwest by northeast, and like nearly all others in this district, is a regular contact vein, having distinct walls of a micaceous granite on both sides; in some places it is pure granite. This mine has been lying idle for the past four years, until in October last (1873), when a combination of the Black Hawk, Briggs and this mine started up together to rid this lode of water, (these three mines being on the same vein).

Hoisting Works, Shafts, etc.

Their hoisting works are run by a steam engine of 50 horse-power, with hoisting apparatus, pumps, etc., complete in every particular. Their main shaft is 450 feet deep, with a double compartment. They are, however, working this mine at a depth of 600 feet through the Black Hawk shaft. The ore body in this mine runs from 3 to 30 feet in width, and averages about 6 feet thick. Of the ore extracted about 90 per cent. is free milling, that averages some \$15 per ton in gold; the other 10 per cent. is smelting ore and produces about \$100 per ton. At the present writing, they are working 50 men, but will soon put on 100 men. They are extracting only about 20 tons of ore daily—using over half of their working force doing dead work, opening up drifts, etc. They own a 50-stamp mill, located in Black Hawk within one mile of their mine, but not at present working; they intend very shortly to start that up. The first mine struck in this camp was the Gregory.

The Buell Mine

Was formerly known as the Leavitt mine, and consists of the following locations: the Leavitt, Vasa and Kip, on which U. S. patents have been granted. It is owned and superintended personally by Bela S. Buell, Esq. This mine is being developed through one principal shaft, which is down 350 feet vertically, striking the vein or ore body at the depth of 300 feet. There are four othershafts on this mine, varying from 230 to 265 feet deep. From the main shaft some four principal levels have been run upon the vein in opposite directions, aggregating some 1,500 feet, and other levels and drifts in this and other drifts amounting to some 2,000 more. The ore body in this mine runs northeast and southwest, and in character very much resembles the Gregory.

The Extent of this Mine,

Over which Mr. Buell holds U. S. patents, is 2,400 feet; the main ore body of this district, of which this is a part, is traceable and has been prospected for over two miles in extent. There are some fifty men regularly employed at this mine, and are extracting some fifty tons

of milling ore daily, that averages about \$10 per ton; the average for the year 1873 was \$11.23 per ton; and varied from \$5 to \$15 per ton. By the above it will be seen that the ore of this mine is of a low grade, yet the mine is one of the best paying in this district. The vein matter in this mine runs from three to fifteen feet in width. The smelting ore taken from the mins in the past averaged about \$100 per ton, of which they used to extract from five to thirty tons per month. At present all ore extracted is free milling. Mr. Buell is now engaged in erecting

New Hoisting Works and Mill

In connection with each other, to be run, however by separate engines. The mill will have sixty stamps, with all the equipment to make it as complete a mill as any in this Territory. The engine for the mill will be of one hundred horse-power. This mill is expected to be in operation by July 1, this year. It will have a capacity of sixty tons daily. Mr. B. is leasing the New York mill, at Black Hawk, located some 1½ miles below his mine at Central, Colorado. The New York mill has fifty-five stamps and is run by steam during eight or nine months of the year and the other four months by water. This mill's capacity is about fifty tons daily. This mine is not for sale. I will send the continuation of this letter in time for your next issue. L. P. Mc.

Robinson District, Nevada.

EDITORS PRESS:—Thinking you might like to know what we poor, forsaken miners are doing, I thought I would drop you a line, although I am better with the pick and hammer than with the pen. We are a slow moving people, but then we have an abiding faith in the future of this camp. Our great drawback is the

Lack of Capital,

And the intelligent application and use of it, to develop the vast resources of this really rich (in mineral) district. What we really want is a good company to take hold and build smelting works, and buy the ore on the dumps, (provided they do not want to purchase the mines,) paying the owners cash in hand. There would be no trouble in getting any amount of ore which would pay the smelters a large profit. There has been too much trouble already with superintendents that cared nothing about the interests of their employers, or at least the interest of the stockholders.

There are but three companies doing anything at present, the Watson, Ward Ellis and Hayes.

The Watson Co.,

Under the management of D. T. Elmore, superintendent, are working about twelve men at their mine, the North Star, (located at Hercules Gap). I am informed by Mr. Elmore that the mine is looking exceedingly well, and that they are taking out some rich ore. The mill of the company was to have started up on the company's ore on the 20th, but for some cause did not, (owing, I presume, to the reads being unfit for hauling, and a rather small supply of quicksilver). I have no doubt, however, that they will commence by the first of May.

Superintendent B. F. Ward reports that the

Ward Ellis

is looking the best it knows now; they are getting some fine ore, and so far as developed, it bids fair to be the mine of the camp. Lately they have been troubled by water, and the ground is caving. Mr. Ward is having the mine timbered in a thorough manner, and will then go ahead with his developments. Nine men are employed here.

At the Hayes Mine.

Nelson Allan, lately the foreman, is now superintendent. A contract has been let for sinking the main incline seventy-five feet, when a new level will be opened. The mine is opened and partially prospected now to the depth of 185 feet. There is a great deal of low grade ore already developed; ore, which with an honest deal in milling etc., would probably pay the stockholders a profit. A new shop has been built and other improvements made, which makes it look as though business was meant, and faith in the future of the mine was not wanting. Seven men are employed besides the contractors.

Mr. Frank Enas, our enterprising restaurant keeper, has had several men employed on one of his mines all winter. I am happy to state that lately he has struck a body of ore that assays all the way from \$80 to \$200. Several other parties are also prospecting and taking out ore and filing it on the dumps. At some future time I may write you again and let you know how we are prospering. JASPER.

TRANSIT OF VENUS PARTIES.—Two parties will start from San Francisco about the middle of August, to observe the transit of Venus in Japan and China. Professor Davidson, of the Coast Survey, will have charge of the party going to Japan, and Professor Watson, of Ann Harbor University, will take command of the party going to Pekin, China. Professor Titman, of the Coast Survey, will accompany Davidson, and Thomas F. Woodward, also of the Coast Survey, will be detailed for duty, and probably be assigned to Watson's party. Capt. Woodward will not be required to report at Washington, but report to the head of his party, in San Francisco. Professors Davidson and Titman are here daily, studying their future work at the Observatory, in order to be well prepared.

Cinnabar Mining District.

The northeastern corner of Sonoma county has heretofore been chiefly noted as the site of the Geyser springs, which are visited by tourists from all parts of the world. There was in 1860 a mining excitement in that section, which died out from lack of capital to prosecute discoveries, and the belief which prevailed at the time that the Almaden mine was inexhaustible and would supply quicksilver in quantities equal to the demand for all times, at rates cheaper than it could possibly be mined elsewhere. A diminished supply from Almaden, and an increased demand for quicksilver in the past few years, greatly stimulated the search for this metal. About a year ago valuable discoveries were made near the Geysers and Cinnabar district was organized. The main range of the Mayacamas mountains forms the northeastern boundary line between Sonoma and Lake counties. Between Pine and Cobb mountains, links in the main chain, rises Big Sulphur creek, flowing through a deep gorge formed by Cobb mountain and the Hogsback, a spur running nearly parallel with the main range. In the cañon formed by these two mountains, the Geyser springs are located.

Little Sulphur creek rises in Pine mountain, flows west of the Hogsback range around Geyser Peak, and unites with Big Sulphur, isolating, as it were, this immense upheaval, whose highest point, Geyser Peak, is 3,500 feet above the sea level. On the opposite side of Little Sulphur there is a parallel range of almost equal length which, to the westward, breaks into irregular hills terminating finally in the Russian river plain. We have now Cobb mountain in the main range for a background, a parallel range known as the Hogsback on Geyser mountain, and still another parallel range of almost equal altitude—the trend of each being southeast and northwest. Little Sulphur creek flows through Pine Flat, which is situated between the two ranges last named. As the mountains approach each other the valley is pinched out and the creek, leaving the flat, flows through a steep and precipitous cañon.

The main quicksilver lode of Cinnabar district is supposed to come through Pine mountain into the Hogsback or Geyser range near Pine Flat. The ledge runs along this range in the direction of Geyser Peak, near which it crosses the ridge, running from thence in the direction of Cloverdale. It is said that the outcrop has been traced until it terminates with the coast at a point in Mendocino county. Commencing at Pine mountain, we have on each side mines of great promise, the Georgia, Occidental and its extensions on the west side, and those of the English company, including five locations on the eastern side. Between Pine mountain and Pine Flat, a distance of four miles, there are a number of other promising mines.

Near Pine Flat and in the central range above described the outcrop of the ledge is hold and prominent. We have in this mountain, on one side, the Sonoma and its two extensions, the Rattlesnake, the Mohawk, and the Missouries, Nos. 1, 2 and 3. On the other side of the ridge, just above the Little Geysers, are the Bell mine and the Flagstaff. To those who have a general knowledge of the country the above description will give an idea of the direction of the ledge and location of the new mines. The Great Western, in Lake county, near St. Helena, is supposed to be upon the same ledge, and also the Pope Valley mine, in Napa. The Healdsburg and Pine Flat road will wind up the slopes of the most westerly of the parallel ridges we have described, entering Pine Flat at its head, which is near the point where the parallel ridges leave the main range. For this reason the mines are all easy of access from the town of Pine Flat, which it now seems is destined to become a place of much importance.—*Sonoma Democrat.*

SACRAMENTO SMELTING WORKS.—Julius Wetzel, Samuel Poorman and G. M. Gerrish, Directors and Superintendent of the Sacramento Smelting works, will leave for Utah this afternoon to buy ore for the works, and make arrangements for procuring a continuous supply. The building is now all finished. One of the furnaces is completed, and the other will be ready for work this week. These are cupola furnaces, and combine all the modern improvements of volatilizing chambers to oxidize all that comes over the top of the furnaces. There is a Stuyvesant blower put up, which came from Boston, and is the largest on the Pacific coast. The engine, manufactured by Horace Adams, is 40-horse power, full. The capacity of the works is 40 tons a day—two furnaces, but the building was erected with a view to erect additional furnaces when necessary. Water jackets and water lining are put around the furnaces, and they are of the most approved style. A. Henley, who contracted to do the brick work, has done a good job, and so also have the other contractors. The fire-brick, fire-sand and fire-clay used came from Salt Lake. The fire-brick used was made near Sacramento, and is known as Addington's brick. It is said to be of superior quality. The probability is that the fires will be started by the 10th of May, and the works will be run continuously after that. The machinery is all new, of the latest and most approved pattern, and there is little doubt but that there will be good work done.—*Sacramento Union, April 30th.*

The annual product of sulphur from the Sicilian mines is nearly seven million hundredweight, while that from all the rest of the world is only about 150,000 hundredweight.

SCIENTIFIC PROGRESS.

Photographic Engraving.

The subjects suitable for printing blocks, of the kind now to be described, are those known as line and dot subjects, that is, pen and ink sketches, line drawings, engravings, and such like, to the exclusion of objects in pure graduated tint, like a silver print from a negative of a natural subject having graduation of tint.

A plate of glass is coated with a solution of beeswax in ether, the relative proportions of the two being about half an ounce of wax to ten of ether. This leaves a very thin coating of wax upon the plate, which is still further attenuated by rubbing with a cloth. The object of this waxing is to prevent a too close adhesion of the gelatin coating, to be next applied.

To prepare the sensitive surface, gelatin is steeped in water for half an hour or upwards until it has become swollen from the absorption of water; most of the superfluous or unabsorbed water is now poured off, and the vessel containing the gelatin is placed in hot water, or otherwise subjected to heat, by which the gelatin immediately becomes liquefied. To this is added sufficient of a saturated solution of bichromate of potash to render it of an orange color, yet not sufficient to cause the salt to crystallize out and show it upon the surface of a glass plate, coated with the mixture. The film is dried and then removed from the glass, which is permitted to be done by the agency of the wax substratum. It is now ready for exposure.

Suppose now, that a reproduction of an engraving or piece of ordinary print or sheet of music be the subject that is to be produced; a transparency—not a negative of this subject—must have been obtained and superimposed upon the side of the gelatin pellicle next to the glass plate. After exposure to light for a quarter of an hour—more or less, according to the light and quality of the negative—this gelatin film is pressed into contact with any handy flat surface, such as glass or metal, care being taken that the surface that was next the negative be placed outside. It is now sponged copiously with, or immersed in cold water, by which a considerable amount of relief is obtained, the parts corresponding with the block of the original print or drawing being seen standing in high relief, while the whites are sunk. This, it will be seen, supplies the conditions for a surface block to print in connection with type, all that is now wanted being the conversion of the soft gelatin into hard, unyielding metal.

The gelatin relief or mold obtained in the manner described is, first of all, made surface-dry by means of bibulous paper, and is then lightly dusted over with finely pulverized plumbago or bronze powder. A cast from this surface is then taken by means of molten beeswax, which, when cold, readily parts company with the gelatin relief, owing to the intervening sprinkling of plumbago or bronze. This wax cast is then sent to the electrotypist, who, in a few years afterwards, will deliver a metallic cast, mounted upon wood and ready for working in the printing press. This process originated with Mr. Thomas West, of London.

—British Journal of Photography.

The Coming Transit of Venus.

At the Greenwich Observatory a very ingenious little apparatus has been constructed in order to train the assistants in photographing the transit of Venus. It consists of a mirror placed upon a heliostat that represents the sun, so that whenever there is sunshine the model is as bright and luminous as the orb of day itself. Traveling in front of this light is a strip of glass carrying a tiny disk of platinum to represent Venus, and this is made to move by clockwork along the same path that the planet will take across the sun's disk. Viewed by a telescope from below the sun, the planet and the rate of motion are exactly the same as the original will appear to our observers in December, 1874. It is furnished with a tell-tale attachment that points out mistakes in faulty observations. Photo-astronomers will practice on this model until thoroughly conversant with the nature of the work to be performed.

Mr. Janssen's method for photographing the transit of Venus is as follows: The photographic plate is in the form of a disk, fixed upon a plate which rotates upon an axis parallel to that of the telescope. Before it is placed another disk, forming a screen in which is a small aperture, in order to limit the photographic action to the edge of the sun. The plate which carries the sensitive disk has 180 teeth, and is placed in communication with an escapement apparatus actuated by an electric current. At each record the pendulum of a clock interrupts the current and the plate turns one tooth, so that at each second a fresh portion of the plate is exposed. Thus in as many seconds 180 images of the sun and the planet can be obtained. When the series relating to the first contact is obtained, the plate is withdrawn and another substituted, which gives the second contact, and so on for the four.

—College Courant.

NITROUS OXIDE.—Jolyet and Blanche state that experiments made on pigeons and dogs show that nitrous oxide is not a true anæsthetic, but that it produces insensibility by asphyxia.

What is Steel?

Under this head Mr. Elbridge Wheeler, of Philadelphia, claims to have solved this problem and we give place to his remarks on this subject: There has of late been considerable discussion upon the subject of iron and steel, and we think, according to the best information that can be obtained, no one ever had better opportunity for testing the relative properties of steel and iron than Sir William Armstrong, with the kingdom of Great Britain to back him.

Sir William says: "It is impossible that I can hold any other opinion than that the vibratory action attending accessive concussion is more dangerous to steel than to iron;" and we think that years of experience in the manipulation of iron and steel fully attest the correctness of his opinion.

What we desire to impress upon the public mind is the importance of the two metals combined for such purposes, and in such proportions as are best adapted for the uses they may be intended; and further, to give a few facts in the working of steel by our process, which we think of great utility, and which, so far as we know, has never been accomplished by any other process.

We contend that steel cannot be made to answer the purposes of steel and iron at one and the same time; that is, in fact it must be either steel or iron—hence high grades and low grades of steel, as they are termed, and the lower grades but little if any better than the best grades of iron.

It has been said that no one could tell where iron leaves off and steel begins, but we think steel commences where iron presents carbon, and steel is no longer steel when it has lost its carbon, for it is carbon that makes steel.

At a recent convention of the American Railway Master Mechanics' Association, held at Baltimore, it was contended that steel axles did not wear as long as iron. The reason is obvious. No engineer would think of using a car axle made of steel proper—that is, of steel high in carbon, which would give the necessary wearing property—but must have steel that will stand the axle test of iron; consequently it is but iron, or a very low grade of steel, which for wearing purposes is no better than iron.

A similar difficulty arises in the manufacture of railroad rails. Steel that is best adapted to wearing purposes is liable to sudden fracture, and would not be considered safe "under accessive concussive strain," quoting a well known authority; therefore, the Bessemer steel rail has but the slightest amount of carbon, or barely enough to distinguish it from iron.

We claim that we have a process that will make safe and reliable high grades of steel under any and all circumstances, giving longer life to rails and axles, and safe and reliable as the best iron, by combining iron and steel together.

It is a well known fact that ingot steel is more or less open, porous, or spongy, and that no amount of blooming or hammering unites or welds the particles, from the fact that a welding cannot be taken upon the ingot after leaving the mould; by our process we can safely bring an ingot to a welding heat, and finish it into a bar at the same heat without in the least detracting from the quality of steel.

THE ACTIVE PRINCIPLE OF YEAST.—It is stated in a foreign scientific journal that M. Hoppe-Zeyler has recently made a communication on the separation of the active or active matter in yeast from the yeast itself. This matter is procured in the form of a white powder, soluble in water, and which may be preserved intact in a dry state or in pure alcohol. Beer yeast in an active or living condition retains this substance, and will not yield it up to water; but when the yeast is killed by means of ether, the yeast readily abandons the ferment to the water and the active substance or principle is obtained by evaporation. The aqueous solution of this ferment, or active principle, acts in the same manner as the yeast itself, and rapidly transforms sugar into alcohol.

PREPARING AMMONIA SALTS.—Bobrownicki, of Paris, proposes to prepare ammonia salts from the ammonia liquor of gas works by acidifying and then treating it with fluoride of silicon, chloride of silicon, hydrofluoro-silicic acid, or an alkaline silicate. The silicon compounds carry down the suspended bodies, and those in solution, and hold them in a solid or half-solid form. Bobrownicki calls the precipitate a silicoid. It furnishes the crude material for preparing ammonia salts in the usual manner.

A NEW METHOD, by Mr. Wilson, for lighting street gas lamps is as follows: The lamp has two burners; one, very small, burns all the time. When the gas pressure is raised, a small gas holder, on the top of the column, is elevated, affording a passage for the gas to the larger of the two tips, which is lighted by the small jet. Thus all the street lamps in the district may be lit automatically.

WITH respect to unalloyed copper, M. Riche finds that its density, when alternately submitted to mechanical treatment, tempering and annealing, is variously affected according as the metal is protected from or exposed to access of air. In the former case the mechanical action increases, and in the latter case diminishes the density. The introduction of a small proportion of iron gives considerable tenacity and hardness to copper.

MECHANICAL PROGRESS.

Puddle Walls.

A correspondent writes for information relative to making a fish pond in a valley by constructing a dam across from one side to the other. The essential idea in a dam is its capacity for holding water. To this end it must be of sufficient substance, so that its weight shall secure it from being overturned or pushed away by the pressure of the water. It must also be constructed so as to be watertight.

To secure this last requirement the most effective method is to include within the dam a puddle wall. The correct method of puddling, so simple in itself, is not always practiced. The popular ideas in regard to this important part of the work are erroneous. By many persons it is supposed that the best material for the purpose is clay. This is an error. Pure clay is, in some respects, the worst. Again, it is supposed that the work must be compacted by a rammer. Ramming is not effective in compacting it. There are still other erroneous notions entertained on the subject, but we will perhaps best expose the objectionable methods by simply stating the correct one. If the puddle is to extend across a valley, commence by removing from the surface, where the wall is to stand, all rubbish, brush, grass, roots and other perishable material, as well as all surface soil down to the solid natural gravel or ground. In doing this, excavate a trench equal in width to the thickness of the wall. Make the bottom of the trench level across the bottom of the valley, and extend it into and up each side hill in level benches or steps, so that at all points the wall shall have under it a level surface to stand upon.

Next, the material. This should be a gravelly loam, taken from a bank where alternate layers of gravel and loam, or clay, are found. Screen from it by a rake all stones larger than an egg. Spread it to an even depth of four inches in the lowest trench. Sprinkle water over the whole surface by a hose or buckets until the material is soaking wet, when another layer of dry material four inches deep is to be spread over the first one. A convenient method of regulating the depth is by setting up staked intervals stakes projecting eight inches above the bottom of the trench with notches cut four inches from the top. In placing the first layer, the workman is guided by the notches. The second layer is carefully graded to the top of the stakes. Now place a plank, equal in length to the width of the trench, across it near one end. Standing at one end of this plank with a shovel, hold it upright, the back from you. In this position push the shovel to the bottom of the trench by aid of the foot on top of the blade, and then push the handle horizontally from you with force. Withdrawing the shovel, move along the plank the width of the shovel, and placing its point in a line with the position it before held, again press it to the bottom of the trench and horizontally from you. Continue this operation until you have moved along the entire length of the plank. In doing this, you have formed a wedge-shaped opening across the trench.

In returning along the plank, slice off, in the same manner, about an inch in thickness from the edge of the opening nearest you, pushing it compactly upon the material previously packed. Continue this process, cutting slice after slice, until the edge of the plank is reached. Turning the plank over gives room for more work. Follow this operation until the whole of the material is cut and compacted. In making these cuttings, the water which was put upon the lower layer of four inches, is squeezed up through the whole of the upper layer, and the whole thickness of material is rendered of the consistency of putty. The next morning the puddle will be found sufficiently hard to walk upon freely. Then repeat the entire process of spreading the two separate layers of four inches each, watering the first layer and cutting and compacting as before. By this method, double layer upon double layer is to be laid until the top of the wall is reached. Some parts of the operation may appear unimportant and thus be neglected, but many who have so thought and acted have found to their sorrow, after the completion of the work, the necessity of adhering strictly to what experience has shown, in some of our largest engineering works, to be the true method of making puddle walls.

The thickness of the wall should be in proportion to its height and length. For small ponds, a wall four feet broad at top and gradually widened downwards at a rate of one and a half inches per foot of height on each side, or three inches on both sides, will be of ample strength. The puddle wall must be covered from the air on all sides by the filling and stone work used to form the dam.—Sci. American.

IMPROVEMENTS IN THE MANUFACTURE OF FLOOR CLOTHS.—In these glue or gelatine is first combined with any suitable vegetable or animal oil or mixture of such oils, the combinations being effected by intimately mixing the oil in a solution of the glue or gelatine in about its own weight of water, the solution being maintained at about the temperature of boiling water. The combined glue and oil is then intimately mixed with any suitable powder. The plastic mass formed by combining the ingredients as described is applied or spread by rollers or other means, and whilst in a heated state to a backing of jute cloth or any other suitable woven fabric.

Copper Boilers.

In the production of a good copper boiler quite a number of processes are necessary. Such boilers vary in capacity from thirty-five to eighty gallons. The former are about thirteen inches in diameter and about fifty-eight inches in height, and the latter twenty-eight in diameter and of the same height. Ordinary sheathing copper, weighing about two pounds to the square foot, is generally used. It is not necessary to employ heavier sheathing, as the pressure within the boiler is seldom over sixty pounds to the square inch, unless the water is allowed to become overheated so as to produce steam.

Sheathing measuring four by five feet is used for the smaller boilers, and eight by five feet for those holding eighty gallons. The sheet is first bent into shape by hand and hung upon a rod over a fire and the two edges brazed together; the boiler then possesses the appearance of a cylinder open at both ends. The brazing takes about ten minutes. The seam formed in this operation is, of course, rough, and the next process is to render it smooth by hammering. The latter operation, however, leaves the copper near the seam quite hard, and the boiler is next hung upon a rod and heated over the fire to soften it. The cylinder is then put "in pickle," or to speak more scientifically, it is immersed in a bath of nitric acid and water, contained in a box five feet long by two wide and two feet deep, and lined with tin. The proportions of the pickle vary according to the season. In winter the solution is made stronger than in summer; that is, the proportion of water to acid is less in winter than in summer. The cylinder remains in the solution from one to two hours, according to the season, in winter longer than in summer.

When the boiler is removed from this bath it is washed inside and out with water and rubbed with sand. It is now hung over the fire again, and its interior surface is tinned by rubbing pieces of solder up and down the boiler, assisting the operation with a swab. This operation generally does not take over fifteen minutes. The boiler must now be cleaned with weak nitric acid again, after which it is washed, placed upon a horse, and the exterior carefully swabbed. After this the boiler is laid upon a mandrel, and the seam hammered again, this time with a polished hammer, to make it perfectly smooth and level with the rest of the surface. The boiler is then rolled. The machinery by which this is accomplished is peculiar, and may be thus described: A common railroad rail is laid upon a heavy frame, the upper surface of the rail, however, having been planed off. A carriage rolls along the frame and is so arranged that the weight mainly rests upon a small iron or steel wheel which bears upon the rail. The copper cylinder is passed around and is supported by the rail, and the carriage, which is weighted with 600 lbs., is rolled over it. This presses the seam neatly down and gives a finish to the boiler. The edges of the cylinder are then tinned over preparatory to affixing the heads, as it is necessary to protect every portion exposed to the action of the steam. The heads, which have previously been spun from circles of copper and grooved in whatever style may be thought most ornamental, and afterward tinned, are then soldered on.—Iron Age.

A NEW AND PRACTICAL IMPROVEMENT IN UMBRELLAS.—We have been shown an umbrella which, by its simple and ingenious construction, can in a moment's time, when desired, be folded up and packed in a valise, or carried in the pocket. The ribs are cut in two parts, and secured together by means of a slide, so that when the umbrella is folded one section of the ribs slides along the side of the others, thus reducing the ribs to one half their length. When the ribs are extended and ready for use, they are held in position by an extra set of braces, which serve the double purpose of holding the ribs at their full length, and giving extra strength to the umbrella. The stick is jointed in the center by a link and slide ferrule, and is folded up with the ribs.—Technologist.

A CHANCE FOR INVENTORS.—An exchange says: A common, well built country wagon, weighing about 800 pounds, will carry 3,000 on any fair country road, and without injury pass over obstructions which cause it to fall one, two, or more inches, the paying weight being about 79 per cent. of the whole. The ordinary box car in use upon our railways at the present time weighs about 10 tons; its maximum load is generally about 11 tons, while its average load is about eight tons; the paying weight being from 44 to 52 per cent. of the whole. It does not seem reasonable that the weight of a car constructed to run upon a smooth, even track, without a fall, should be so disproportioned to the load carried. There is here a chance for inventors to devise a light form of freight car, strong enough to carry 11 tons.

WRITING INK is one of the things in which modern science seems to have made very little improvement. A recent analysis of the ink found on a manuscript of the year 910 showed that its composition was similar to that of the ink now in general use. In printing inks, however, modern science has made many improvements, of which every advantage has been taken.—Newspaper Reporter.

BOAT PLUGS.—A new invention consists of a ball-valve so placed in the bottoms of boats or other vessels as to remain open when out of the water, but instantly and automatically to close on being placed in the water.

New Incorporations.

Meetings and Elections.

ONEIDA M. Co.—Ignatz Steinhart, Wm. M. Stewart, S. Heydenfeldt, B. F. Sherwood and J. Benjamin, Trustees.

PROOFER S. M. Co.—May 4.—J. D. Fry, A. K. P. Harmon, James A. Pritchard, W. E. Hale and Charlee E. Elliott. The shaft is down 740 feet, and is being sunk at the rate of 10 to 12 feet per week. A drift has been

KOHLER'S REDUCTION WORKS.—May 2.—President: R. J. Kohler; Vice-President: Abner Sedgley; Secretary: Harrison P. Eayre; Treasurer: Abner Sedgley; General Superintendent: R. J. Kohler; Superintendent of Construction: Abner Sedgley. Trustees: R. J. Kohler, Harrison P. Eayre, Wm. Meeke, Abner Sedgley, Jacob Kohler, Edward Kohler.

Mining Accidents

On the morning of the 2d instant a fearful accident happened in the Yellow Jacket mine, caused by the giraffe parting from the cable in some manner and running down the main incline, a distance of 600 feet, with frightful velocity. In the bottom of the incline were six miners at work—Cornelius McCarthy, Richard Pearce, Samuel Odgers, Thomas Odgers, Charles Bennett and Francis Polkinghorn. McCarthy and Pearce were crushed to death, their bodies lying horribly mangled and almost unrecognizable. Samuel Odgers had the left side of his jaw broken, and was otherwise seriously hurt and injured. Bennett was cut about the shoulders severely. Thomas Odgers had one foot crushed and his back badly hurt. Polkinghorn received a severe cut on the side of the head, and was bruised on other parts of his body. McCarthy, one of the killed, was a native of the county of Cork, Ireland, and married; aged twenty-eight years. He was a leading member of the Gold Hill Miners' Union, and a highly esteemed citizen. Richard Pearce was a native of Cornwall, England, twenty-two years of age, single, and a young man of fine abilities. The Gold Hill News says that how the accident happened seems to be a complete mystery, except that by examination it was shown that the wire cable, where it was riveted to the sheikls which attaches it to the giraffe, had pulled or torn completely out, and that the giraffe also had the usual safety attachment, but which from some unaccountable cause did not operate as it should.

The Coroner's jury returned a verdict exempting any one from blame, but recommending that some measures be taken for the prevention of such accidents.

This *Foothill Tidings* states that a man named Hsammel, underground foreman in the Idaho mines, while engaged in "firing a pass," was struck on the head by a falling rock, which rendered him for the time insensible, fracturing the skull and otherwise injuring him severely. This "firing a pass" is rather dangerous work. A pass, or chute, for the passage of rock from one level to another, becomes choked; it cannot be opened by hand when the obstruction is far up, and resort is had to powder and shell. A cannon is placed at the mouth of the chute, aimed directly at the obstruction and fired, often breaking the wedged pieces of rock and liberating the whole mass at once; but if not, it must be fired again. We explain for the benefit of our non-professional readers who might not know what "firing the pass" meant. This mine in which this accident occurred, the Idaho, employs some 300 men, and, although accidents are not frequent, three happened there last week. George Lord, foreman of engineers, while working at the engines of the old hoisting works was struck in the eye by the rebound of a cold-chisel, inflicting a painful though not dangerous wound. Pat Nevins had his thumb mashed by a drop of the mill battery, while at work adjusting a stamp-head.

At the Empire mine, Grass Valley, a miner, named G. Richard Williams, was caved upon and had his right leg broken.

MINERS complain that the Virginia City labor market is overstocked, and that an unusual large number of skilled miners are out of employment at the present time.

BULLION.—The amount of bullion dispatched last week from Pioche, by Wells, Fargo & Co., is \$65,667.21; and Pritchard's freight line, \$7,239.30; total, \$82,906.51.

Rumors are prevalent of a recent strike of rich diggings in the hills in the vicinity of Reess river.

NAME OF COMPANY.	STOCK IN MINES.	SHARES IN MINE.	HIGHEST. PRICE.	LOWEST. PRICE.	ADVANCE.	DECLINE.
WASHOE.						
Alamo		360	6000	10 ¹ / ₂ T	8M	2 ¹ / ₂
Alpha Con.		3690				3 ¹ / ₂
Alta		65	30000	67 ¹ / ₂ T	6 ¹ / ₂ M	3 ¹ / ₂
American Flat			10400	6 ¹ / ₂ T	5 ¹ / ₂ W	5
Bacon M.			14000	87 ¹ / ₂ T	81W	5
Baltimore Con		1640	14000	87 ¹ / ₂ T	81W	5
Belcher		22	20	5000	21W	5
Best & Belcher		22	20	5000	21W	5
Bowers		2500	2500	1000		3
Buckeye		400	1600	40M	35	4
California		2500	2500	1000		3
Chollar-Potosi		2500	2500	61 ¹ / ₂ T	52T	3 ¹ / ₂
Confidence		130	2400	43 ¹ / ₂ T	41W	3 ¹ / ₂
Con. Gold Hill Quartz		34 ¹ / ₂	2400	21 ¹ / ₂ W	13M	2 ¹ / ₂
Con. Virginia		1160	10800	85 ¹ / ₂ T	73W	2 ¹ / ₂
Cook & Geysr.		1800	2400			6
Crown Point		2600	2400			8
Daisy		1200	2400			8
Dardanelles		2400	2400			8
Dayton		50	2400	67 ¹ / ₂ T		2 ¹ / ₂
Eclipse		50	2400	43 ¹ / ₂ T	41W	2 ¹ / ₂
Empire M. & M.		55	5000	3 ¹ / ₂ F	3 ¹ / ₂ W	2 ¹ / ₂
Eschequer		400	3000	27 ¹ / ₂ T	19 ¹ / ₂ M	2 ¹ / ₂
Fairmount		3000	12000			2 ¹ / ₂
Flowers			2000	27 ¹ / ₂ T	17 ¹ / ₂	2 ¹ / ₂
Franklin			2000	27 ¹ / ₂ T	17 ¹ / ₂	2 ¹ / ₂
Globe		1500	2400	41 ¹ / ₂ T	31 ¹ / ₂ W	2 ¹ / ₂
Gould & Curry		40	16000	64 ¹ / ₂ T	4 ¹ / ₂ W	2 ¹ / ₂
Granger		184	10000	54 ¹ / ₂ T	4 ¹ / ₂ W	2 ¹ / ₂
Imperial		2500	3000			2 ¹ / ₂
Indus.		2000	3000	334 ¹ / ₂ T	2M	2 ¹ / ₂
Insurance		3000	3000	154 ¹ / ₂ F	6M	2 ¹ / ₂
Jacob Little		2000	3000	14 ¹ / ₂ T	11 ¹ / ₂	2 ¹ / ₂
Julia		2000	3000	5 ¹ / ₂ F	2W	2 ¹ / ₂
Justine		3000	2100	174 ¹ / ₂ T	23 ¹ / ₂ W	2 ¹ / ₂
Kentuck		1200	2400	5 ¹ / ₂ T	4W	2 ¹ / ₂
Kickerhooker		1200	2400	5 ¹ / ₂ T	4 ¹ / ₂ W	2 ¹ / ₂
Kosentb.		3800	3800			2 ¹ / ₂
Lady Bryan		1000	5000			2 ¹ / ₂
Levee		1000	5000			2 ¹ / ₂
Mint		1000	5000			2 ¹ / ₂
Nevada		3000	4000			2 ¹ / ₂
New York Con.		3000	3000	3W	2W	2 ¹ / ₂
North		1400	1800	174 ¹ / ₂ T	12 ¹ / ₂ W	2 ¹ / ₂
Opfir.		1200	1200	45 ¹ / ₂ T	23 ¹ / ₂ W	2 ¹ / ₂
Oregon		2000	3000			2 ¹ / ₂
Phil. Sheridan		2000	3000			2 ¹ / ₂
Potosi		2000	3000			2 ¹ / ₂
Rock Island		2000	2400			2 ¹ / ₂
Savage		800	16000	64 ¹ / ₂ T	61W	2 ¹ / ₂
See Zales		163	5400	51 ¹ / ₂ T	64 ¹ / ₂ W	2 ¹ / ₂
Seelye		1000	1000			2 ¹ / ₂
Seg. Rock Island		2400	2400			2 ¹ / ₂
Senator		2000	17 ¹ / ₂	15W		2
Sierra Nevada		5400	92 ¹ / ₂	7 ¹ / ₂ W		2
Silver Hill		2400				2
South Comstock		2400				2
South Overman		2400				2
St. Louis		2400				2
St. Patrick		2400				2
St. Lawrence		2400				2
St. Mary		2400				2
St. Nicholas		2400				2
St. Peter		2400				2
St. Raphael		2400				2
St. Vincent		2400				2
St. Xavier		2400				2
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Company.	Location.	No.	Amt.	Levied.	Deling't.	Sale.	Secretary.	Place of Business.
Alps S M Co	Ely District	7	25	April 23	May 29	June 26	C F Balcan	426 Montgomery st
Daney G & S M Co	Washoe	9	50	Mar 31	May 5	May 26	G R Spinney	320 California st
Empire M Co	Idaho	6	150	April 18	May 22	May 22	W Willis	419 California st
Enterprise S M Co	Washoe	22	20	Mar 27	April 30	May 20	A K Burbow	Merchants' Ex
Indus G & S M Co	Nevada	10	19	Mar 19	May 1	Apr 30	David Wilder	419 California st
Ingotmar S M Co	Ely District	7	26	May 4	June 16	July 2	C S Neal	Merchants' Ex
Justice M Co	Washoe	9	150	April 18	May 20	June 10	F Swift	419 California st
Miner S M Co	Nev	2	50	Nov 24	June 4	May 27	F Swift	419 California st
Mint G & S M Co	Washoe	10	19	May 1	June 3	June 3	W J Jennings	401 California st
Newark S M Co	Ely District	7	200	April 20	May 23	June 19	N T Bazley	419 California st
Original Gold Hill G & S M Co	Washoe	1	50	Mar 24	April 24	May 11	W M Helman	401 California st
Phoenix S M Co	Ely District	1	50	April 23	May 26	June 10	C A Sankey	438 California st
Phoenix S M Co	Eureka Nev	14	25	April 21	May 26	June 10	C A Sankey	438 California st
Pieton M Co	Washoe	5	25	April 20	May 23	June 10	S Phillips	419 California st
Portland S M Co	Ely District	4	25	April 13	May 20	June 15	B J Gray	438 California st
St. Cloud G & S M Co	Gold Hill	2	25	Mar 13	April 22	May 11	A Noel	Merchants' Ex
South Overman S M Co	Cal	1	50	April 4	May 1	June 1	R E Noyes	419 California st
St Lawrence M & M Co	Cal	6	50	April 27	June 1	June 23	R E Noyes	Merchants' Ex
St Patrick G M Co	Cal	8	100	Mar 20	April 27	May 19	D F Verdenal	408 California st
Succor M & M Co	Cal	8	100	Mar 20	April 27	May 19	W H Watson	302 Montgomery st
Union S M Co	Cal	8	25	June 5	June 6	June 6	W E Mann	419 California st
Utah S M Co	Washoe	5	100	April 22	May 26	June 16	W E Dean	419 California st
War Eagle M Co	Idaho	5	50	April 17	May 22	June 12	L Kaplan	Merchants' Ex

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS

Atlanta & Pacific Cons G M Co	Cal	3	5	April 10	May 15	A Noel	419 California st
Bohannon M & Co	Nevada	1	5	Mar 17	May 15	Leavitt	4401 California st
Cederberg G M Ist S Extension Co	Cal	5	5	April 25	May 28	J Webster	420 Montgomery st
Cederburg 1st N Extension M Co	Cal	4	10	Mar 7	April 10	J N Webster	424 Montgomery st
Champion Cons M & S Co	Nevada	1	50	Mar 26	May 20	J M Bunington	Merchants' Ex
Clayton & Wase	Cal	2	25	Apr 16	May 28	J V Landend	419 California st
Dutch Flat Blue Gravel Co	Cal	3	25	Apr 20	May 18	W M Helman	419 California st
El Dorado Water & D G M Co	Cal	3	50	Apr 9	May 14	H Elias	416 Montgomery st
Emerald Hill M Co	Cal	25	May 1	Apr 14	Mar 11	F Mudge	Merchants' Ex
Emerald Hill M Co	Utah	6	25	Mar 13	May 1	F Mudge	Merchants' Ex
Esa Buena Cons S M Co	Nev	4	25	Apr 1	May 8	A Noel	419 California st
Glasgow G M Co	Yuba Co	2	25	Mar 30	May 1	O S Cortiss	419 California st
Gold & Dyke Cons Coal Co Wyoming	Nev	1	10	Apr 20	F Swift	419 California st	
Iowa M & S Co	Nev	10	10	Apr 3	May 11	A D Hunter	May st
Jefferson G & S M Co	Cal	3	10	Mar 26	May 1	O V D Hubbard	214 & 216 Pine st
Lady Eaten T M Co	Utah	6	10	Mar 27	May 21	O S Healy	Merchants' Ex
Lea & Wainwright S M Co	Cal	9	5	Apr 9	May 12	F Swift	507 Montgomery st
Lane & Kuritz Ash & Shoo M Co B Columbia	Cal	1	50	Apr 6	May 11	B M Binor	517 California st
McMahon S M Co	Shell Creek	7	25	Apr 1	May 4	B G Spinnay	520 California st
Monahs Cons N Co	Cal	2	25	Apr 16	May 17	W Small	331 Kearny st
Monahs Cons N Co	Arizona	2	10	Apr 16	May 17	T Jewell	376 Montgomery st
Monte Cristo S M Co	Washoe	2	10	Mar 19	Apr 21	D T Bagley	401 California st
Mount Ste Helena G M & S M Co	Cal	1	10	Mar 10	Apr 11	A Badiam	418 Montgomery st
North Fork Gravel M Co	Cal	1	10	Apr 13	May 12	Thomas Derby	229 Sansome st
North Fork M Co	Cal	2	15	Jan 24	May 19	A Mader	520 Washington st
Quintero M Co	Mexico	1	25	Apr 7	May 1	W M Helman	401 California st
Red Jacket M Co	Idaho	10	15	Apr 3	May 10	Wm Willis	419 California st
Renderson M Co	Calaveras	9	25	Feb 11	Mar 10	M M Garretts	141 Leesford st
Santiago M Co	Nevada	1	30	Mar 8	Apr 23	D T Bagley	401 California st
San Jose M Co	Cal	4	50	Mar 30	May 5	A Carrigan	139 Ford st
Shasta River M Co	Nevada	2	40	Mar 20	May 20	G W Stewart	113 Liedesdorf st
Sierra Mountain B G M Co	Cal	19	50	Apr 13	May 1	J M Helman	
Tally Mt Alpha M Co	Cal	3	25	Apr 3	May 11	T F Cronise	438 California st
Valley Copper M Co	Cal	15	15	Mar 22	Apr 23	W H Martin	334 California st
Washoe M Co	Cal	3	10	Mar 26	May 26	B V Ingard	415 Montgomery st
Washrough S M Co	Los Angeles Co	Cal	50	Apr 27	June 1	E Barry	415 Montgomery st
Wacatero G M Co	Cal	4	25	Mar 25	Apr 29	L Hermann	422 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Adams Hill Cune M Co		W V Traylor	418 California st	Annual,	May 16
Steele Mountain Gravel Co	Cal	W J Dakin	213 Sansome st	Annual,	May 16
Empire M Co	Idaho	Wm Willis	418 California st	Annual,	May 11
Lower Cal C Co	Lower Cal	J H A McVigate	408 California st	Annual,	May 15
Independent G M Co	Nevada	George T Trustees	247 Montgomery st	Annual,	Aug 8
Kosuth M Co		Called by Trustees	419 California st	Special,	June 1
Grange & Fish Co	Cal	R E Brewer	312 Montgomery st	Annual,	Cal 12
Lexington M Co	Nevada	P H Blake	306 Montgomery st	Annual,	May 13
Lexington M Co	Nevada	Called by Trustees	419 California st	Special,	May 26
Wellington M & S Co	Utah	R Wegener	414 California st	Annual,	May 13

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS

Nams of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable
Black Bear Quartz M. Co.		W. L. Oliver,	216 California st.	25	April 15
Belcher M. Co.	Washoe.	H. C. Kluge,	419 California st.	5 00	May 9
Beldering G. & C. Co.	N. Cal.	D. M. Jooke,	420 Montgomery st	50	Feb. 9
Con. Amador M. Co.	Cal.	P. B. Latham.	402 Montgomery st	50	April 8
Crown Point M. Co.	Washoe	C. E. Elliott	414 California st	4 00	April 11
Diana M. Co.		N. C. Pascoe,	220 Clay st.	00	Jan. 28
Elmer's Consolidated M Co	Nev	W W Traylor	419 California st	00	May 5
Eureka M. Co.	Grass Valley, Cal.	R. Wegener,	414 California st	1 00	Dec 1
Keystone Quartz M. Co.	Cal	L. Vesarini		50	Feb 11
Montezuma Mining Co.	Nevada.	B. E. Minor.		50	Dec 8
Providence G. & S. M. Co.		J. M. BnEngstrom.	411 1/2 California st. Merchants' Ex.	100	Nov. 15

Mining Stocks.

The mining stock market still continues depressed, and the transactions at the Board show light sales and low prices. The rise predicted for the first of May has failed to put in an appearance. Still the mining prospects continue good. As far as the situation in Washoe is concerned, the *Enterprise* says: The low price of stocks does not at all discourage our mining men; More machinery is now arriving and being set up in this section of the State than at any other period in the history of the country. The ore-producing mines are all looking and yielding unusually well, giving encouragement to all who are delving in this range of the great lode to continue their explorations till they reach productive ground. The richest deposits of ore often lie but a few feet from the most barren rock, therefore good fortune may be near at hand when no promise of it cheers the labors of the miner. At best, the opening up and development of mines is a tedious business, therefore all who have to do with them must exercise the virtue of patience. The many companies prospecting are earnestly and honestly engaged in such work as seems best calculated to make known the value of the ground upon which they are located, and while this is the case, stockholders should be content to await the result of explorations in progress, resting assured that no man would be more rejoiced should valuable developments be made than those who are directing and are immediately connected with the work.

Prominent fluctuations in stocks for this week were as follows: Belcher has run between \$81 and \$87; Best and Belcher, \$21 and \$27.50; Maldonian, \$15 and \$21; California, \$33 and \$40; Cons. Virginia, \$73 and \$85; Crown Point, \$82 and \$86; Exchequer, \$19.75 and \$27; Gould & Curry, \$17 and \$22; Hals & Norcross, \$31.50 and \$41; Kentucky, \$11.50 and \$14;

Ophir, \$12.50 and \$17.25; Overman, \$23.50 and \$45; Savage, \$61 and \$64.50; Seg. Belchar, \$64.50 and \$81; Sierra Nevada, \$15 and \$17; Union Cons., \$10 and \$14; Yellow Jacket, \$64.50 and \$82, Enrska Cons., \$16.75 and \$18; Raymond & Ely, \$22 and \$24.

Prominent declines from highest prices of last week were as follows: Alpha Consolidated, \$2.50; Belcher, \$5; Caledonia, \$3; California, \$4.50; Consolidated Virginia, \$2.50; Crown Point, \$6; Exchsquar, \$8; Gould & Curry, \$2; Hals & Norcross, \$3.75; Kentuck, \$2.25; Ophir, \$4.75; Overman, \$5; Savage, \$2.50; Ssg. Belcher, \$14; Sierra Nevada, \$2; Union Consolidated, \$3; Yellow Jacket, \$2; Golden Chariot, \$2; Raymond & Ely shows an advance of \$2, and Eureka Consolidated an advance of \$1.

The Silver Cord M. Co. propose to increase its capital stock from \$1,200,000 to \$2,400,000, in 24,000 shares of \$100 each.

The call of Philip Falk, President of the Page & Panaca M. Co., Ely district, has been responded to by the stockholders, and many of them have paid up their assessments before the time required by law, in order to place the financial condition of the company on a good footing.

SAN DIEGO MINES.—There are now three steam quartz mills at work in San Felipe cañon, Banner district, San Diego county. The Chariot mine, the "banner mine" of the district, is expected to send down a great deal of bullion this summer. Around Julian City, affairs are not so lively as they were; a large part of the business formerly done there being now done in the cañon below, where the mills are.

THE Richmond Company at Eureka shipped 20,000 pounds of bullion on Monday of last week.

MINING SUMMARY.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE COUNTY.

SILVER CLOUD.—*Chronicle*, April 25: After a suspension of ten years, work was resumed this week on the Silver Cloud mine. It is intended to sink 300 feet.

AMADOR COUNTY.

THE QUICKSILVER MINE.—*Dispatch*, May 2: Reports from the Amador quicksilver mine continue to be more and more flattering, and its richness is satisfactorily proven.

PROSPECTING.—*Ledger*, May 2: The recent discovery of cinnabar in El Dorado county has infused a spirit for prospecting among many of our citizens, and in their researches for quicksilver, many discoveries of metal-bearing rock have been made, some of which may eventually prove of value. We were shown a few days ago an ore, that greatly resembles tin, very heavy, and very rich in whatever metal it may contain. We were likewise shown a specimen of chrome iron, which will evidently assay 70 per cent. A heavy ledge of manganese is known to exist west of us, which assays 50 per cent, and asbestos has been found in several localities in the county—at one place, said to be somewhat abundant.

PLYMOUTH.—Reports from Plymouth are very encouraging. The Phoenix mine is still yielding excellent rock and in any desirable quantity; the mill and mine are kept easily and cheaply supplied with wood, timbers, lagging and other material required in the mine, by floating the same down the canal that affords motive power to drive the mill.

THE ALPINE.—The prospect in the Alpine is very flattering, and as work progresses the mine gives still further evidence of soon proving a valuable and permanent mine. Placer mining is being carried on to a considerable extent in the vicinity of the town, and a number of claims are paying well.

THE DISCOVERY NEAR VOLCANO.—The discovery near the Marklee mine still continues good, and yielding largely. The claim is on Russell hill, a locality in which extraordinary rich deposits have been found. In the recent discovery, the largest nugget yet found weighed 15 ounces, with a large number of others varying from one to three ounces. The claim bids fair to be lasting.

The tunnel now being driven by McKay & Co. in Murphy's ridge is progressing rapidly, with the most flattering prospect of developing as valuable quartz veins as have ever been discovered in the county.

Work is still progressing along the gravel range of hills, along the graded road leading to Ione city, and in many of the claims very flattering prospects have been discovered.

CALAVERAS COUNTY.

MINING ITEMS.—*Citizen*, May 2: At Mokelumne Hill several large hydraulic mines have been opened and hoisting works and a mill are being erected on Lamphear's quartz ledge near town. This mine has been prospected to considerable extent and it is the opinion of mining experts that all needed to make it a paying ledge is capital sufficient to work it. At Mosquito Gulch the San Bruno quartz mine is paying \$60 per ton with plenty of the same quality of ore in sight. The last clean-up netted \$12,000. At West Point the severe winter has retarded mining, but several large mines will be worked this summer, and a number of small pocket ledges which are good for large wages to the owners. Rail Road is taking a rest at present, although considerable prospecting is being done by private individuals. At El Dorado, Rodesino is getting good prospects in his ledge and will soon start the mill. Treat & Wylie have commenced work at Gascon Hill and if their hydraulic pays there is a large extent of country equally good, only needing capital to bring water on it and furnish pipe etc. At the Sheep Ranch, the Ferguson & Wallace mine is steadily holding the even tenor of its golden way, turning out \$90 to the ton.

DONNELLY'S MILL started up last week on rock from Potter & Morse's mine, a short distance down the creek. Wood has better rock than ever before.

The Echo hydraulic claim, 5 miles from Murphy's, is the largest in that section of country. At Douglas Flat mining is as brisk as usual. The deep placer mine here will undoubtedly last many years.

ANGELS is at present dull. Although there are a number of arastras grinding out gold.

EL DORADO COUNTY.

REPUBLICAN.—May 2: The Oregon mill is now engaged in crushing rock from the Rose mine. A run on rock from the Oregon mine will be made soon.

FRESNO COUNTY.

COPPER.—*Expositor*, April 29: The Ne Plus Ultra Copper Mining company will shortly ship between 70 and 80 tons of ore to San Francisco. The ore is being hauled from the mine to the railroad. If the Railroad company would reduce the freight on copper ore to about \$40 per car load from Berendo, it would be the means of starting up four or five copper mines in the vicinity of Buchanan. At the present price of freight none of the mines can be profitably worked.

KERN COUNTY.

MINING DITCH.—*Miner*, May 2: Our enter-

prising mining man, E. R. Burke, has inaugurated another big project, which is the construction of a mill race, that will be ten miles in length, and powerful enough to run the hoisting works and pump at the mine and the eighty-stamp mill. It is a big job, but the mind, which has brought Kernville and the two adjacent towns into note and revived the interest of the Southern mines is equal to the task.

EIGHTY STAMPS.—The ground on which this large mill is to be built, has been graded. Stamps, machinery, etc., are en route. The Big Blue mine with these additional stamps will lower those 2,000 tons of rock, which have been accumulating ahead of the stamps during the past year.

NELLIE DENT.—Over 100 ft. have been sunk on this mine. They are now cross-cutting on the ledge, but have not got through. The mine is a twin sister of the Big Blue ledge.

PROSPECTING still continues on the extension of the Joe Walker.

NEVADA COUNTY.

IDAHO.—*Grass Valley Union*, May 5: Gross yield for the month of April \$63,000. The usual monthly dividend has been declared, payable immediately. It will amount to \$38,750, or \$12.50 per share. A larger dividend could have been declared, but the company is now incurring extra expenses in putting in a new engine, air compressor and the Burleigh drill. Four of these drills will shortly be put to use. They will be driven by compressed air from machinery stationed at the surface. The drills will be set to work in about one month.

EUREKA.—The ground between the fifth and sixth levels continues to pay well. The yield for the month, with ten stamps running, was \$24,000.

MAONTA.—This new mine is giving every encouragement of future richness. A good deal of annoyance is experienced from this surface water yet, but with the discontinuance of the rains this drawback is becoming of less serious moment. In the mine there are two distinct ledges, upon both of which drifts have been run. One crushing has been made the past month of 100 tons which yielded \$19 per ton. There are now over 150 tons of rock on the dump.

COE.—The main shaft of the Coe is down 506 feet. No stopping is being done at present, but all the work is directed to getting the levels opened so that a large body of ground may be available for stopping out.

NEW YORK HILL.—The developments of the past month have been most encouraging. The rock in the lower tunnel has improved greatly in appearance, and some of it will go at least \$100 per ton.

SLATE LEDGE, or better known as Perrin's mine, is working steadily, but not with a large force of men. The incline is now in 625 feet. The stopes are looking well.

EMPIRE.—The general appearance of the mine is good. A great deal of prospecting has been done for several months past in running drifts for further developments, and with encouraging results.

PROSPECT MINE, or West Idaho, on Slate creek, is energetically worked. The tunnel being driven for the ledge is in 300 feet, and the presence of quartz stringers in the heading indicates that the ledge is likely to be struck at any moment. The shaft on the croppings is now down 45 feet.

TOWN TALK gravel mine is running night and day, working a force of from 26 to 30 men. The main tunnel is in 1,500 feet, and other tunnels are being driven to prospect new ground. The month's run has not been up to the average yield, but the prospects for the future are very encouraging, and the extent of ground to be worked is almost unlimited. The mill is driven by water-power, and a hardy-gurdy wheel is used. The power is directly attached to the cam-shaft, which makes a simple and complete arrangement, and altogether the cheapest running mill in the district.

DARTMOUTH has a perpendicular shaft 55 feet deep, from the bottom of which a drift is being run north-west. This drift is now in between 300 to 400 feet. The gravel they get is washed in a sluice, and the cement all goes through the batteries at the mill, which is run by an undershot wheel. We believe this is the only mill that uses this power, at least around here. The Dartmouth is working on rock that in the halcyon days of '52 was discarded as not worth working, but Capt. Miller has successfully shown that this regarded poor ore will pay with modern machinery and knowledge.

OTHER GRAVEL MINES.—The Independent, adjoining Town Talk, is still running the new tunnel, which is in 800 feet. No gravel for washing is being taken out at present.

Excelsior is also running tunnel. Not yet in to gravel.

Consolidated Blue Gravel has been idle all winter. Expects to start up soon.

SOLANO COUNTY.

COAL DISCOVERY.—*Chronicle*, April 25: John Stills, of Green valley, has discovered coal outcroppings on his ranch, and the indications are favorable to the presumption that he has a regular lead.

SONOMA COUNTY.

NEW DISCOVERIES.—Quite an excitement was created during the early part of the week by the announcement of extraordinary discoveries of quicksilver in the vicinity of Mount Jackson, four miles in a northerly direction from Gnerneville. The rumors were vague and the reports highly colored. The new mines are distant about 27 miles from Santa Rosa. We visited and examined the mines and returned the same

day; distance traveled on horse-back not less than 57 miles. We think that there is an excellent prospect for a mine here which would fully justify the expenditure of a sum sufficient to determine its value.

TRINITY COUNTY.

MINERSVILLE.—*Journal*, April 25: From Jacob Bowerman we learn that miners at Minersville are hard at work, and prospects cheering. Minersville is the land of nuggets; the last one picked up was by Mead & Alden, and weighed \$81.

DOWN THE RIVER.—W. T. Malone, from Cox Bar, tells us that miners in that part of the county are well supplied with water and are making good use of it.

TULARE COUNTY.

HO, FOR THE MINES!—*Times*, April 25: The rush to the new mines has already commenced. At the present time many parties are encamped at the foot of the snow line, hoping to be the first to enter the mineral regions on the disappearance of the snow, while many others are now on their way to the mountains. There is no doubt but that thousands will wend their way in that direction during this rapidly approaching mining season.

YOLO COUNTY.

COAL AT BUCKEYE.—*Mail*, April 30: An old "49er" and an "honest miner," has placed upon our table some specimens of bituminous coal which he found on the ranch of S. M. Enos, about seven miles west of the village of Buckeye, Yolo county. These specimens, he says, were taken from the surface of the ground with a pocket knife, and, of course, can only be the color of what may be found by a more thorough investigation. There has been no excavation to ascertain just how deep the vein may be, but the ledge from which these specimens were taken is sufficiently solid to satisfy him that there is coal there, and that it is continuous.

Nevada.

WASHOE DISTRICT.

CONSOLIDATED VIRGINIA.—*Gold Hill News*, April 30: The sump for the shaft is finished 25 feet below the 1,500-foot level. The main south drift, on the 1,400-ft. level, and the north drift from the north winze, have been completed, giving a fine circulation of pure air, which will cool and greatly facilitate work in that portion of the mine. The ore breasts from the 1,000-ft. level down to the 1,400 are looking splendidly throughout, and promise a long and rich yield for the future. The bullion production of this mine will amount to the neat little sum of \$400,000 for the present month.

OPHIR.—The ore developed in both the winzes from cross-cuts Nos. 1 and 2, on the 1,300-ft. level, continue to show quite favorable, the ore giving good assays, with a fair promise of the development of a considerable body. The south drift on the 1,300-ft. level only lacks about 8 feet of connection with the north drift on the same level from the Virginia Consolidated, which, when completed, along with the connection of the winze and up-raise from the 1,465-ft. level, will give a fine and perfect ventilation of the entire mine to that depth.

HALE & NOACROSS.—Sinking the main incline is progressing 20 feet per week. In the west cross-cut, on the 1,900-ft. level, the ledge has been penetrated 80 ft., developing small bunches and streaks of ore, but finding nothing that will pay for extraction.

SERRA NEVADA.—Sinking the main shaft is making good progress. The drain tunnel is finished and connected with the shaft 165 feet below the surface, which will make a great saving in the cost and labor of pumping the water when it may become necessary. Putting in the foundations for the new machinery goes steadily on. The sluice tunnel is finished and a raise is being made from the end of the drift up to the cement and gravel bodies above. Daily yield 65 tons of ore, keeping the mill steadily running.

BELOHER.—Daily yield, 550 tons of ore. The ore-breasts and stopes on all the different levels are both looking well and yielding splendidly. The mills are all running and the future prospects of the mine look brighter than ever.

CROWN POINT.—The ore stopes on the 1,200, 1,300 and 1,400-ft. levels are all looking well and yielding the usual amount of rich ore. Prospecting throughout the mine is progressing with the usual energetic vigor, the mills are all running up to their full working capacity, and the future prospects appear bright and hopeful.

UTAH.—The ledge on the 400-ft. level has been prospected and proven to be over 100 ft. in width, with as finely developed clay walls and intervening matter as in any mine on the Comstock lode. Sinking the main shaft for a new level will be commenced on Monday next. It is the intention to sink 300 ft. before again drifting.

IMPERIAL EMPIRE.—Sinking the main incline is making good headway, the bottom in fair working ground. The main east drift on the 1,850-ft. level has penetrated the west wall of the ledge, and is now running through quartz, with occasional bunches of clay and porphyry. This quartz gives low assays.

GOULD & CURRY.—Sinking the double winze below the 1,700-ft. level is making the usual steady progress. The Burleigh drills employed seem, however, to meet the full requirements of the situation, and enable good progress to be made.

SILVER HILL.—The machinery is all working with the utmost perfection. The up-raise in the old St. Louis chimney from the south drift on the first station level shows a steady im-

provement, and promises the development of a good body of ore.

SUTRO TUNNEL.—The main header is in 5,837 feet, with the face in hard blasting rock. The new Burleigh drilling machines were started into operation on Saturday last. Drifting both east and west from shaft No. 2, on the line of the tunnel will be commenced in about two weeks.

LEO.—The ledge matter continues wide between the walls, and the under ore vein carries several seams of good looking quartz, varying from one to four inches in thickness, which are quite likely to concentrate into an ore body farther ahead.

CALEDONIA.—The main west drift at the fourth station level, to connect with the air winze from the level above, is making rapid headway.

KOSUTH.—The main south drift is in 202 feet, the entire drift running through a solid body of ore for the last 30 feet. In this ore gold largely predominates and a fair average of assays show it to be worth about \$35 per ton.

BALTIMORE CONSOLIDATED.—The shaft is now down 715 feet. The erection of new machinery is at a stand-still for the present, owing to the want of the necessary bed sills and other foundation timbers for the engines, which have not yet been shipped from the mountains.

MINT.—The new hoisting machinery is working with utmost perfection. The shaft is now down 175 feet, and will be pushed rapidly ahead for the opening of a new level.

WOONVILLE.—The sinking during the last few days has been considerably impeded by a strong flow of water, although there is not enough as yet to entirely stop work.

OVERMAN.—The main west drift, on the 1,200-ft. level, is making steady progress, the face in very promising material, indicating a near approach to the main ledge.

CHOLLAS POTOSI.—All work on this lower levels is suspended for the present, in order to renew the foundations for one of the hoisting engines, which was injured by the heat of the fire at the time the hoisting works were burned a year or two since. Daily yield of ore, 130 tons, the assay value of which is \$32 per ton. The ore breasts are all looking well and yielding finely.

SAVAGE.—The material in the face of this cross-cut on the 1,900-ft. level is considerably softer, and shows evident indications of a near approach to the ledge.

SUCCESS.—Sinking the main shaft east of the hill is making fair progress. The shaft is now down 455 ft.

DAYTON.—The ore breasts throughout the entire mine are both looking well and yielding finely. Two mills, Woodworth's and Briggs', are kept constantly running crushing ore from the mine.

SOUTH STAR.—There are over 2,000 tons of ore on the dumps for milling as soon as a mill can be procured.

GLOAZ CONSOLIDATED.—Sinking the main incline is making excellent headway, the rock in the bottom blasting out splendidly. The north drift at the head of the incline is in 25 ft., this entire distance through good milling ore.

BUCKEYE.—The south drift at the 450-ft. level has developed no new or extensive body of ore as yet.

NEW YORK CONSOLIDATED.—Owing to some unavoidable delays the new machinery has not yet been started up, but will be in a very few days. There is on hand at the mine of material and supplies, consisting of timber, wood, iron, steel, tools, etc., the equivalent of \$16,000. Grand total expenses during the year, \$35,000.

FLORIDA.—Assays of ore taken from winze No. 2 range all along from \$16 to \$20 per ton. Working operations are impeded somewhat, owing to the encountering of a large body of water.

UNION CONSOLIDATED.—The face of the north drift on the 1,300-ft. level from Ophir shaft is showing a continued improvement, and promises good ore developments in that quarter when cross-cuttings shall have been commenced.

LADY BRYAN.—Work on this new hoisting works building, and erecting the new machinery is making steady progress.

MO MEANS.—The west tunnel is still making good headway, the rock in the face gradually softening, and showing evident indications of a near approach to the ledge.

LADY WASHINGTON.—The erection of the new machinery is making steady progress, and will probably be ready to resume sinking the shaft by the 10th of next month.

EUROPA.—Sinking the winze from the north cross-cut on the tunnel level is making steady progress, the bottom in vein matter of a very promising character.

ALHAMBRA.—The new hoisting works is completed and the machinery all in splendid running order. Work has been resumed in the shaft.

SENATOR.—The water is drained from the shaft and sinking is resumed.

TYLER.—The shaft is completed to the 300-ft. level, and cutting out for a new station at this level was commenced this morning.

NEVADA.—The south drift from the tunnel level is still showing a steady improvement in the quality of the ore penetrated.

The Pacific Mail Steamship Company save \$13,000 a round trip between this port and Panama by the use of the new screw steamers instead of the old side-wheelers.

AFTER a suspension of nearly two years, work was resumed on the Brownville quicksilver mine, situated about four miles from Vallejo, on Monday.

USEFUL INFORMATION.

Salt and its Uses.

A correspondent of the *Country Gentleman* thus writes of this well-known but not very well understood necessity of life:

Salt is a chemical compound, consisting of 60.68 per cent. of chlorine and 39.32 of sodium. These two substances, thus combined, make pure salt, unless some other thing be combined with them. When other substances enter into the combination, they are impurities—some of them only adding to the weight, and doing no other injury, others destroying the value of the salt as a preserver of meat.

The principal impurity usually found in the salt made from sea water, in the English and French, and in the Syracuse salt, is sulphate of lime, (common plaster of Paris,) which does no other injury than to add to the weight, thus causing the consumer to suppose he has purchased fifty-six pounds (a bushel) of salt, when in fact, according to the extensive chemical determinations of that great authority, Prof. Cook, now in the service of the State of New Jersey, he generally buys in salt made from sea-water 2.04 per cent. of sulphate of lime, in the Chesire, 1.35; in the Dieuze, 1.70, and in the Syracuse, 1.14.

The impurities that injure salt are known as the deliquescent chlorides, so called because they absorb moisture from the air and cause the salt to become damp. Thus the purchaser of salt should take care to see the salt he buys is dry. This is, to men who have no better means of judging, the best test they can have, and even an expert judge would trust his decision quite readily upon the feeling of a handful of salt. If when he closed his hand upon it and then freed the salt it fell apart like dry sand, and there was a sharp, angular feel to the grain, he would say that the salt was free from the injurious chlorides of magnesium and lime. But if the handful of salt retained the form given it by slight pressure, and it felt soft and clammy, he would say it would do to salt cattle, hides and like uses, but that it was unfit to put in butter or to salt beef or pork.

Some of your readers may wish to know more exactly what these chlorides are. For their information I will say that, in connection with salt, they are found in a fluid form adhering to the surfaces of the particles, and may be washed away in the process of manufacture by the use of proper skill and care. So the makers of the salt of the Bay of Biscay, on the coast of France and Spain, place the salt as it is made on platforms, where it is washed, and when it has become hard it is broken up, piled in heaps, and then washed and allowed to drain until the chlorides are carried off.

Chemically stated, the chloride of calcium (lime) consists of 63.35 parts of chlorine and 36.65 of calcium; the chloride of magnesium consists of 73.64 parts of chlorine and 26.36 of magnesium. These chlorides have an exceedingly bitter taste, and not only injure the salt by causing it to imbibe moisture, but, by their acid, eating qualities, causing beef to become hard and dark colored, the rind to slip off from pork when it is boiled. Fish, under their action, become hard, dark colored and tasteless. Butter and cheese have a bitter taste imparted by these substances, and are soon spoiled by them.

Prof. Cook spent much time in the examination of salt, and to know all about the salt of Europe he went there and exhausted the subject, and as the result of his labors the following table of analytical results is given, of the presence of the deliquescent chlorides in the best known salts sold for consumption:

Salt made from sea water, seventy-three parts in 10,000; Cheshire, commonly called Liverpool "stoved," four parts; Cheshire, commonly called Liverpool "common," twenty-five parts; Cheshire, commonly called Liverpool "rough," thirty-seven parts; salt made at Dieuze, (in the northeast part of France,) "fine," twenty parts; salt made at Dieuze, "medium," twenty-six parts; salt made at Syracuse, "solar," four parts; salt made at Syracuse, "boiled," two parts.

Thus Prof. Cook found that the salt of Syracuse was only equalled in its freedom from these injurious chlorides by Liverpool (England) stoved salt, as compared with the "solar," and that the "boiled" salt of Syracuse had only one-half the quantity contained in the Liverpool-made salt; but why should the Syracuse solar salt have four parts to the boiled two? The solar forms in large, irregularly-shaped crystals, that have cavities and sunken places, from which it is difficult to wash and drain the sticky semi-fluid chlorides, unless the crystals are broken down by grinding.

Having Prof. Cook's analysis before them, the salt-makers turned their attention to the discovery of some process by which they could get rid of the impurities, and make pure salt. In this they were successful. Professor Charles A. Goessman, a chemist of established reputation, was employed to perfect the methods that the salt-makers had themselves devised of removing the delinquent chlorides, and the result was pure salt, which was put into the market under the name of factory-titled dairy salt. In 1861, while the processes adapted for making entirely pure salt were much less perfect than they have since been made, some of this dairy salt was sent to Prof. Cook for his opinion. Of this salt he said: "A satisfactory evidence of the purity of salt is its dryness. I have had this specimen in a wooden

salt-box for four months, and still it loses less than one per cent. of water by heating it to melting. Your factory-titled possesses no deliquescent properties, and contains no active substance except pure salt."

Butter, to remain of the first quality, must have salt that is pure, and it is for butter and cheese and table purposes that this exquisitely pure salt is mostly used. The chemical processes to which it is subjected, and the grinding is very fine, add about one-eighth of a dollar to the cost of a bushel—equal to sixty-two and half cents a barrel.

COLORS FOR FIREWORKS.—Those who are interested in home-made fireworks may learn something from the following hints given by the *Scientific American*: Red fire: sulphur, 1 part; sulphuret of antimony, 1 part; niter, 1 part; dried nitrate of strontia, 5 parts. Blue fire: Tersulphuret of antimony, (orpiment) 1 part; sulphur, 2 parts; dry niter, 6 parts. This is the Bengal blue light. Green fire: Boracic acid, 10 parts; sulphur, 17 parts; chlorate of potash, 73 parts. Yellow fire: Sulphur, 16 parts; dry carbonate of soda, 23 parts; chlorate of potash, 61 parts. Violet fire: Charcoal, 8 parts; sulphur, 10 parts; metallic copper, 15 parts; chlorate of potash, 30 parts. Orange fire: Sulphur, 14 parts; chalk, 34 parts; chlorate of potash, 52 parts. Purple fire: Lampblack, realgar and niter, of each 1 part; sulphur, 2 parts; chlorate of potash, 5 parts; fused nitrate of strontia, 16 parts. By parts are meant equivalent proportions, ounces, pounds, etc. The different ingredients are to be separately reduced to powder, sifted through lawn, and kept in well corked wide mouthed bottles until used. Care must be exercised in handling, especially the chlorate of potash, when in contact with combustible materials. The materials must be carefully mixed on a sheet of paper with a wooden stirrer with a light hand, avoiding excessive friction. They should not be mixed long before using, as they are apt to deteriorate by long keeping and even to inflame spontaneously. The nitrate of strontia, alum, saltpeter and carbonate of soda, before being weighed, should be heated until their water of crystallization is driven off and they fall to powder.

CANNON MADE OF ICE.—A hollow cylinder will bear a greater strain than a solid one. Many of us know by experiment what a hard pressure an egg will resist when placed endwise between the hands. This curious strength in a round but weak substance is due to the exact, orderly arrangement of the particles, i. e., in perfect curves. A memorable illustration was seen in the mock artillery set to play guard in front of that creation of imperial whim, the ice palace of Catharine of Russia. Before the palace stood six cannons of ice, and two mortars formed of cast pieces. The cannons were six-pounds, which are commonly loaded with three pounds of powder; these, however, with a quarter of a pound, and carried a ball of stuffed hemp, and sometimes of iron. The balls, at a distance of sixty paces, passed through a board two inches in thickness, the ice of the cannons could not have been more than three or four inches in thickness, and yet it resisted the force of the explosion.—*American Manufacturer.*

In kerosene lamps the light often is unsatisfactory while all is apparently in good order. It should be borne in mind that, though the wick is but very gradually burned, it is constantly becoming less able to conduct oil. During several weeks some quarts of oil are slowly filtered through the wick, which stops every particle of dust or other matter that will with the utmost care be in the best kinds of oil. The result is that the wick, though it is of sufficient length and looks as good as ever, has its conducting power greatly impaired, as its pores, so to speak, or the minute channels by which the oil reaches the place to be burned, become gradually obstructed. It is often economy to substitute a new wick for an old one, even if that be plenty long enough to serve for some time to come.

TO PREVENT THE RUSTING OF IRON.—A correspondent sends us the following suggestions: I have tried many things, but found nothing better than boiled linseed oil to protect instruments and tools, (files, saws, guns, etc.) from rusting. It even works the best with a kettle used for heating water for bathing. Wipe the metal with a cloth dipped in the oil, and let it dry, which will require only a few minutes. If it is unnecessary to have the iron bright and shining, you need not scour it before the application of the oil; this will combine with the rust and form a firm, durable coating.—*Journal of Chem.*

RAISING WRECKS.—In raising sunken vessels, it has been common to use flexible air-tight bags, which, when properly secured to the vessel, are inflated with air by pumps. A recent improvement, by Mr. Sowerbutts, of England, consists in supplying acid and alkali to the bags, which, on being mixed, generate carbonic acid within the bags and produce the necessary inflation, no air pumping being necessary.

WHEN fuel is burned in an open fire place, at least seven-eighths of the actual or potential heat passes up the chimney unused; about one-half being carried off with the smoke, and one-fourth with the current which flows in between the mantel-piece and the fire, while the remaining loss is represented by the unburned carbonaceous matter in the smoke,

GOOD HEALTH.

Brief Thoughts on Habit.

Our habits are the best illustration we can give of the very intimate relation between our minds and our bodies.

1. Every person has his modes of thought and action, and these are but habits which we have inherited from our ancestors, or acquired ourselves. Indeed some physiologists go so far as to teach that the reason why the body grows up as it does, is because of the power of habit for ages.

2. It is a matter of universal experience that training for special aptitudes is more effective when exerted on the young and growing child, than when brought to bear on the full grown man or woman. The training in early life gives the organs of the body a tendency to grow to certain modes of action. In after life these modes of action are difficult to acquire. In other words, we find it easy and almost automatic to do what we have done before, and to think and feel what we have thought and felt before. This tendency is stronger in the nervous system than in the other organs of the body.

3. The reason why old people remember so much more distinctly what they learned in early life than that most recently learned, is because the force of habit, while the body was in its full vigor, has fixed these impressions more thoroughly in the nervous tissues of the growing brain. They endure to the end of life.

4. In mature life it is difficult to form new habits of thought, or to master new subjects, unless they fit in with what we have already learned. Things seem very unreasonable to us that do not match with our previous knowledge, though they are perfectly true, measured by the standard of those who have formed different habits of thought.

5. Habit shows its power over both mind and body concerning the things we eat and drink. People who, from long habit, have got used to certain articles of food think they cannot live without them. They are used to them, and whether best or not is a question never to be thought of.

6. It is more than probable that the habit of drinking liquors would never be acquired to any great extent after the age of thirty. Let a boy be well fed and know nothing about the use of alcoholic beverages till a man, and he would rarely form the habit of using them. "I once knew a family reduced to poverty," says Carpenter, "who declined to eat a rich barley soup because they were not used to it." It was hard to form a new taste after the habits of the body and mind had become fixed. The same writer gives another case where all the workmen of a large outfitting establishment refused to work because they were required to make a slight alteration, not more troublesome, in the pattern of a particular garment. And still another of an effort on the part of manufacturers of cheap prints for the humbler classes, to change the styles a little, which failed. They had been in the habit of wearing a particular pattern so long it had become a part of themselves. The least departure from it could not be tolerated. The tissues of the body get into bad habits as well as the nervous system. After nasal catarrh has once been established it is often kept up from mere force of habit. People cough from habit, spit from habit, go to sleep and wake at particular hours from habit. We once knew a thief who stole from habit. His faculties were used to working in this way and could work in no other.

7. Where habits are wisely and judiciously formed in early life the tendency is an extremely useful one, enabling us to work with ease instead of with difficulty. Habit renders all things easy. Without habit it requires a strong will to bring us up to the point of doing what we ought to, or must do.

8. It is not wise to be a slave to even good habits; to be so we cannot do any work except in a particular way, sleep except in a particular bed or room, or eat only a particular food.

9. To break up a bad habit requires a powerful effort of the will. Nothing so weakens this faculty as the force of bad habits. Every victory of habit over the will leaves the victim weaker and weaker, till at last his power of resistance is completely annihilated.

10. The formation of habits should begin with birth, especially as regards eating, drinking and sleep. The regularity of these early bodily habits will help to shape the mental habits of after life. Nothing tends so to develop the vice of self-indulgence in children so much as to allow them to eat, sleep, study and play when they please, without reference to order and discipline. A mother related a case to me the other day, of her child, which had been used to nursing twice during the night, thus disturbing the sleep of the mother and injuring her health. She resolved to break up this habit. The first night the child awoke as usual for its food. The mother refused it, and the result was two hours of lusty squalling. It almost made the mother relent, but she persevered. The next night the same was repeated, only in a less degree. The third night the child did not cry over ten minutes, and this was the end of all her trouble. The child did not reason on the subject; it had no will in the matter. The strong force of habit made it cry for its accustomed food at a certain hour, and as soon as a new habit was formed it took the place of

the other, the little fellow being equally satisfied. Mothers would save themselves much care and trouble if they would study the subject of habits thoroughly, and then adopt a wise course with their little ones.

11. Military drill in schools for the young, or gymnastic drill, has great value, from the fact that it not only promotes a healthy physical development, but it helps to form habits of strict order and prompt obedience. When soldiers go to battle if strict discipline is maintained they can lead a forlorn hope; but the moment the ranks are broken, if they cannot form again, all is lost.

12. The habit of doing its duty is a very important one for a child to learn. It generally has a good idea of its own rights, but knows nothing of the rights of others. Duty teaches this, especially when right and justice are made a part of it.

13. Lastly, love and affection should grow into habits. Fathers and mothers, sisters and brothers must set the example. There is no moral health or happiness without love. It is the mainspring of all healthy action, the greatest power given to human beings.—*Herald of Health.*

THE CINCHONA ALKALOIDS.—Dr. H. C. Wood, in his excellent "Treatise on Therapeutics," just issued, has the following remarks on cinchona:

"The physiological action of cinchona is similar to, but less powerful than that of quinia. Thus Conzen (quoted by Husemann) has found that its action on infusoria and on fermentation is similar to but weaker than that of its sister alkaloid. Upon dogs, according to Bernatzki's experiments, the lethal dose of cinchona is to that of quinia as 5 is to 4. The history of cinchona in the organism appears, therefore, to be parallel with that of quinia.

As an antiperiodic cinchona exerts a similar influence to quinia, but is probably about one-third weaker than that alkaloid, and must be used in correspondingly larger dose. Dr. J. B. Hamilton (*Indian Medical Gazette*, November, 1873) affirms as the result of experiment that cinchona as a prophylactic against malaria is very superior to quinia.

As a tonic I have never been able to perceive that cinchona acts differently from quinia.

The London *Lancet* (February, 1873), referring to the cinchona alkaloids, says: Considering the expense of quinine, it is somewhat surprising that these alkaloids have not been more generally used in the treatment of malarious fevers, especially as there does not appear to be any doubt in the minds of those who have tried them as to their efficacy."

MILK DIET IN DYSENTERY.—Dr. Barret states in the *Archives de Medecine Navale*, that he has made use of milk in chronic dysentery among soldiers and sailors returning from China. He considers a milk diet superior to all other treatment in such cases. The milk must be pure, unmixed with water, as fresh as possible, and not boiled. Sufficient milk was given to a patient, but nothing else allowed to pass his lips. Diarrhea, if it appears, lasts but a few days. No change of diet is to be made, and no medicine given. If the physician fears the persistence of the diarrhea, a small quantity of bismuth may be prescribed. If the milk pass through the bowels undigested, pepsin will remedy the defect in the digestive process. After a time the faeces become solid, the patient thinks himself cured, and craves other food. This is the dangerous period, for too early relaxation of the diet may cause a relapse. White of eggs, rice cream, and the lightest possible things are to be admitted sparingly; and when the patient feels convalescent, and will endure the restrictions no longer, he is to return by the slowest degrees to his former diet.

THE NEW BLOODLESS OPERATION.—The plan of operating lately introduced or revived by Professor Dittel, of Vienna, appears to have become suddenly fashionable. The London *Lancet* gives an account of the mode by which it was suggested to Dittel. It seems that some months ago he was called to see a young girl who was suffering from severe nervous symptoms, and who was evidently dying. Next day, on making a post-mortem examination, he found that the rubber band of a hair net which had been worn day and night for a month was deeply imbedded in the pericranial tissues, and had in one part cut through the walls of the skull and was pressing on the dura mater, which was in a state of acute inflammation. On inquiry it was ascertained that the girl had a cruel step-mother, who greatly objected to the loose and dishevelled looks of her daughter, and insisted, therefore, on the child wearing a net to keep the hair in place.

USE OF LEMONS.—When persons are feverish and thirsty beyond what is natural, indicated in some cases by a metallic taste in the mouth, especially after drinking water, or by a whitish appearance of the greater part of the surface of the tongue, one of the best "coolers," internal or external, is to take a lemon, cut off the top, sprinkle over some loaf sugar, working it downward into the lemon with the spoon, and then suck it slowly, squeezing the lemon and adding more sugar as the acidity increases from being brought up from a lower point. Invalids with feverishness may take two or three lemons a day in this manner with the most marked benefit, manifested by a sense of coolness, comfort and invigoration.

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Are We to Have a Flood?

The unusual continuance of the spring rains the present season, may well suggest the heading of our article. In the earlier days of California it was not unusual to see our larger mountain streams overflowing their banks in May and June, and completely submerging the whole tule country of the Sacramento and San Joaquin rivers. The occurrence, when it did happen, was in seasons in which large quantities of snow had accumulated upon the Sierras during the winter, to be suddenly melted by late and warm rains, to be sent in torrents to the valleys, and, on their way, flooding the alluvial of the rivers, to the great destruction of the farmers' crops, and sometimes the property of cities upon their borders.

That Sacramento is perfectly safe from any future flood we have not the least doubt; but how is it with those fine, extensive alluvial that border the American river? We hope they may experience no overflow, though we are not without misgivings. The best of the reclaimed delta islands, Sherman and others, will doubtless stand firm in their levees, and thus escape the damaging effects of former overflows; but should it be otherwise, an immense amount of damage to growing crops would be inevitable.

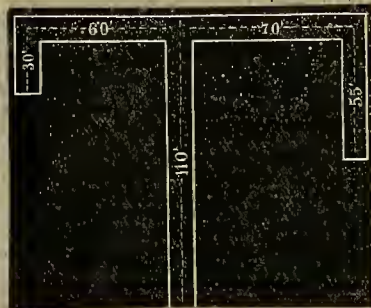
CALIFORNIA RICE CULTURE.—Mr. J. H. Taylor, of Livermore, has some three acres of upland rice now growing and looking finely. He sowed 100 pounds of seed obtained in New York, and two pounds from the Agricultural Bureau, at Washington. Several years since, Mr. T. sowed one pound of seed, which grew well until two feet in height, when it was destroyed by stray stock, that devoured the straw with avidity. Mr. T. has sowed this experimental crop broadcast, but recommends sowing in drills, 18 inches apart. He believes the upland rice will grow on any good barley land. We invite him to furnish us the result of his pioneer efforts in rice and cotton raising at Livermore.

The work of rebuilding the burnt district, at Colfax, Placer county, has commenced.

Placer County Mining News—Banks, Blasting, Etc.

Mr. J. H. Brown, of Forest Hill, Placer county, has several men at work on his claim, the New Jersey, a mine only needing development to yield rich returns. Mr. Brown, who is probably the "oldest resident" on the divide, having been there since 1851, affirms that capital only is wanting to make the Forest Hill mines as profitable as they were in 1859 and 1860.

At Forest Hill on the morning of April 29th, at 8 o'clock, Mr. N. J. Kabath, of the firm of Kabath & Ladd, agents of the Lafin & Rand Powder Co., fired by electricity the largest blast that has ever been shot off on the divide. The claim operated upon is known as the "Paragon," situated at Bath, and owned by Wheeler and Breese. The amount of powder used was 700 kegs, or 17,500 pounds. The blast was acknowledged by many practical miners who



witnessed it, to be the most successful and effective that had taken place in that section. In preparing the ground for this blast, drifts were run in the shape shown in the preceding diagram.

The drift from the face of the bank was 110 feet long. From the end of this a drift was run one way 70 feet, and the other way 60 feet. From the end of the 70-foot drift an L was run towards the face of the bank 55 feet; from the end of the 60-foot drift a short drift, 30 feet long was also run back towards the face of the bank. In the drift to the right 400 kegs of powder were placed, and the opposite side, 300 kegs. The mouth of the drift was tamped for 75 feet from the near end, and the T drifts were tamped 10 feet each way. Plenty of space was left in the L drifts for the expansion of gases generated by the explosion of powder. The tunnel was 4½ feet high and five feet wide, and the bank was 140 feet high. The electrical apparatus by which the blast was fired was 450 feet from the mouth of the tunnel. The whole length of wire was about 1,500 feet.

It will be seen from the cut, and what has been before remarked, that there was 25 feet of tamping—ten feet on each side and that in the width of the tunnel—between the two L drifts, not counting the 75 feet between that and the outer air. If this blast had been fired by means of fuses, and one side had gone off before the other, much less execution would have been done. Being fired by electricity, the discharge was simultaneous and was exerted on both sides of the tamping at the same instant, so that the explosive force of the powder was exerted in the proper direction only. The powder was placed in the drifts in iron kegs. The drifting necessary to put off this blast cost \$300, and powder, materials, etc., cost \$2,700 more. As the owners estimate that from the effects of this single blast, they will be able to clean up about \$200,000, the outlay of \$3,000 was extremely small in view of the benefits derived. The system of bank blasting will probably double the consumption of powder in California in a few years, with good results to the miners.

The Dardanelles claim, owned by Mr. Jones, is panning out well. It is stated that \$80,000 has been offered for this claim by a San Francisco company, but \$100,000 is asked. The last clean-up for a run of one week was \$9,000. This was last week; the gold weighed 30 pounds.

At Michigan Bluffs, the Big Gun claim of Van Emmon & Bros., gives employment to 20 men. The "Whisky" is making preparations for a new start, and expect a rich strike. Some \$45,000 has been expended on the Hazard claim, owned by a San Francisco company, and they are now doing well.

The Meares, Pond, at Todd's valley, are working several claims, which are paying them well.

At Yankee Jim's they expect a busy time this season.

The toll roads between Auburn and Forest Hill are in excellent condition.

MINING SALE.—A cotemporary states that Dr. A. Anderson, of Vallejo, has been one of the lucky ones connected with the cinnabar excitement in Lake county. He has disposed of a mine, in which he has a half interest, for \$20,000. This mine is known as the Sulphur Bank, and is located on the Clear Lake shore, two miles from Borax Lake.

The water has been turned into 4,100 feet of new pipe just laid by the Northerly Five Cent Hill Mining Company. This will be of benefit to the placer mines in the vicinity of Greenwood.

Mining Education in California.

We recently made some remarks to the effect that there was no better place, perhaps, in the world, for the student of mining engineering in all its branches, than at our State University, providing the necessary facilities for pursuing studies were furnished. Of course, as far as the acquisition of book knowledge is concerned the locality where the student "absorbs" such knowledge is of no moment; but in this study, more than all others, a practical education is necessary and students must be able to make geological tours, visit mines and mills in operation, have a well-furnished chemical laboratory and a good mineralogical collection close at hand, and above all good, practical and efficient instructors.

Since the former article referred to was published, the Regents of the University have decided, among other improvements, to commence the instruction in mining at the University, and a special committee is to be appointed to consider and report what is feasible. There are to be in the University two Faculties, one of Letters and the other of Science. The Faculty of Letters shall maintain two courses of instruction, one corresponding to the usual classical college, and one in which special prominence shall be given to the modern languages and literature. The Faculty of Science shall maintain five courses of instruction, which shall be announced as colleges, namely, the College of Agriculture, the College of Mechanic Arts, the College of Mining, the College of Engineering, and the College of Chemistry. Plans shall be taken to make the instructions in each of these thorough, systematic and complete. Scientific students may be required to attend some literary studies, and literary students may be required to attend some scientific studies, in order that a liberal culture as well as special proficiency may be attained.

In carrying out the plans proposed it is to be hoped that the committee will consult with a few practical mining men as well as those connected with educational institutions. If every effort possible is made to cause this department to be as practical as is consistent, it will be of great value to the State. The students ought to know how to handle a pick and shovel, put in a blast, place a set of timbers, lay tracks and lagging, sharpen a pick or drill, and do other things of like character that every common miner knows. They ought to be able to replace a shoe or die, prepare their plates, regulate the cams to get the right drop, know how much quicksilver to put in a battery, charge a pan, clean up a battery with plates, blankets or pane, retort the amalgam, make a bar, clean the quicksilver, and do the general work around a mill. We mention these, since they are subjects frequently neglected in favor of more scientific knowledge.

When young men are advanced far enough to be able to get a position as superintendent of a mine or mill they will not have to do such work as we mention, but until they are able to get such a position they must expect to accept subordinate places. The great fault with most of them is that they suppose themselves capable of accepting positions of superiority as soon as they leave school, and are rather surprised and offended if they do not get an opportunity to display their talents. The truth is that in the mining regions, scientific miners are looked down upon unless they prove by their works that they are fully as well posted in minor details as in more advanced knowledge. When they are known to possess the necessary qualifications of both the common miner and the educated metallurgist, they will be recognized according to their merits.

If our university can succeed in sending out young men fitted to accept any position about a mine or mill, it will have accomplished much good; for the advanced and theoretical knowledge of such, after being increased with experience, will create a class of men much needed. The university has a good laboratory, a quartz mill has been given to it, and now it wants samples of all the improved machinery of the day. Means should be provided for the students to take extended trips into the mining regions where large operations are being carried on. Will not some of the many gentlemen who have made their fortunes from the mining interests of this coast have generosity enough to start this fund with a liberal donation? If properly inaugurated, others may become willing to aid the cause and build up a department of mining in the university which shall be a credit to the State. Who speaks first?

GUERREVILLE mining district, in Sonoma county, the seat of the latest quicksilver excitement, commences at a point on Russian river, at the mouth of what is known as Porter creek, thence along said creek to the head of the main branch, to the head of East Austin creek, thence west on a line to West Austin creek, thence southwest to Poll Mountain, thence south to the mouth of Russian river, thence up said river to the place of beginning.

COMSTOCK ORE.—The following is a statement of the amount of ore shipped by rail during the month of April from the Comstock mines to the various mills in the vicinity: Number of car loads, 3,772; number of pounds, 56,580,000.

The new town in Highland district is to be called Williamsburgh.

The Negley Amendment.

"There are none so blind as those who won't see," and a majority of the papers on this coast are perfectly blind with respect to the effect of the different mining bills now before Congress especially the Negley amendment. They persist in calling it the "Sutro amendment," and state that it is wholly in his interest, simply because a clause in the amendment specifies that the rights of the tunnel company "shall not be in any way affected." Common sense is not enough to teach any one that if there is no clause in an amendment which changes any former law, the former law will stand as it is; and in this case there was no need for the clause quoted above, as the vested rights of the tunnel were not affected by it. Commissioner Drummond, of the General Land Office, in a letter publicly states that so far as the rights of the tunnel are concerned, the amendment does not change any existing law, and that Sutro's rights are as good now as they will be if it passes.

The only question at issue is this: "Shall the productive Comstock mines define their boundaries?" The owners do not want to do so, and because Mr. Sutro supports this amendment—somewhat unadvisedly, we think—and he is an unpopular man, as most persistent men are, the owners of these mines desire to make the bill odious by throwing it on to his shoulders. Sutro naturally wants to protect whatever rights he has under the law, and no one can blame him for so doing; but if he had not made himself so prominent in this matter, the question might have been better understood.

The idea of Mr. Sutro "running" Congress is twaddle. Rich men like Jones and others would do it if they could, but because they cannot, they pitch into Mr. Sutro because Congress wants to recognize rights which a former Congress has conferred. There is a large amount of telegraphic "boob" on this subject coming from Washington from day to day, and so very one-sided that it looks to impartial observers as if the owners of those productive mines had captured the sender of these dispatches. We are glad to see that the *Chronicle* of this city has been just and fearless enough to speak the truth about this matter and has suppressed many of the foolish statements forwarded to it. Many of the other papers, in their enmity to the tunnel scheme, have mis-stated the whole case.

If these productive mines on the Comstock define their boundaries as this bill compels them to do, many more mines will be patented and worked than at present, the titles of those claims to the eastward will be settled and they will be marketable, which they are not now. There is no reason to tug in the Sutro question at all, whatever his rights are they are not affected. The statement that suit will be begun by the Comstock mines against the tunnel is improbable, as there is as yet no cause for suit. When the tunnel reaches the lode and the royalty is demanded there will be time enough to renege the demands in the courts; at present there is no cause to.

Poison Oak Remedies.

A lady recently informed us that "soap root," which grows wild in most hilly districts in California, macerated and applied, gives almost instant relief to the surface affected by poison oak. As soon as dry it seems to form an airtight covering. We have seen it tried with effect; but as to whether in bad cases it is sufficient without any further means of eradicating the poison from the system, we can not say. Mrs. Sherwood writes to the San Francisco *Call* as follows: "We tried several cures, but all failed but the following, which was sent from your paper. It did not act so quickly as promised in the recipe, but was very effective:

"Dissolve one ounce of gum shellac in six ounces of sulphuric ether; cork tightly in a bottle. Bathe the surface where the irritation appears with cold water, and wipe dry; then apply the above ointment. The ether will evaporate, leaving an elastic coating of gum, impervious to the air. In about two minutes the most distressing case of poison oak can be relieved entirely of all unpleasant sensations. As the coating peels off, apply more of the ointment, and in twenty-four hours the cure is performed."

[We presume that collodion, which is gun cotton dissolved in sulphuric ether, will answer the same purpose. It may be obtained at any druggist's, and when applied to the surface with a brush, immediately forms a thin coating impervious to air or water.—En: CALL.]

The last angustion on this subject is that a simple mustard plaster answers all purposes in effecting a cure for poison oak.

The San Francisco Microscopical Society held its annual reception on Monday evening last, when a number of microscopical specimens were exhibited to the guests. The society is now in a flourishing condition, has a good membership and several very handsome instruments, which latter are not put away under glass, but made good use of by the members.

The St. John quicksilver mine near Vallejo, Solano county, produced 192 flasks of mercury in April, worth about \$22,000.

Improved Hydraulic Motor.

The accompanying illustration represents an improved hydraulic motor, invented by Wm. Walter, of Arkada, Washington Territory, the object of which is the utilization of the power of small streams of water for various purposes, with or without requiring dams, as all the water can be conveyed through flumes or pipes. The inventor claims that, by the use of his invention, small streams, which have hitherto been useless for water-power, may be applied to impart motion to stamping, pumping, sawing, and other machinery. The invention consists in the application of the stream or body of water to a vertical cistern and cistern-valve, which is balanced by a weighted lever, so that, on floating, the water rushes into a horizontal pipe and trough, filled with water. The forward motion of the water, in connection with the closing of the cistern-valve, produces a forward motion of a piston-valve at closed end of the horizontal pipe, which is connected suitably to the machinery to be driven by it.

The drawing represents a vertical longitudinal section of the motor. *A*, is a trough or ditch, constantly filled with water; *B*, a horizontal pipe placed lengthwise therein, the shorter end, *a*, of which has a larger diameter than the longer end, *b*. To the wider part of the pipe, *B*, is connected, in a suitable manner, the vertical cylindrical cistern, *C*, having about the same diameter as the pipe, *a*. Its upper funnel-shaped end, *d*, conducts from the pipe, *c*, the stream of water to the cistern, *C*. The shorter end, *a*, of the pipe, *B*, is closed and provided with a well-fitting piston-valve, *D*, which is connected in some suitable manner to the machinery to be operated. The end of the cistern, *C*, communicating with the pipe *A*, is provided with a ring, *g*, rigidly connected to the cistern, *C*, the opening of which is about half of the width of that of the cistern. A cylindrical body or valve, *E*, of wood or other material, as heavy as water, extends through the full length of the cistern, *C*, its diameter being of such width that one-half of the volume of the cistern is taken up by it. The valve, *E*, is pivoted at its upper end to a lever, *F*, sliding in a guide-rod, *h*, and having its fulcrum in standards, *G*. To the other end of the lever, *F*, is suspended a weight, *W*, slightly lighter than the valve, *E*. A projecting band-spring, *i*, acting on the stop, *k*, of the standards, *H*, accelerates the down-stroke of the valve, *E*.

The operation of the motor is accomplished by filling the trough, *A*, pipe, *B*, and cistern, *C*, with water; the valve, *E*, closing the opening of the cistern in the ring, *g*. When the stream fills up the cistern entirely, the valve, *E*, will float as soon as there is some pressure from below to start it. By lifting it slightly the water in the cistern will rush under the valve, *E*, and carry the same upward. It will, in one or two moments, pass through the ring, *g*, into the larger part of the pipe, *B*. The valve, *E*, having no floating pressure from below, in connection with the action of the spring, *i*, of the lever, *H*, on the stop, *k*, is carried back and closes the ring, *g*. The water in the pipe, *B*, being in rapid forward motion or current, causes, by the sudden closing of the valve, *E*, the forward motion of the piston-valve, *D*, with power created. The return of the piston, *D*, by means of the spring, *j*, draws the body of water back, and gives, therefore, pressure enough to float the valve, *E*, and repeat the same operation.

The power of the motor may be used fast or slow, as required—30 to 45 strokes a minute, down to one stroke in ten minutes—with but slight alterations in the proportions of the parts. The power may be utilized in crushing quartz and stamping bones, sawing with sash saw, pumping, etc.

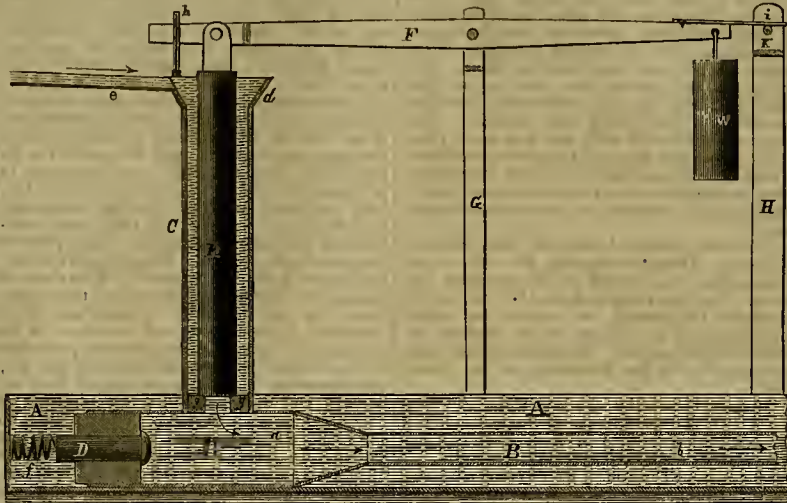
The inventor tells us that in building the machine, the piston, *D*, opening in the ring, *g*, and pipe, *B*, are the same diameter. The length of the pipe, *B*, is about three times the height of the cistern, *C*, or fall of water. Lumber, very thick and strong, is the cheapest material for the cistern and pipe for a large motor, well fastened to the solid mud sills. If made of lumber, (square), the ring, *g*, is not needed and the enlargement of the pipe, *B*, can be made inside of the same and only into two of the planks. Really it is not necessary at all, for it is merely for a stop to the piston, which stop can be made outside and have no head to the piston.

In the trial made by the inventor, *A* was made five feet high and six inches in diameter, and the pipe, *B*, was 14 feet long and three feet in diameter. The mechanism was very poor, and the piston roomy, but it raised a stamp weighing 24 pounds, six inches high. Two quarts of water will escape per stroke, in slow motion. The inventor thinks more perfect workmanship would permit the motor to turn a crank with a fast motion, the fall of the head to force the piston one way and the snout the other. The spring, *i*, must be made so that it can be fastened long or short, and the machine can be regulated with the spring and weight.

The slow motion is caused by a spring catch to the valve, *E*, or lever, to catch, until a float in the cistern will touch it off again. The valve, *E*, is provided with a guide-rod, *h*, on top, to keep the same in its place. The spiral spring, *F*, is not needed when machinery is attached, as it shows in the drawing, but there will be another place found for it in fast motion. In slow motion a mere weight will do to bring it back,

Improved Chimney Stacks.

We illustrate in this issue an improved form of chimney stack, recently patented through the Scientific Press Patent Agency by J. Browell, of this city. The main features of the invention are its strength and lightness. In a country like this, where we are frequently subject to earthquakes, chimneys constructed on the principle of this one are less dangerous than the heavy brick structures in such general use. Mr. Browell claims that his chimney is earthquake proof, and is at the same time efficient for the purposes for which it is made. Fig. 1, in the cut, represents a perspective

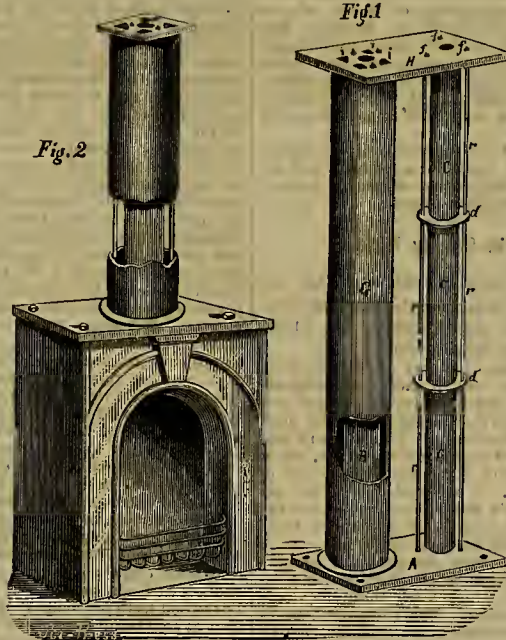


WALTER'S HYDRAULIC MOTOR.

view of chimney; Fig. 2, part of chimney with ventilator; letter *A*, the base upon which chimney, *B*, rests, which is usually above the fire-place. The sections of chimney, *C*, *C*, *C*, are constructed of fire-clay, earthenware, cement, or artificial stone, which are made in the form of a tube and placed one upon another. For protecting and securing the joints,

works, 600 feet long, which has 250 feet pressure, giving a good hydraulic force. Four hydrants are attached, with 250 feet of carbolized hose, to be ready in case of fire.

The laborers employed at some mining works in Missouri are debating the question as to whether, when the whistle blows for dinner, they



BROWELL'S IMPROVED CHIMNEY STACKS.

a metallic band or ring, *d*, is employed; the annular channel is filled with cement or other hardening fire-proof substance, which hermetically seals the joints and fixes the bands in place. Outside of the chimney, *C*, *C*, *C*, is a metallic tube, *G*, which is larger than the chimney, *C*, *C*, *C*, so that space is left between the two for ventilation. The rods or bars which secure the chimney are represented by *R*, *R*.

The construction of the chimney is easily seen by referring to the cut. In the manner which it is made, a chimney can be put in the second story of a house or anywhere else, without the necessity of building from the ground. The longitudinal rods have the effect of keeping the stack perfectly firm and solid. The weight of a chimney is very sensibly diminished by using one of this construction. They can be readily set on any fire-place, or outside of brick or frame buildings; in fact, can be placed in any part of the house with perfect safety, without going to the foundation. They can be applied to cooking stoves, ranges, blast furnaces, pottery kilns, etc. The sections of pipe are joined together in their upright position in a novel manner, and the joints are thoroughly protected. The chimneys can be transported readily from one place to another, and can be set up by any mechanic.

For further information concerning this chimney, address the inventor, Mr. J. Browell, at No. 442 Jackson street, in this city.

UNDERGROUND CONNECTION.—The Gold Hill News of the 22d, in speaking of the California mine says: The connection between the north drift on the 1,300-foot level and the south drift on the same level, will be complete by to-morrow morning. The connection of these drifts is quite an important event as there will then be a complete underground connection of all the mines on the ledge extending from the Ophir on the north to the south line of the Hsie and Norcross.

The Consolidated Virginia Company have laid a six-inch water pipe to their crushing

Congress and the Patent Laws.

This week the following dispatch came from Washington to the daily press: The bill reported from the Committee on Patents authorizing the extension of the patent to John Marsh for a trimming attachment to sewing machines, passed, 95 to 85, after a long discussion.

Here then is another case upon which those opposed to the patent system of the country will seize, to illustrate the evil effects and monopolizing influence of patents, when the Patent law is not to blame, but rather the Congress that will not let the patent law alone. In a recent issue of the *Bulletin*, we noticed an editorial on this subject headed, "The Protection of Inventors," which, although true as far as it went, did not fairly state the whole facts, and especially that portion which goes to show the real cause of the trouble complained of. It is an easy task to pick out certain special cases and use them to illustrate the evil working of any law, no matter how just that law may be in the generality of cases. In the article referred to, the India rubber patents and sewing machine patents are employed to illustrate the monopolizing character of patents, when the fact is, that these patents would long ago have been thrown open and free to the public by the expiration of the patents protecting them, had not Congress by special act extended them. This being the case, the monopoly of these inventions can be attributed to special legislation and not to the system of granting patents for original inventions.

No one will assert for a moment that the inventor or discoverer of the process of vulcanizing India rubber, or the inventor of the sewing machine was granted more than he deserved when the exclusive privilege of working his invention for fourteen or seventeen years was given to him, if that privilege had ended when the patent expired; but if Congress saw fit to extend the patents after that time, we do not see how we can attribute the monopolizing influence which that extension created to the patent law. The trouble is with Congress, and not with patent law. If a man discovers or invents something that was not known before, and by that discovery or invention produces something of value to the world, is it not right that he should be benefitted by the results? The world got along quite well before he made the discovery or invention, and it is not going to be greatly inconvenienced by having to pay the small amount of profit in the shape of royalty that is imposed on patented articles for the term or duration of a patent. We agree that in some particulars our patent law can be improved, so as to benefit both inventors and the public; but the idea of Congress, as is proposed, passing a law establishing a fixed royalty of ten per cent. on all patent inventions, irrespective of their value characters, is to us a gross absurdity. Few inventors will devote their time and expend their money in investigating and experimenting upon new ideas, if their reward is to be thus curtailed.

THE COINAGE AT THE SAN FRANCISCO MINT in April was \$1,752,000, making \$7,983,000 for the first four months of this year. Of this total amount \$6,940,000 was in double eagles; \$793,000 in trade dollars; \$143,000 in half-dollars; \$98,000 in quarter dollars; and \$9,000 in dimes.

MONTEREY COAL.—Reports from the newly discovered coal fields near Monterey are very cheering. Investigation has proved that large, well-defined ledges of a superior quality of coal exist there, and that the coal is easily extracted, and lies convenient to a cheap and rapid route of transportation to a market.

MINERS' STRIKE.—Late advices from London state that there seems to be no prospect for the settlement of the strikes at Durham Crossing. Seventy thousand miners and laborers are now out of employment, and great distress prevails among them. Many are preparing to emigrate.

Sacramento men who have a fancy for mining enterprises appear to have quite generally dropped gold and silver hunting, and are now getting interested as fast as possible in quick-silver claims.

Lewis, Bnll & Co., owners of the famous Legal Tender Silver Mine, in Montana, have negotiated in the East, for concentrating machinery, which will be shipped and placed in operation at Clancy, the present season.

PLACER mines have been discovered on the head waters of the Bruno, about 70 miles northeast of Elko, Nev. They are said to be "Chinese diggings," which will not pay white men to work.

ASSAY OFFICE AT HELENA.—The bill providing for the establishment of an assay office at Helena, Montana, has been passed by Congress.

New placer diggings have been discovered below the mouth of South Boulder, in Jefferson county, Montana. It is claimed that they will yield \$5 a day to the man.

GULCH mining is starting up quite lively in Montana.

The Hoosac smelting furnace is being put in repair for the summer campaign. When fully at work, seventy tons of ore will be reduced in twenty-four hours, and extra teams will be put on to haul the bullion to the railroad.

The Eberhardt mill, says the White Pine News, has been compelled to shut down, owing to the impossibility of getting ore down from the mine. The snow on part of the road is eighteen feet deep.

Those interested in Guerneville district, Sonoma county, think that the quicksilver mines discovered there will be as rich as those at Pine Flat.

JOHN R. TAYLOR has discovered rich specimens of cinnabar on Cache Creek, ten miles north of Bertlett Springs.

OVER 800 bars of bullion were brought into Los Angeles, one day last week, from the mining districts of the lower counties.

Metallurgy of Bismuth.

In reply to a correspondent's questions on this subject we insert the following paper, originally contributed to *Les Mondes* by M. A. Valenciennes, director of the factory of chemical and pharmaceutical products of the central pharmacy of France, at St. Denis.

It is well known that the bismuth of commerce has been for a long time extracted from the mines of Saxe, and that the preparation of this metal was very simple, as it was only necessary to heat the ore in melting-pots to separate the pure bismuth from its gangue.

The consumption of bismuth having increased of late years, the production of the mines of Saxe became at last insufficient, and the price in 1869 reached 55 fr. the kilogramme, while twenty years ago it hardly fetched 11 fr. Then there appeared in the market a new ore of bismuth, originally from South America, and rich enough to be brought to Europe, in spite of the expense of transport.

M. Dorvault, director of the central pharmacy of France, purchased in 1869 a considerable quantity of ore from Bolivia, and entrusted me with its metallurgical treatment in the factory of chemical and pharmaceutical products at Saint Denis.

This ore occurs in a vein of metal near the copper and silver mines situated in the chain of the Andes, close to the town of Azucar, in Bolivia. The proprietors of these mines have tried, but without success, to extract the bismuth upon the spot. The ore is brought on the backs of mules to the port of Cobija, whence it is embarked for England. It is composed of sulphide of bismuth mixed with sulphides of iron and of copper. Its gangue is mainly quartz; its richness in bismuth is very variable. In examining a medium sample coming from different lots, I have found the following proportions in a hundred parts:

Bismuth.....	22-30	30-05
Iron.....	16-20	16-90
Copper.....	9-50	12-15
Sulphur.....	19-50	16-90

Antimony, lead, and silver are also present in small quantities.

When the composition of this ore is compared with that of the samples described in treatises of mineralogy, a notable difference is observed. The latter come from the southern countries of Europe, and while they contain a great quantity of sulphide of lead mixed with sulphides of copper and of bismuth, or perhaps with sulphides of silver and of bismuth, that of Bolivia, on the contrary, contains but very little lead and silver, and a much greater proportion of sulphides of iron and copper. From the point of view of bismuth intended for pharmaceutical purposes, this composition is interesting, for the metal obtained contains but very little lead, the iron and copper, with sulphur, separating readily by the dry process, while the lead is very difficult to eliminate.

In order to avoid the transport of these rough ores to Europe with their gangue, an attempt was made to melt them in a blast furnace. Coal being scarce in those mountainous countries, the Indian miners employed a dried moss with a very thick and resinous root. They thus obtained some bismuth, and some matte formed of sulphides of bismuth, of iron and of copper; but they were obliged to abandon this procedure, because of the great loss of bismuth.

Among the samples brought by M. Dorvault, were some of the mattes resulting from these operations; but they did not contain upon the average more than 18 or 20 per cent. of bismuth.

Treatment of the Ore.

The ore, powdered, is roasted at a red heat for 24 hours in a reverberatory furnace, of which the bed is flat. A little coal dust is thrown in from time to time, and the mass is frequently stirred with iron rables. The ore, oxidized by this operation, is then mixed with three per cent. of coal, and a liquid composed of lime, soda and fluor spar. This mixture is introduced into a reverberatory furnace with a concave sole furnished with a tap-hole for running off the slag. At the commencement of the operation, the damper is shut in order that the reducing flame produced may assist the reaction of the coal upon the oxide of bismuth, and also to prevent the volatilization of that oxide. During the operation, which lasts for two hours, the mass is frequently stirred. The register is then opened, and the fire is urged to a white heat. At the end of two more hours, the mixture is perfectly liquid, and ready for drawing off into a casting-ladle lined with earth. On taking out the stopper the melted mass flows out, and the ladle is raised and left alone until the matter has become quite cold. There are found in the ladle three distinct layers which are divided according to their density. At the bottom, a layer of bismuth; above that, a matte composed of sulphides of bismuth and of copper; lastly, vitreous scoriae containing the iron from the ore in the state of silicate.

This bismuth, in a rough state, contains two per cent. of antimony and lead, and two per cent. of copper, besides a very slight portion of silver. When it is intended for the preparation of nitrate of bismuth, for use in pharmacy, it is only necessary to melt it to a red heat with some niter, in order to separate the antimony. The copper, lead and silver are eliminated by the wet process.

The matte drawn out from the top of the layer of bismuth contained, upon the average, from five to eight per cent. of bismuth. They were reduced to powder and calcined. The product of the calcination was afterwards smelted, the same result being obtained as in the first operation; the mattes from this second

fusion gave no more than one or two per cent. of bismuth. It was impracticable, by the dry method, to more effectually separate the bismuth, because it formed an alloy with the copper. In order to exhaust these last workings the wet process had to be employed.

Treatment of the Melted Ore.

This product, as we have said above, results from the first fusion of the ore, which separates it from the gangue. It is composed of the mixed sulphides of bismuth, of iron and of copper. We have treated it by two methods.

The first, a direct method, consisted in treating the pulverized substance by iron, without previous calcination. It was mixed with twelve per cent. of iron filings, twenty per cent. of vitreous scoriae, and a small quantity of soda. This mixture was put into the reverberatory furnace, and, after four hours' submission to a white heat, the whole was in full fusion. It was run off into a ladle, and after it had become cold there was found a layer of bismuth, a matte composed of sulphides of iron and of copper, and some vitreous scoriae. The bismuth thus obtained has less copper than that prepared by the previously described method, but it contained some antimony. This operation succeeded well, and was more expeditious than the first; but it had one considerable inconvenience, that the melted sulphide of iron attacked the sole of the furnace so strongly that it was impossible to continue the operation.

The first described method was therefore adopted. After the roasting, the ore, mixed with a flux, was carried to the smelting furnace. The flux employed was the same as that used for the natural ore, except that a little silicious sand was thrown in to replace the quartz of the gangue. The same results were obtained as in the treatment of the native ore.

It may be seen by the statement of these facts that the metallurgy of bismuth bears a certain analogy to that of lead, when the sulphide of bismuth from Bolivia is employed.

We have had occasion to examine a French ore containing some bismuth, at the same time that we were reducing the ore from America. This ore was found at Saint Angel, near Ussel, in the department of La Corrèze, and was sent to me by M. Jules Brougnart. It consisted of wolfram and oxide of bismuth.

After several ineffectual efforts to extract bismuth from this ore in the dry way, I had recourse to the following method: The ore was finely pulverized and digested, in two portions, with hydrochloric acid. The acid liquids were decanted, and one-half of the acid was neutralized by soda. Afterwards the solutions were poured into a large excess of water, when a precipitate of oxychloride of bismuth was found. This was washed, made into a paste with water, and left in contact with thin plates of iron. The bismuth thus reduced by cementation was dried and melted with an alkaline flux. This metal contained some traces of lead and silver.

The portion of ore insoluble in the hydrochloric acid was ignited at a red heat with nitrate of soda. The product exhausted by boiling water gave tungstate of soda.

Klamath County Mines.

The *Eureka Union* of the 25th publishes the following items from this out-of-the-way locality, of which the outer world has heard little or nothing during the past winter:

The Black Bear company are taking from their lower level rock of exceeding richness. Sometime back this company discharged several of their hands on account of running short of provisions to feed them. The stores in that section are out of sugar, out of candles, out of potatoes, and out of numerous other articles of prime necessity. A train of mules was expected at Sawyer's bar from Arcata about the time he left. As soon as the roads and trails are open, so that supplies can be shipped in freely, the Black Bear company will employ from 50 to 75 more men than they have at present, and a much larger force than they have ever employed before. The company have in contemplation to build a new mill the coming summer. The Klamath company are running a tunnel to strike the ledge at the lower level, and as soon as they strike it they will put on a largely increased force. There are yet on the mountain, between Etna and Sawyer's bar, about seven miles of snow—four on this side of the summit, and three on the other. This snow is of great depth, and will not disappear, if left to the slow process of melting, for weeks, and even months. The necessities of the people on Salmon, however, require that the trail should be open at an early day, as they are out of several of the necessities of life, which they are accustomed to get from Scott valley. To assist nature in the removal of the snow-blockade, they have taken up a subscription with which to hire a force of men to shovel the snow from the trail. In this movement they are joined by the people of Rough and Ready and vicinity. From what Father Callaban says, we judge it is much on the Salmon now as it was here in the starvation winter of 1852, "though with a variation;" there is there now money, money everywhere, but not a potato to eat; here there was money, money everywhere, and nothing but a potato to eat.

CHINAMEN are placer digging in the gulches of Greenhorn mountain. When you ask them how much they make a day, they invariably answer: "Sometime one bittee, sometime one dollar hop."—*Havilah Miner*.

Charcoal Coke for Smelting at Eureka.

In an article on the mines of Eureka district, question of fuel, etc., the *Eureka Sentinel* of a late date says:

The charcoal question is now being very extensively discussed, and should be, because it is one of no little interest to our citizens. The available fuel supply is every day becoming scantier and scantier under the increasing demands which our furnaces have each successive year made upon it. It is well known that charcoal is one of the chief agents employed to promote the prosperity of our camp, and anything that tends to both cheapen and increase its supply must be a matter of some concern to all interested. There is but very little wood of any sort available for coal to be met with on the hills within a radius of 25 miles of Eureka, and the area of the circle is every day rapidly extending itself. Coal or coke we must have, if we would continue smelting operations. Should the former give out, or the price per bushel advance to such a figure as would render it too dear for profitable use, it follows that the only substitute we can fall back upon to supply its place with any degree of profit to consumers, is the latter article. Cheap transportation is the great desideratum; upon it depends the future of the district, though there are some to be found in our midst, property owners, too, who are prone to think otherwise, and a railroad built upon any plan but their own, a useless and profitless undertaking. Such persons live but for the present. Progress and speculation are no parts of their creed. This class of persons not infrequently forget that the permanency and prosperity of a camp are often measured by the energy and enterprise of its population. Great natural resources, whether of the mineral or vegetable kingdom, will not, of themselves, do much good without they are utilized and made available for purposes of commerce and speculation. What benefit to the world or its commerce would the colossal wealth now lying within the confines of the Richmond, Eureka Consolidated and K K properties be, were it not brought forth from where for ages it has lain, to be disseminated among the people of the district?

The completion of the narrow-gauge, now in course of construction, upon which work was resumed on the 12th instant, will prove a certain and effective panacea for whatever difficulties may arise from a want of fuel. There were probably 360,000 bushels of charcoal on hand at the commencement of last season's operations. Are there as many now? No; nor are there likely to be for some months to come. The Consolidated may have 2,000 to 3,000 yet unused, while the past week has not given to the Richmond much above 12,000 bushels more, so that taking these two extremes and adding them will show us the small amount on hand as compared with last year. The amount that has been burned during the past winter is also very small. The severity of the weather retarded wood-chopping, pitting and burning. One hundred and seventy-five thousand bushels will cover about all that is now ready to be hauled. Let's see what the probable consumption would be for the next eight months, from May to January. Suppose eight of our furnaces should run for that period and were to consume daily for that time an average of 1,700 bushels each, we would require 13,600 bushels per day, 408,000 per month and 3,264,000 bushels for the eight months. But since there is no furnace will make a run of that duration, we must allow for stoppages, cleanings and repairing, say five days each or forty days altogether, in which 544,000 bushels would be consumed. Deducting this last sum from the former we will still leave a residue of 2,720,000 to be supplied during that period to meet the requirements of smelting. To produce this enormous amount among the hills will absorb for eight months the united labor of 5,440 men. The product of each man's labor for one month is generally estimated at 500 bushels. From this estimate we can see that it will take 680 men per month constantly employed to produce the 2,720,000 bushels that will be needed. Messrs. Reilly & Lockwood have not employed more than 108 men at coal burning the past winter, while Mr. Whisler did not work more than 80 men during the same period. These three men do not contemplate increasing their force more than 200 or nearly 400 altogether, which would leave the remaining 280 men required to be supplied by the remaining parties engaged in the business. With such a state of things staring us in the face how can it be expected that we can, with any degree of exactitude, judge of the amount of coal to be received this season?

Messrs. Reilly & Lockwood are about to inaugurate a new era in coal burning. They have already let their contract for the erection of several kilns wherein to burn coal, whose capacities are to be 50 cords each. They are to be built of stone and to be similar in construction to lime kilns, only that instead of being opened at the top similar to them, they are to have conical-shaped roofs with an aperture at one side, through which the wood will be put lengthwise into the kiln preparatory to burning. It is not claimed that this process will have any material influence in reducing the price, though it will give more and a better quality of coal than that produced by the old method of pit burning. The labor dispensed with in one department will be required in another; because it is manifest that the stationary character of the kilns will necessitate the wood being hauled from longer distances to them than was found to be needed under the old system.

Having pursued this vexed question so far,

it will be necessary, in order to do it justice, to present some pertinent facts in relation to the arguments adduced in favor of

Coke

As an article of fuel. The Dunderberg company has ordered 100 tons of this article, which it is in daily expectation of receiving from the West. That it will soon supersede charcoal in this camp, is among the certainties of the future, and this not so much on account of the price of the latter as from the increased scarcity of the wood from which it is produced. Should the charcoal rates advance within the next month or two, a crisis is imminent, for the mining superintendents are apparently not very willing to adapt themselves to the views expressed by our coal producers, and will, they say, should these views be put in practice, immediately order large supplies of coke from California and elsewhere. The Pancake article will soon be made available, too. Then much of the anxiety of smelters will be removed. Coke can be laid down here for present uses at \$60 per ton. One ton of it will reduce within a fraction of eight tons of ore, while the same quantity of the other, containing 125 bushels, at 16 pounds per bushel, will not smelt more than five tons. Coke, it is alleged, is, even with those equalities of results, cheaper than charcoal at 35 cents per bushel. The cost of 125 bushels of the latter at 30 cents per bushel is \$37.50, while the cost of the same weight of coke is 60 per cent. greater; but since it will smelt 60 per cent. more ore than the former, we find that it is fully as cheap as coal at the aforesaid rate. Now, from this showing, we can see that should charcoal advance to 35 cents, as it is claimed it will and must under the pressure of demand, seeing there is little or no coal on hand, the furnace men will be compelled to fall back upon coals entirely for smelting and other purposes. Should it, however, advance to only 32 cents, they will still demur, since they claim that an advance of six per cent. in the price would be even more than they could afford to pay; and if they cannot pay six per cent. they certainly will not pay 15 per cent., which an advance of five cents per bushel would make it.

Pioche Mines.

The *Pioche Record* of the 26th ult., says: Matters in our mines since our last report have been without any change of a character that calls for notice. There are about the same number of men at work in the respective mines, and about the same amount of ore being extracted. To the two great mining enterprises of the place, the Raymond & Ely and the Meadow Valley, these remarks are especially applicable. In others of lesser note there is perhaps more variation. The Silver Peak on Thursday struck a body of ore which looks as if it might prove to be of considerable value and extent. The Newark has acquired the title of the Amador Tunnel Company, including its mill. We understand the superintendent of the Newark intends to commence shipping ore in a few days. We learn that steps are being taken to pay off the incumbrances of the Caroline, and to resume work in a very short time.

While we were making our rounds yesterday collecting the data for our mining review we had the pleasure of meeting Col. W. H. Raymond, with whom we had a long conversation. In the course of our talk we naturally drifted into a discussion of the prospects of Pioche. The Colonel expressed himself very hopefully, and is evidently determined to fight it out on this line if it takes all summer, and the winter too, for the matter of that. Speaking of the present dullness of Pioche, Colonel Raymond reminded us that last year at this time not less than 200 tons of excellent ore were being extracted daily, and at present there are not probably more than 70 or 80 taken out of the ground, averaging one day with another.

The amount of bullion dispatched the past week by Wells, Fargo & Co. is \$65,667.21, and Pritchard's freight line \$7,239.30; total, \$82,906.51.

THE PROSPECTOR.—He leaves the haunts of civilization in early spring. The first bird who trills his notes (i. e. the bird that catches the worm), is anxiously looked for. His notes are a signal for new discoveries to be made and new districts to be formed. Mounted on a sorry broncho with long-eared burros packed with bacon, beans, flour, etc., with very few of the luxuries of life, plenty of ammunition and a trusty rifle, away he goes. Across torrents, without any bridges, and over mountains, without trails; traveling at night on the snow crust, paddling by day through the mire, goes the early prospector. Nothing stops him; he travels, eats, drinks and sleeps; but that is not all. Along the mountain sides he is constantly looking and watching for indications. No piece of rock, however small, and which differs in any way from the general country rock, escapes his notice. Should it be favorable for gold, it is soon prospected; if silver, he looks for more, and wending his way toward the source, finds more and more, till at last he is rewarded by finding the outcrop of the lode. Does he stop here? Not much. He looks for more lodes and finds them too, locates them, makes known his discoveries, names a district, immortalizes himself, owns plenty of mines, makes a sale, spends his greenbacks, gets up his broncho, packs his burros, goes for another discovery, and repeats this over and over, till he passes on to another world to—prospect. —*Colorado Express*.

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The here inauguration of this industry upon a limited scale, anywhere within the broad sweep of that great and luxuriant valley, would at once add a ten-fold value to thousands of acres, and would alone amply reimburse the proprietors of the soil for making the necessary outlay. Appropriate a body of land to this purpose, reserving yet other acres by the thousands, to be eventually incorporated into one grand concern for the manufacture of beet sugar on a scale commensurate with its importance, and, under proper management, the same could be made so largely paying as to astonish even its most enthusiastic projectors and supporters.

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Wyoming Iron.

The following information is taken from the columns of the Nebraska Herald: By the courtesy of the general superintendent of the Union Pacific, Mr. T. E. Sickles, we had the pleasure of meeting Mr. Potts, a practical iron manufacturer of Pennsylvania, who has just returned from a visit to Wyoming, where he has been carefully examining the quality and quantity of iron ores in that territory, lying along the Union Pacific. We were pleased to hear from him that many of these ores, enough to operate a thousand furnaces, came under his own eye during a brief visit to that country, and that he has no doubt that these ores are equal to the best of those which have enriched Pennsylvania and the country. Fuller details are withheld by Mr. Potts, who is here as a representative of the Union Pacific, and who will report all the facts, together with his opinions of the practicability of iron manufacture in Wyoming to general superintendent Sickles.

Mr. Potts is a practical operator, and is here for the purpose of opening the way to the establishment of extensive rolling mills in Wyoming, for the Union Pacific company. He will be followed by experts who will trace and map out the veins of iron ore with their locality, that the railroad company may have complete data upon which to base their proposed operations. It is not doubted from what we have known heretofore about the intentions of the company that this visit of Mr. Potts is preliminary to the immediate construction of rolling mills in Wyoming, which are rendered necessary by the condition of the iron on the railroad, which must be re-rolled to save enormous outlays for the reconstruction of the track. Although this is now in good order, the necessity for new rails is foreseen, and must be provided for at an early day. An enterprise so important to the road and the country will be but the beginning of others, which will develop in the future great wealth in Wyoming, and which will give employment to large volumes of well paid, skilled labor.

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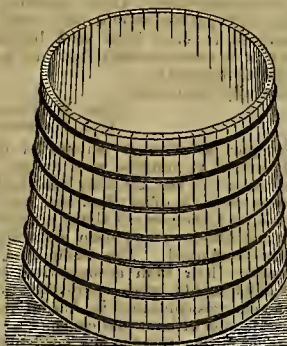
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SCIENTIFIC PRESS.—The attention of our readers is called to an interesting article on the Mining Industry of Northern Sierra, on the first page of this issue, from the SCIENTIFIC PRESS, San Francisco. This is the ablest, most instructive and influential Mining Journal published in the Great West, and should be liberally patronized by all our mining friends.—*Mountain Messenger*, April 25.

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Mining and Other Companies.

Owing to the time necessary to mail the present large edition of the
M. & S. Press, we are obliged to go to press on Thursday even-
ing—which is the very latest hour we can receive advertisements.

Benjamin Mill and Mining Company—Loca-
tion of principal place of business, San Francisco,
California. Location of works, Devil's Gate District,
Lyon county, Nevada.

NOTICE.—There are delinquent upon the following
described stock, on account of assessment (No. 1), levied
on the 17th day of March, 1874, the several amounts
set opposite the names of the respective shareholders
as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Armstrong, Wm.	unissued.	325	\$16 25
Benjamin, F. A. Trustee.	33	260	13 00
Benjamin, F. A.	unissued.	7,150	357 50
Bourke, Terry.	unissued.	1,300	65 00
Booth, G. A.	unissued.	698	29 90
Emerson, J. M.	unissued.	325	16 25
Findley, O.	unissued.	225	11 25
Gould, J. M.	unissued.	225	11 25
Hosmer, Charles.	28	500	25 00
Hosmer, Charles.	29	500	25 00
Hosmer, Charles.	30	500	25 00
Hosmer, Charles.	31	500	25 00
Hosmer, Charles.	32	340	17 00
Hyman, Samuel.	unissued.	1,300	65 00
Leavitt, Leander Trustee.	1	100	5 00
Leavitt, Leander Trustee.	2	100	5 00
Leavitt, Leander Trustee.	3	100	5 00
Leavitt, Leander Trustee.	4	100	5 00
Leavitt, Leander Trustee.	5	100	5 00
Leavitt, Leander Trustee.	6	100	5 00
Leavitt, Leander Trustee.	7	100	5 00
Leavitt, Leander Trustee.	8	100	5 00
Leavitt, Leander Trustee.	9	100	5 00
Leavitt, Leander Trustee.	10	100	5 00
Leavitt, Leander Trustee.	11	50	2 50
Leavitt, Leander Trustee.	12	50	2 50
Leavitt, Leander Trustee.	13	50	2 50
Leavitt, Leander Trustee.	14	50	2 50
Leavitt, Leander Trustee.	15	50	2 50
Leavitt, Leander Trustee.	16	50	2 50
Leavitt, Leander Trustee.	17	50	2 50
Leavitt, Leander Trustee.	18	50	2 50
Leavitt, Leander Trustee.	19	100	5 00
Leavitt, Leander Trustee.	20	100	5 00
Leavitt, Leander Trustee.	21	100	5 00
Leavitt, Leander Trustee.	22	50	2 50
Leavitt, Leander Trustee.	23	50	2 50
Leavitt, Leander Trustee.	24	50	2 50
Leavitt, L. J.	unissued.	250	12 50
Morrison, J. J.	unissued.	624	31 20
Mitchell, R. J.	unissued.	299	14 95
Myers, J. G.	unissued.	325	16 25
Mcken James.	unissued.	2,600	130 00
McClean Hugh.	unissued.	650	32 50
Norton, Geo. M.	unissued.	4,530	227 50
Smith, E. B.	unissued.	939	46 95
Sylvester, D. L.	unissued.	325	16 25
Shaefer, E.	unissued.	325	16 25
Smiley, Geo. W.	unissued.	650	32 50
Smith, N. T.	unissued.	1,300	65 00
Snyder, A. W.	unissued.	2,600	130 00
Upham, W. R.	unissued.	325	16 25
Van Brunt, R. W.	unissued.	1,900	95 00
Waters Arthur.	25	50	2 50
Waters Arthur.	26	50	2 50
Waters Arthur.	27	50	2 50
Wells, D. R.	unissued.	1,248	62 40
White, J. O.	unissued.	325	16 25
Wright, J. A.	unissued.	325	16 25
Wright, J. W.	unissued.	325	16 25

And in accordance with law, and an order of the
Board of Directors, made on the 17th day of March,
1874, so many shares of each parcel of said stock as
may be necessary, will be sold at public auction, at the
office of said Company, Room No. 7, No. 401 California
street, San Francisco, Cal., on Friday the 15th day of
May, 1874, at the hour of 12 o'clock m., of said day, to
pay said delinquent assessment thereon, together with
costs of advertising and expenses of sale.

Office—Room No. 7, No. 401 California street, San
Francisco, Cal.

POSTPONEMENT.—The above sale is postponed
until Monday, the 18th day of May, 1874, at the hour of
12 o'clock m., at the office of said Company, Room No.
7, No. 401 California street, San Francisco, Cal. By
order of the Board of Directors.

Office—Room No. 7, No. 401 California street, San
Francisco, Cal.

Continental Silver Mining Company—Loca-
tion of principal place of business, San Francisco,
State of California. Location of works, near Treasure
City, White Pine County, Nevada.

NOTICE is hereby given, that at a meeting of the Directors,
held on the 4th day of May, 1874, an assessment (No. 4)
of the capital stock of the corporation, payable immediately
in United States gold coin, to the Secretary, at the office of the Company, 118
Front street, San Francisco, California.

Any stock upon which this assessment shall remain un-
paid on the 7th day of June, 1874, will be delinquent, and
advertised for sale at public auction, and unless payment is
made before, will be sold on Tuesday, the 29th day of
June, 1874, to pay the delinquent assessment, together with
costs of advertising and expenses of sale.

THEODORE BLANKENBURG, Secretary.
Office, 118 and 120 Front street, San Francisco, California.

Diamond Silver Mining Company.—Loca-
tion of works, East Tintic Mining District, Juab
County, Utah Territory. Principal place of business,
San Francisco.

NOTICE is hereby given that at a meeting of the Board of
Directors, held on the 18th day of April, 1874, an assess-
ment, No. 1, of ten (10) cents per share was levied upon the
capital stock of the corporation, payable immediately in
United States gold coin, to the Treasurer, J. F. Fish, at the
office of the Company, No. 123 Post street, San Francisco,
California.

Any stock upon which this assessment shall remain un-
paid on the 1st day of June, 1874, will be delinquent,
and advertised for sale at public auction, and unless pay-
ment is made before, will be sold on Thursday, the 26th day
of June, 1874, to pay the delinquent assessment, together
with costs of advertising and expenses of sale.

Office—No. 123 Post street, San Francisco, Cal.

Geneva Consolidated Silver Mining Compa-
ny.—Principal place of business, City and County of
San Francisco, State of California. Location of works,
Copper Creek Mining District, White Pine County, State
of Nevada.

NOTICE is hereby given, that at a meeting of the Board of
Directors, held on the second day of May, 1874, an assess-
ment of twenty-five (25) cents per share was levied upon
the capital stock of the corporation, payable immediately
in United States gold coin, to the Secretary, at the office

of the company, Room 14, No. 302 Montgomery street, San
Francisco, California.

Any stock upon which this assessment shall remain un-
paid on the eighth (8th) day of June, 1874, will be delin-
quent, and advertised for sale at public auction, and unless
payment is made before, will be sold on Monday, the
twenty-ninth (29th) day of June, 1874, to pay the delin-
quent assessment, together with costs of advertising and
expenses of sale.

Office, Room 14, 302 Montgomery street, San Francisco,
Cal.

Jefferson Gold and Silver Mining Com-
pany. Location of principal place of business, San Fran-
cisco, Cal. Location of works, Brown's Valley, Yuba
county, California.

NOTICE.—There are delinquent upon the following
described stock, on account of assessment (No. 2) levied
on the 26th day of March, 1874, the several amounts
set opposite the names of the respective shareholders
as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A J Snyder.	31	10	\$5 00
A J Snyder.	38	10	5 00
A J Snyder.	39	4	2 00
A J Snyder.	47	266	133 00
A J Snyder.	63	50	25 00
A J Snyder.	64	50	25 00
A J Snyder.	65	50	25 00
A J Snyder.	67	10	5 00
A J Snyder.	68	10	5 00
A J Snyder.	69	10	5 00
A J Snyder.	70	10	5 00
A J Snyder.	71	10	5 00
A J Snyder.	72	10	5 00
A J Snyder.	120	3	1 50
A J Snyder.	121	2	1 00
Max Armer.	107	3	1 50
Max Armer.	119	5	2 50
Geo H Thompson.	118	5	2 50
N D Ridsout.	12	10	5 00
H A Charles.	81	2	1 00
C L Low.	09	5	2 50
J S Kline.	41	10	5 00
J Hoesch.	41	10	5 00
Mrs J Hoesch.	47	5	2 50
J S Belcher.	45	10	5 00
M J Lord.	52	10	5 00
M J Lord.	68	1	50
M J Lord.	71	2	1 00
M J Lord.	90	2	1 00
M J Lord.	122	1	50
M J Lord.	126	1	50

And in accordance with law, and an order of the
Board of Directors, made on the 25th day of March,
1874, so many shares of each parcel of said stock as may
be necessary, will be sold at public auction, at the office
of the Company, Nos. 214 and 215 Pine street, San Fran-
cisco, Cal., on the first day of June, 1874, at the
hour of 12 o'clock m., of said day, to pay said delinquent
assessment thereon, together with costs of advertising
and expenses of sale.

Office—No. 214 and 215 Pine street, San Francisco, Cal.

Land Purchasers' Association—Office, No.
425 Kearny street, San Francisco, Cal.

NOTICE is hereby given, that at a meeting of the Directors
or Trustees of this corporation, held on the 14th day of
April, 1874, an assessment of ten dollars per share (being
the 40th monthly installment on the subscription to the
stock) was levied upon the capital stock of said corpora-
tion, payable immediately, in United States gold coin, to
the Secretary, at No. 425 Kearny street, San Francisco,
California.

Any stock upon which this assessment shall remain un-
paid on the 18th day of May, 1874, will be delinquent, and
advertised for sale at public auction, and unless payment is
made before, will be sold on the 30th day of June, 1874,
to pay the delinquent assessment, together with costs of
advertising and expenses of sale.

Office, No. 425 Kearny street, Room No. 2, San Fran-
cisco, California.

N. B. This assessment is levied to pay the balance due
for grading Washington street.

Mansfield Gold Mining Company.—Loca-
tion of principal place of business, San Francisco,
California.

NOTICE.—There are delinquent upon the following de-
scribed stock, on account of Assessment levied on the
Twenty-first day of March, 1874, the several amounts
set opposite the names of the respective shareholders
as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Besse, Mrs M D.	204	100	\$2 50
Besse, Mrs M D.	205	100	2 50
Besse, Mrs M D.	206	100	2 50
Besse, Mrs M D.	207	100	2 50
Bowen, Miss E.	282	63	1 33
Bowen, Miss E.	285	20	50
Bowen, Miss E.	286	20	50
Bowen, Miss E.	287	20	50
Bowen, Miss E.	288	10	25
Bowen, Miss E.	289	10	25
Bowen, Miss E.	290	10	25
Bowen, Miss E.	291	10	25
Bradford, O. A.	292	100	2 50
Bradford, O. A.	293	100	2 50
Bradford, O. A.	294	100	2 50
Brown, Andrew.	209	100	2 50
Brown, D.	212	100	2 50
Brown, D.	242	100	2 50
Buch, C. I.	222	100	2 50
Campbell, J. B.	185	100	2 50
Campbell, J. B.	186	100	2 50
Campbell, J. B.	187	100	2 50
Campbell, J. B.	188	50	1 25
Caro, Morris.	241	100	2 50
Eckert, I.	Not issued	900	22 50
Fitzgerald, P.	223	100	2 50
Fryer, G. H.	215	50	1 25
Fryer, G. H.	219	50	1 25
Griffin, John.	213	100	2 50
Hinckley, G. E.	245	100	2 50
Hinckley, G. E.	297	63	1 33
Hitchcock, Benj.	210	100	2 50
Holman, G. O.	Not issued	525	13 13
Locke, J. P.	230	50	1 25
Locke, J. P.	231	50	1 25
Murphy, Richd.	Not issued	627	15 68
Nelson, Isaac.	227	100	2 50
Norton, Albert.	203	100	2 50
Norton, Albert.	220	100	2 50
O'Brien, Mrs E. M.	267	100	2 50
Peterson, John.	225	100	2 50
Peterson, John.	224	100	2 50
Sanders, J. P.	203	100	2 50
Sanders, J. P.	202	100	2 50
Sanders, J. P.	239	100	2 50
Small, Wm, Trustee.	112	100	2 50
Small, Wm, Trustee.	128	100	2 50
Small, Wm, Trustee.	135	100	2 50
Small, Wm, Trustee.	141	100	2 50
Small, Wm, Trustee.	100	100	2 50
Small, Wm, Trustee.	104	100	2 50
Steele, J. B.	228	100	2 50
Steele, J. B.	229	50	1 25
Thompson, Frederick.	284	100	2 50
Walker, S. H.	202	25	63
Wilson, Miss J.	298	25	63

And in accordance with law, and an order of the
Board of Directors, made on the 21st day of March,
1874, so many shares of each parcel of said stock as may
be necessary, will be sold at public auction at the
Company's office, Room 1, No. 531 California Street, San Fran-
cisco, Cal., on the 18th day of May, 1874, at the hour
of 1 o'clock p. m., of said day, to pay said delinquent
assessment thereon, together with costs of advertising
and expenses of sale.

Office—Room 1, No. 531 California Street, San Fran-
cisco, California.

Marshall Mining Company—Location of
works, Contra Costa, Mariposa county, California.

Principal place of business, San Francisco, Cal.
STOCKHOLDERS' MEETING.—A meeting of the stock-
holders of the Marshall Mining Company, will be held
at the office of the corporation, No. 409 California street,
on Tuesday, May 19th, 1874, at one o'clock p. m., for the
purpose of adopting a code of by-laws for the govern-
ment of said corporation.

GEO. F. MAYNARD, Acting Pres't.

San Francisco, April 25, 1874.

Mount Saint Helena Gold and Silver
Mining Company. Principal place of business, San
Francisco, California.

NOTICE.—There are delinquent upon the following
described stock, on account of assessment levied on the
10th day of March, A. D., 1874, the several amounts
set opposite the names of the respective shareholders
as follows:

Shareholders as follows:			
Names.	No. Certificate.	No. Shares.	Amount.
Swift, R.	78	50	\$5 00
Evans, John	79	50	50
Badlam, A.	62	50	5 00
Badlam, A.	63	100	10 00
Winnans, J. W.	60	1800	180 00
Tetresw, C. L.	75	10	1 00
Wills, W. B.	01	50	5 00
Roux, P.	87	5	50
Tourpel, E. C.	88	10	1 00

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10v28-6m

DATA OF CAMERON'S PATENT STEAM PUMPS, REGULAR SIZES.		NUMBERS.	
DIAMETER OF STEAM CYLINDER, IN INCHES.	DIAMETER OF PUMP CYLINDER, IN INCHES.	0	1
1-6	1-6	4	5
2-0	2-0	6	7
2-6	2-6	8	9
3-0	3-0	10	11
3-6	3-6	12	13
4-0	4-0	14	15
4-6	4-6	16	17
5-0	5-0	18	19
5-6	5-6	20	21
6-0	6-0	22	23
6-6	6-6	24	25
7-0	7-0	26	27
7-6	7-6	28	29
8-0	8-0	30	31
8-6	8-6	32	33
9-0	9-0	34	35
9-6	9-6	36	37
10-0	10-0	38	39
10-6	10-6	40	41
11-0	11-0	42	43
11-6	11-6	44	45
12-0	12-0	46	47
12-6	12-6	48	49
13-0	13-0	50	51
13-6	13-6	52	53
14-0	14-0	54	55
14-6	14-6	56	57
15-0	15-0	58	59
15-6	15-6	60	61
16-0	16-0	62	63
16-6	16-6	64	65
17-0	17-0	66	67
17-6	17-6	68	69
18-0	18-0	70	71
18-6	18-6	72	73
19-0	19-0	74	75
19-6	19-6	76	77
20-0	20-0	78	79
20-6	20-6	80	81
21-0	21-0	82	83
21-6	21-6	84	85
22-0	22-0	86	87
22-6	22-6	88	89
23-0	23-0	90	91
23-6	23-6	92	93
24-0	24-0	94	95
24-6	24-6	96	97
25-0	25-0	98	99
25-6	25-6	100	101

These Long Stroke Pumps have large free openings, and are highly esteemed for draining mines.

LONG STROKE PUMPS. No. 4, 21-in. Stroke, \$ No. 6, 30-in. Stroke, \$ No. 7, 30-in. Stroke, \$

These Long Stroke Pumps have large free openings, and are highly esteemed for draining mines.

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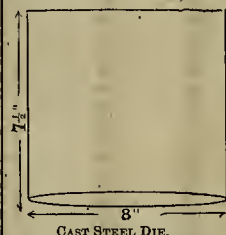
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CAST STEEL SHOE AND DIE COMPANY,

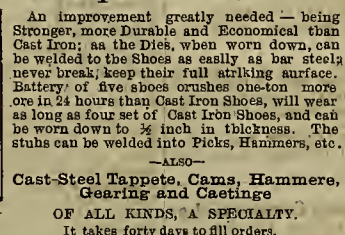
OFFICE—Room 28, Hayward's Building, 419 California St., S. F.

Patented CAST STEEL SHOES & DIES for Quartz Mills.

Price, 20 cents per Pound.



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CAST STEEL SHOE.

An improvement greatly needed—being Stronger, more Durable and Economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as bar steel; never break; keep their full striking surface. Battery of five shoes crushes one-ton more ore in 24 hours than Cast Iron Shoes, will wear as long as four sets of Cast Iron Shoes, and can be worn down to 1/2 inch in thickness. The studs can be welded into Picks, Hammers, etc.

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Cast-Steel Tappets, Cams, Hammers, Gearing and Castings
OF ALL KINDS, A SPECIALTY.
It takes forty days to fill orders.

CALIFORNIA BRASS FOUNDRY,

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ALL KINDS OF Brass, Composition Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Belts and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Couplings and Connections of all sizes and patterns, furnished with dispatch.

PRICES MODERATE.
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LIGHT AND HEAVY CASTINGS,

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California Assay Office—J. A. Mars &

Wm. Ireland, Jr., Chemists and Assayers, Rooms 47 and 48 Merchants' Exchange, San Francisco. Analysis of Ores, Mineral Waters, Etc. 8v28-3m

THE IMPROVED CHAMPION SPRING

MATRESS



Is Light, Noiseless, Elastic and Durable.

CAN BE USED EITHER SIDE UP.

No Vermin can harbor about it. So constructed that the pressure is equally distributed. Does not sag or bag. Can be rolled up in a small compass for transportation. Manufactured by

W. H. SMITH, Manufacturer.

No. 151 New Montgomery street, SAN FRANCISCO. 11v28-1am-3m

Machinery.

TREADWELL & CO.'S

UPRIGHT SAFETY ENGINES,

2 to 10 Horse Power.

MADE BY THE N. Y. SAFETY STEAM POWER CO.

Has tubular boiler, and therefore is secure against the dangers common to shell boilers. Power is taken from near the base, which avoids vibration or top-heaviness. Occupies but two feet square of floor space and is so simple a boy can run it. All its parts are easily accessible—a great advantage. Is complete in itself as a Portable Engine and Boiler, or the engine can be detached from the boiler and run independently, if required. Its main points are SIMPLICITY, SAFETY and ECONOMY. For printing offices, laundries, tanneries, ranches, small repair and machine shops, or for boistering wherever a small and safe power is required, they are peculiarly adapted.



Refer to the following parties who have them in use

E. DETTRICH & CO., Bag Factory, San Francisco;
PACIFIC CHEMICAL WORKS, San Francisco;
ST. IGNATIUS COLLEGE, San Francisco;
STEAMER "PELICAN";
STEAMER "COQUILLE";
JAS. STANTON, Mission street, San Francisco;
GEN. NAGLER, San Jose;
S. L. FRUIT PRESERVING CO., San Lorenzo;
H. BEHRENT, Market street, San Francisco;
A. BOOTH & CO., Collinsville;
J. HICKS, Los Angeles;

And many others in different parts of the country.

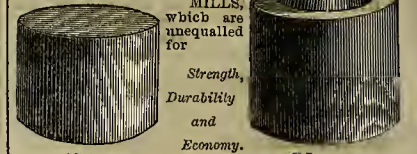
Send for Circular and Price List to

TREADWELL & CO., Sole Agents,
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STEEL SHOES AND DIES

FOR QUARTZ MILLS,

Made by our improved process after many years of patient research and experiment. We have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS,



which are unequalled for Strength, Durability and Economy.

Will wear three times longer than any Iron Shoes.

BUILDERS AND CONTRACTORS

Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and general Mining Machinery in all its details and furnishes of Mining Supplies.

All orders promptly filled.

MOREY & SPERRY,

Liberty St., N. Y.

Examination solicited. 8v28-1y

THE AMERICAN TURBINE WATER WHEEL.



Recently improved and submitted to thorough scientific tests by James Emerson, showing the following useful effect of the power of the water utilized, being

THE HIGHEST RESULTS EVER KNOWN.

Percentage of part gate, 1/4 50.08; 3/4 69.64; 1/2 78.73; 3/4 82.53; 1/2 82.90. Percentage of whole gate, 83.14.

Mr. Emerson says: "These are the best average results ever given by any Turbine Wheel in my experience."

A splendidly illustrated descriptive catalogue, or any further information desired, furnished on application to

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Sole Agents for the Pacific States and Territories. ap25-1f

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MACHINIST,

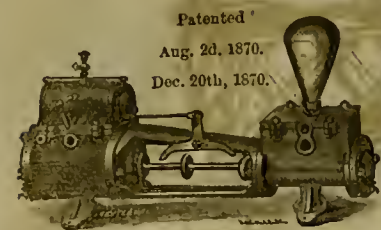
and Maker of Models for Inventors. All kinds of Dies Stamps and Punches made. Also, all kinds of Small Gears Cut.

Repairing done on all Versatile Terms and in the best manner. No. 32 Fremont street, S. F. 19v28-3m

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Boes' Quicksilver Pump saves labor and waste of metal. Address, M. P. BOSS, Bullionville, Nev. 16v7-3m

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Combining simplicity and durability to a remarkable degree. Its parts are easy of access, and it is adapted to all purposes for which Steam Pumps are used.

As a Mining Pump it is Unsurpassed.

STEAM, GAS & WATER PIPE, BRASS WORK STEAM & WATER GAUGES, FITTINGS, ETC.

CARR PATENT STEAM RADIATOR.

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CROCKER'S PATENT TRIP HAMMER QUARTZ BATTERY.



This machine, complete, weighs 1,500 lbs. Has an iron frame, two steel arms with stamps weighing 17 lbs. each, which strike 20-60 blows per minute, in a mortar provided with screens on both sides, and crushes FINE 600 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$600.

G. D. CROCKER,
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I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

All persons infringing on either of these patents

WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under Craig's, Rice's, Macey's and Hoskin's patents.

I Guarantee Full Indemnity to all my Customers.

Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an Improved LITTLE GIANT.

For further particulars apply to

R. HOSKIN, Dutch Flat,
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Room 6, 240 Montgomery st., S. F.
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STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by
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L. & J. W. FEUCHTWANGER
CHEMISTS & IMPORTERS.
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SOLUBLE GLASS & SILICATES,
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FLUORSPAR, FELSPAR, FLINT,
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BLACK LEAD, METALS, & C. & C.
PUBLISHERS OF TREATISES ON GEMS,
SILEX AND FERMENTED LIQUORS.

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Brittan, Holbrook & Co., Importers of
Stoves and Metal Pinned Goods, Tools and Machines;
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BUY BARBER'S BIT BRACE.

Metallurgy and Ores.

JOHN TAYLOR & CO.,
IMPORTERS OF AND DEALERS IN
ASSAYERS' MATERIALS
Chemical Apparatus and Chemicals,
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We would call the special attention of Assayers Chemists, Mining Companies, Milling Companies, Prospectors, etc., to our large and well adapted stock of

ASSAYERS' MATERIALS
—AND—
Chemical Apparatus,
Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.
Our Gold and Silver Tables, showing the value per ounce, Troy at different degrees of fineness, and valuable tables for computation of assays in Orais Grammes, will be sent free upon application.
7v25-4f **JOHN TAYLOR & CO.**

CALIFORNIA Quartz Crushing & Ore Sampling MILLS.

Nos. 413 & 415 Mission st., bet. First & Fremont, S. F. public.



Ours is the OLDEST, LARGEST and MOST EXTENSIVELY KNOWN establishment of this kind on the Coast.

Our mills are under the direct supervision of one of the most experienced Samplers and Millmen in the country, and we purpose carrying on the business upon a scale commensurate with the wants of the mining public.

We have the best facilities for Crushing, Sampling and Pulverizing all classes of Gold, Silver, Copper and Lead Ores and other minerals.

We also crush and pulverize all kinds of Marble, Fire-Clay, Bricks, Coke, Cement, etc., upon the shortest notice, for which we have special mills.

Reliable information furnished to miners and ore dealers concerning shipping rates, water prices, etc. Prompt execution of all orders. Faithful attention to business entrusted to us.

Abundant storage room without extra charge.

Ja31-4f "JIM" WHITLATCH, Sup't.

E. N. RIOTTE, JAS. L. BEYER, S. O. BROWN.

AUBURN MILL COMPANY, Reno, Nevada.

Purchase Silver Ores in quantities of ten tons and upwards, delivered on board the cars at San Francisco or Oakland and at the annexed Net Rates, with no charge for SAMPLING OR REDUCTION. On lots of less than 10 tons, freight to Reno will be deducted.

Special Rates for Gold Ores.

On Gold contained in Silver Ores to the amount of \$30 and upwards, 63 per cent. will be paid. When less than \$30, and above \$10, the amount will be added to the Silver value. Sacks promptly returned free of charge. Ores sampled by Battery or Sampling Mill as shipped may elect, and returns made promptly by cheque on San Francisco.

Rates:		Assay		Per Cent.		Assay		Per Cent.		Assay		Per Cent.		Assay		Per Cent.	
Value	Per Cent.	Value	Per Cent.	Value	Per Cent.	Value	Per Cent.	Value	Per Cent.	Value	Per Cent.	Value	Per Cent.	Value	Per Cent.	Value	Per Cent.
\$60	25	\$90	38	\$125	47	\$165	57	\$250	66	\$450	76	\$600	81	\$800	88	\$1000	91
70	28	100	41	135	50	180	58	275	68	500	77	650	84	850	90	1050	94
73	30	98	41	137	51	200	61	288	70	400	79	550	83	750	89	950	93
78	31	100	42	142	52	210	62	300	71	400	81	550	84	750	89	950	93
80	33	107	43	146	53	220	63	330	72	450	82	600	85	800	91	1000	95
84	35	112	44	150	54	230	64	350	74	480	83	630	86	830	92	1030	96
88	37	119	45	156	56	240	65	400	75	500	84	650	87	850	93	1050	97

And on intermediate values in proportion.

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Varney's Patent Amalgamator.

These Machines Stand Unrivaled.

For rapidly pulverizing and amalgamating ores, they have no equal. No effort has been, or will be spared to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits.

They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows.

The pan being filled, the motion of the muller forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular flow between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.

Settlers made on the same principle excel all others. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed.

Mill-men are invited to examine these pans and settlers for themselves, at the office, 229 Fremont Street, San Francisco.

CHARLES F. KIRCHNER,

Sampler and Crusher of Ores,

NO. 11 DRUMM STREET,

San Francisco.

Important to Miners and Mill Men.

Silver-Plated Copper Amalgamating Plates, for Saving Gold.



Of all sizes and in any quantity, furnished to order. Full instructions sent for operating. Particular attention given to plating goods for Builders, Plumbers, etc. Hotel and Restaurant work replated.

SAN FRANCISCO GOLD AND SILVER PLATING WORKS,
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COMMISSION MERCHANTS.

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Ores worked by any process.
Ores sampled.
Assaying in all its branches.
Analysis of Ores, Minerals, Waters, etc.
Plans furnished for the most suitable process for working Ores.
Special attention paid to the Mining and Metallurgy of Quicksilver.

E. N. RIOTTE,
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Mining Engineers and Metallurgists.

Morris' Settler and Amalgamator.

PATENTED MARCH 25, 1873.

An important improvement in milling. Cheap, light, efficient and durable. Gains Quicksilver on working tailings. Is discharged from the surface in the center instead of the side, by means of a Siphon which extends to near the center of the Settler. Heaviest casting weighs only 135 pounds. The sides and bottom of the Settler are made of wood, as also Mullers, placed vertically—the friction of which brightens the quicksilver. One of these machines is in daily operation at No. 616 Merchant street, (basement) San Francisco. Parties desiring information as to rights of use, purchase, etc., can address,
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616 Merchant St., S. F.
Ores Assayed and Amalgamated. 8v28-3m

Richardson & Co., Copper Ore Wharves,

SWANSEA.

RICHARDSON & Co. have been for thirty years established in Swansea as Agents for the preparation, Sampling, Assaying, and sale of Copper, Silver, Gold, Lead, Zinc, and all other Ores and Metals, for which they have extensive Warehouses and Wharves under cover, 1,000 feet of Quay Frontage within the Floating Dock, and the most complete Machinery and Appliances. They are also prepared to make advances against Ores in anticipation of realization, and to guarantee all payments when required. 2v25-1y

G. W. STRONG, W. L. STRONG.

STRONG & CO., Metallurgical Works,

No. 10 Stevenson Street, near First, SAN FRANCISCO.

We purchase high grade Gold and Silver Ores, Bullion, Etc. Ores worked and tests made with care; also, Ore Assays of Gold, Silver, Copper, Lead, Tin, Iron, Manganese, Osmabur, Nickel, Etc.

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Vessels, Apparatus, Sheet, Wire, Etc., Etc.

For all Laboratory and Manufacturing Purposes

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25 Bond Street, New York.

Platinum Scrap and Native Platinum purchased.

Quicksilver.

Parties working Quicksilver Ores can obtain the right to use highly successful patented improvements for condensing fumes and working soot, by addressing

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SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

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Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

All kinds of Machinery made and repaired.

24v22-3m JOSEPH MOORE, Superintendent.

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BOILER MAKERS

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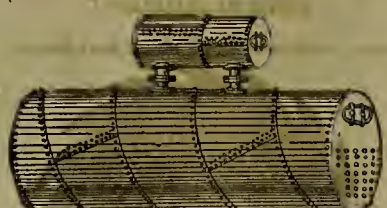
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San Francisco Boiler Works,

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High and Low Pressure Boilers of all

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SOLE MANUFACTURERS OF THE CELEBRATED

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SHEET IRON WORK of every description done

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All kinds of JOBBING and REPAIRING promptly

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No. 314 CALIFORNIA STREET,

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Manufacturers and have constant on hand

SPORTING,

MINING,

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POWDER,

OF SUPERIOR QUALITY, FRESH FROM THE

MILLS. It being constantly received and transported

into the interior, is delivered to the consumer within a

few days of the time of its manufacture, and is in every

way superior to any other Powder in Market.

We have been awarded successively

Three Gold Medals

By the MECHANICS' INSTITUTE and the STATE AG-

RICULTURAL SOCIETY for the superiority of our

products over all others.

We also call attention to our

HERCULES POWDER.

Which combines all the force of other strong explosive

now in use, and the lifting force of the BEST BLASTING

powder, thus making it vastly superior to any other

compound now in use.

A circular containing a full description of this Pow-

der can be obtained on application to our Office.

16v20-3m JOHN F. LOHSE, Secretary.

FRANCIS SMITH & CO.,

MANUFACTURERS OF

HYDRAULIC PIPE

AND

Artesian Well Pipe.

Having the Latest Improved Machinery, we can make

it an object to

Mining & Water Companies

OR

WATER WORKS,

TO CONTRACT WITH US FOR

SHEET IRON PIPE.

ALL SIZES MADE AND ALL WORK GUARANTEED

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The undersigned, owners of LESCHOT'S PATENT

for DIAMOND-POINTED DRILLS, now brought to the

highest state of perfection, are prepared to fill orders

for the IMPROVED PROSPECTING and TUNNELING

DRILLS, with or without power, at short notice, and

at reduced prices. Abundant testimony furnished of

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machines in operation in the quartz and gravel mines

on this coast. Circulars forwarded, and full informa-

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24v26-4f

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(Late S. F. Screw Bolt Works.)

MANUFACTURERS OF ALL KINDS OF

Machine Bolts, Bridge Bolts, and Ship or

Band Bolts.

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Steam Boiler Manufactory

—OF—

N. W. SPAULDING,
Saw Smithing and Repairing
ESTABLISHMENT.

Nos. 17 and 19 Fremont Street, near Market.



MANUFACTURER OF

SPAULDING'S

Patent Tooth Circular Saws.

They have proved to be the most durable and economical Saws in the World.

Each Saw is Warranted in every respect.

Particular attention paid to construction of
Portable & Stationary Saw Mills.

MILLS FURNISHED AT SHORT NOTICE
At the lowest Market Prices.

The California Powder Works

No. 314 CALIFORNIA STREET.

SAN FRANCISCO.

Manufacturers and have constantly on hand

**SPORTING,
MINING,
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POWDER.**

OF SUPERIOR QUALITY, FRESH FROM THE MILLS. It being constantly received and transported into the interior, is delivered to the consumer within a few days of the time of its manufacture, and is in every way superior to any other Powder in Market.

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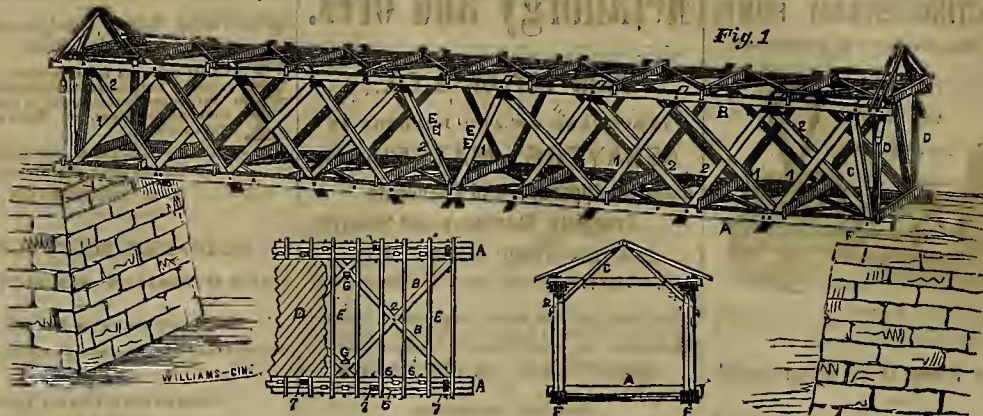
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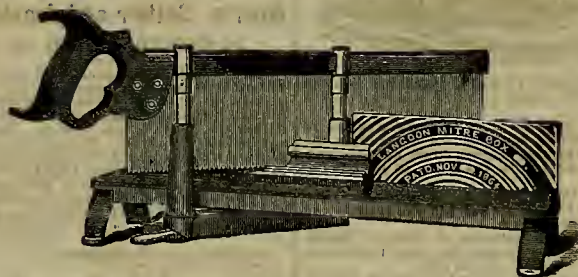
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SAN FRANCISCO, SATURDAY, MAY 16, 1874.

VOLUME XXVIII
Number 20.

Prevention of Overwinding at Hoisting Works.

We present to our mining readers this week diagrams of an improved detaching hook, lately described in the London *Mining Journal*; and which has been successfully tested at one of the large collieries in England. It is the invention of Mr. W. Walker, M. E., of Silthurnby-the-Sea, England.

The improvement consists in so attaching the cargo or load to the lower end of the hook that when the pins are cut the weight of the load itself assists to take hold more rapidly. The principle of the invention has frequently been described as being admirably simple, and Mr. Walker claims that with this modification he has made it so perfectly adapted to this end he has in view that where it is used overwinding is rendered impossible, and perfect safety is obtained from this fact that if the load be raised above a certain point this weight of the load compels the rope to become detached, which detaching cannot take place until the jaw hooks have a firm hold on the supporting ring. It is remarked that the apparatus can be easily applied to every rope permanently raising or lowering a load, whether loose or secured in its traveling position by skeels or guides, and particular attention is drawn to the twofold cause of safety found in this hook. Supposing what is a practical impossibility, that the load did not force open the jaws, the bottom flange of the ring would press the clamp against the incline of the lower limbs, thereby causing the jaws to open and the jaw hooks to act.

In the above diagrams Fig. 1 is a front view of the hook, Fig. 2 an edge view, and Fig. 3 a front view of the whole apparatus, with the supporting ring and clamp in section, showing the hook just after the liberation of the lifting rope. The same letters refer to the same parts in both figures.

The lifting rope is attached to the shackle, A, and the load to the connecting link, B. The supporting ring, C (through which the rope is constantly working), is a fixture in a bulk of timber, or iron girder, at this pit top. The hook consists of a pair of jaws, D, D, working on a center pin, E, in such a manner that the weight of the load has a tendency to open the upper limbs, which clip the strong center pin of the shackle, A. The upper limbs are formed externally with jaw hooks, F, F. The jaws are kept together, and made to retain the shackle pin by means of this clamp, H, which is held in position by the pins, I, I. In case of overwinding, the jaw hooks (held together by the clamp) pass freely into the ring, C, but the projections, K, K, of the clamp coming into contact with the bottom flange of the said ring hold the clamp stationary, while the jaws are being pulled through, the result being that the pins, I, I, are sheared off, and the jaw hooks released from the restraint of the clamp. The internal diameter of this ring being the same as the width across the jaw hooks, F, F, the rope remains secure, until the jaw hooks reach the top of the ring, when, by the action of this weight of the load, they are forced open, and so hook on to the top of the supporting ring, C, as shown in Fig. 4, the rope passing harmlessly over the pulley. The recess, O, in the ring, C, is intended to meet an imaginary case that experiment shows to be almost impossible—that if the engine is reversed after the pins, I, I, are cut, and before the hooks reach the top of this ring, the jaws will then hook into the recess, and the load remain suspended in perfect safety. It will be observed that the upper edge of this ring, C, is curved to match the sweep of the jaw hooks when opening. By this arrangement all shock is avoided.

It is a great advantage with hooks of this class that they can be almost instantly re-adjusted after the occurrence of an accident, neither rope nor cage being injured by the overwind. Although increased care on the part of the engineer will, doubtless, do much to diminish the number of accidents from overwinding, the present invention appears to be well worthy of general adoption, since it is one of those which it is not likely to tend to cause carelessness, as by the use of a suitable seal on the soft pins every case of overwinding could be readily detected, and adequately punished by fine or other-

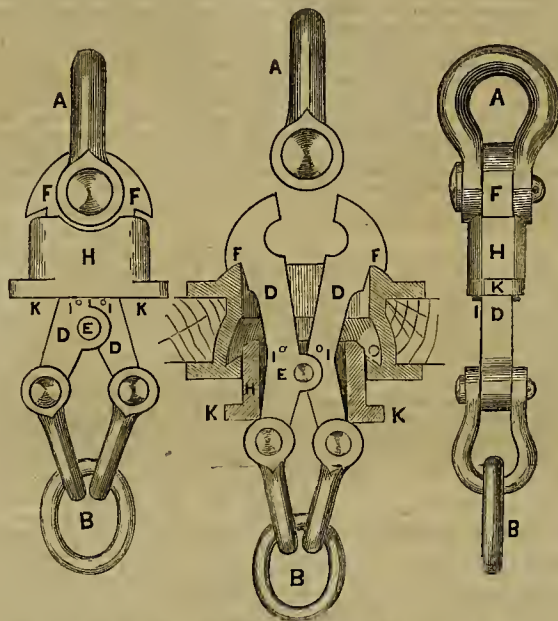
wise, whilst neglect would not be attended, as at present, by loss of life. The invention displays ingenuity, and appears likely to give satisfaction.

Kitts' Improved Header Beam.

To harvest the extensive grain fields, which are so characteristic of California, farming,

them horizontally into it, or secured upon it across its upper face and held down by an iron plate.

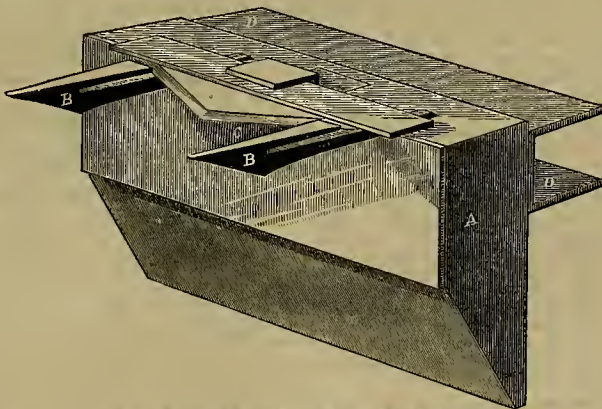
Mr. Kitts constructs the beam quite narrow and of considerable depth. To secure the necessary amount of rigidity he secures a flat iron bar or plate, C, along the front of the beam. He secures the guards in the beam by bending their rear ends at a right angle to the forward part, so that the bent portion can be driven



DEVICE FOR PREVENTING OVERWINDING.

requires quick work; and quick work is always accompanied with a certain amount of carelessness. This carelessness, in connection with the faulty construction of harvesting machinery,

down into the beam from the top and thus lost the guard and end extend out in front of the beam. The beam and plate are notched opposite each guard, so that when the guard is driven down into the groove or notch, its upper



KITTS' IMPROVED HEADER BEAM.

occasions great waste. It has been stated that enough grain is wasted in a single season to pay for harvesting the entire crop. One of the most serious causes of this waste is the falling of the heads of grain in front of the header after they have been cut by the sickle, owing to the angle at which the sickle and beam must work, especially in short grain. Numerous devices have been resorted to in order to ensure the lodgment of the cut grain upon the draper. Our illustration represents one of these devices, which was recently patented through the Mining and Scientific Press Patent Agency, by Philander Kitts, of Monticello, Napa county, in this State. The sickle beam, A, of a header is ordinarily made of considerable width and depth in order to secure a proper amount of stiffness or rigidity, and also to permit of the guard fingers being secured in it by driving

side will be even with the upper surfaces of the beam.

At the rear of the beam, A, he secures a double angle plate, D, so as to form a sort of trough within which the edge of the draper or carrying belt runs and is guided. This plate is secured so that its upper bend is a little below the upper edge of the beam, A, and as the beam is very narrow the sickle, E, beam A, and plate, D, will form narrow steps down which the cut grain and heads will fall easily upon the carrying belt, and there will be but little danger of waste or clogging, because of the nearness of the belt to the knives or sickle.

The ore stops in the east vein on the 1,400-ft. level of the Crown Point mine, are opening up splendidly, the ore being of a fine quality and the ore body of much greater width than it was on either of the levels above.

Work on Tunnel Locations.

An amendment to the Mining Law of May 10th, 1872, has been introduced in Congress, which provides that work done on a tunnel for the purpose of tapping a ledge shall be equivalent to work done upon the ledge. The Commissioner of the Land Office decided in August, 1872, that the expenditures in running a mining tunnel, before a lode was struck therein, were not tantamount to expenditures on the lode.

This construction of the law was approved by the Acting Secretary of the Interior, and accordingly, if work was not done on the claims themselves, in addition to work on the tunnel, the claims were subject to relocation as required by law. This amendment to the Mining Law of May 10th, 1872, changing the law in respect to work done on tunnels, and which is now under consideration in Congress, is as follows:

A BILL to amend the Act entitled "An Act to promote the development of the mining resources of the United States," approved May tenth, eighteen hundred and seventy-two.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the fifth section of said Act be, and the same is hereby amended so that where a person or company shall run a tunnel for the purpose of developing a lode or lodes, owned by said person or company, the money so expended in said tunnel shall be taken and considered as expended on said lode or lodes, whether located prior to or since the passage of said Act; and such person or company shall not be required to perform work on the surface of said lode or lodes in order to hold the same as required by said Act.

CLAYTON'S MILL.—Our correspondent, I. P. Mc., informs us that this mill, which has 37 stamps, seven pans and is 60x125, containing the hoisting works for the American Flag mine, is one of the best arranged mills in Colorado Territory. An engine of 35-horse power is used in running the stamps, pans and hoisting machinery. This mill has been running almost constantly for the last three years and has crushed over 2,500 cords of quartz, most of which was onstom work. It will soon be run on the ore from the American Flag mine, which is connected with the mill by tramway, by which the ore is dumped in this battery room at comparatively little expense. The American Flag mine or the principal part of what is now being worked is owned by J. W. O. Clayton, proprietor of Clayton's mills, and as far as developed shows a fine body of ore. The main shaft is down 175 feet, from which two levels have been run west 150 feet, most of which is in excellent pay. Ore from this mine has run on an average about 8 ounces per cord, and can be broken, hoisted and milled at an expense of \$35 per cord. At present there are on the dump outside the mill about 150 cords of ore, besides perhaps 60 cords broken in the mine.

NEW MONTANA MINES.—We see by the *Montana Independent* that good mines have been recently found within one mile and a quarter from the mouth of Bear. The Dean brothers sunk a shaft to the depth of fifty-two feet and took out \$17 from the bottom of this shaft. They have since taken out as high as \$54 from a five-foot set of timbers. This new discovery will encourage the working of from ten to fifteen new claims, some of which will soon be proved, as the surface clay is of such consistency as to prevent the water from sinking to the bed rock.

NAILEIGH MINING DISTRICT.—This new district on West Walker river was formally organized last month. It is bounded as follows: Commencing at the Garrad Smelting Works, on Walker river, and running thence up the west branch of Walker river to a point opposite the mouth of Alkali valley; thence up Alkali valley to Spring gulch; thence to Churchill canon to the Wadsworth and Mason valley road; thence following the Mason valley road to the beginning.

THE Birmingham Iron Works of Connecticut have concluded a contract with the Union Pacific Railroad Company for the construction of rolling mills to be erected west of the Rocky mountains on the Pacific slope.

CORRESPONDENCE.

Mining in Plumas and Sierra Counties, No. 6.

[By our special correspondent.]

ERRORS PRESS.—Owing to being absent from this section of country some time past I have been unable to furnish you with my letters as usual. There will, I hope, be nothing to prevent your receiving them regularly in the future, until the series is complete.

Southeast from St Louis on the Slate creek side is the eastern channel of the

Great State Creek Basin,

The Star company tunnel, under the able management of Evan Jones, Esq., are at work in front, or what is sometimes called braw ground, and have as yet been unable to reach the deeper main channel, which winds along under the dividing ridge of Slate and Cañon creeks, being here over one mile in width. There is no doubt of the great wealth of this channel, whose treasure vaults must yield to the sturdy miner their golden wealth.

North of the Star company are the

Clipper Ship and Jenny Lind Companies,

Whose ground is lying at present dormant, on account of several owners in the same having become scattered throughout different parts of the country, their place of residence being unknown to the present occupants, who intend opening out the mines again, under the United States laws of May 10th, 1872, and to apply for a United States Patent to the same. Southeast of the Star is

The Caledonia Company,

In Cedar Grove district, owned by a body of men who are all company, and consequently are not working their mine with that energy with which it should be prosecuted, and would be if owned by capitalists. It is claimed they average less than seven hours per man each day, and still they realize large pay. This company is composed of twelve shareholders, and there are not over nine men working at a time on an average; still, with this number of men, they obtain from \$20,000 to \$35,000 per year. Adjoining the Caledonia company are the extensive claims of the

Excelsior Company,

Owned by Messrs. McCrory, Hendel and Small, formerly belonging to Deacon Long, who worked off a small part of the front ground by hydraulic process, in its primitive state, realizing over \$6,000 from but a small piece of ground worked. Here he lost the bedrock, and subsequently became deranged and committed suicide; his mine passing into the hands of the present owners. Immediately northwest of the Excelsior claims, the ground having all been front ground, has been worked in early days by many small companies, who have all taken over large fortunes. I am informed by Mr. McCrory, who owned 2½ claims (100 feet square constitutes a claim in this mining district), that in two years they took out the sum of nearly \$75,000 after building an expensive tunnel which cost \$30,000, and which I now understand is owned by Col. Baker, who also owns some mining ground immediately adjoining this worked out ground, and that of the Excelsior company, which is all piling ground and no doubt will pay well when the Gardner's Point and Grass Flat property has been worked out, which I fully believe will not occur during the present century. Southwest of Cedar Grove the channel is again extensively operated in the adjoining

Grass Flat District.

At Gardner's Point the first company we come to is the Comet & Challenge Consolidated Company, who own some 2,000 feet of front, extending back into the hill and containing from 200 to 300 acres of valuable mining land, the richness of which has been fully proven. Although for want of capital and a sluice tunnel the present owners are drifting in front ground and working under many disadvantages, they are working ground that pays them \$20 to one set of timbers in the main tunnel, 4½ feet apart, 6 feet high, and averaging 4½ feet wide. Yet the greater and richer portion of this mine is best adapted for hydraulic purposes, but as I said before needs capital. From my personal acquaintance many years ago with the late Col. Johnson—at one time a heavy owner in the Comet ground—I know that this company drifted from a small section of ground nearly \$150,000. But as the shareholders of the mine were not practical miners they worked the mine to a great disadvantage without surveys or system. The mine was allowed to cave in and lay idle for many years, until the present owners purchased, and are working it as above stated, having ground that is without a doubt richer than that of the far famed Cherokee mine, which produces over \$40,000 per month. Southwest of the Comet and Challenge Consolidated Company—now known as the Treasure ground—is situated the well known and immensely rich ground of the

Gardner's Point Property,

Now known as Col. Baker's claims, where any of your many readers can at any time be accommodated with a prospect which they would feel delicate in taking along with them on account of its great quantity of beautiful golden ore. It is not uncommon to see prospects of from \$5.00 to \$8.00 per pan of dirt taken from

next the bedrock or from 10 to 25 cts. 20 to 40 feet above the bedrock. From good authority I am lately informed that from one pan of gravel near bedrock and on the rim-rock \$150 were taken. The gravel banks of this mine are this year of a heavier quartz gravel and of deeper dark blue color. The banks are crumbled down by two little giants with an immense pressure of water. Everything is well fitted up and move along like clock work under the able management of Col. Baker and his assistant, D. E. Stover. This is the pioneer mine this year in commencing piling in northern Sierra, or southern Plumas counties. Their flumes end undercurrents, are all of the latest and most approved plan now in vogue; and it is presumed that not less than from \$75,000 to \$100,000 will be the net profits of this claim. The pay of the past washings averaged over \$100 per cubic yard and is now no doubt of a richer nature, as work is fast progressing toward the main channel. South of Gardner's Point and adjoining is the Rifle company, who have run a bed rock tunnel for drifting purposes from Grass Flat Ravine; but the owners not having coin sufficient to prosecute their work this mine lies dormant at present. Next comes the well known

Pioneer Gold Mining Company,

Containing some 360 acres of ground to which they have obtained quite recently a United States patent, their mineral location covering the whole of this immense channel passing through Grass Flat, proper, where the same is, perhaps, wider than at any other point, with the exception, it may be, of near Mount Pleasant ranch. In Grass Flat the channel is about 1¼ miles in width, and its rich gravel banks are many hundreds of feet in depth.

The company (a consolidation of several mines) have been at work on their present (lower) tunnel for over 10 years, which is in some 3,500 feet, besides a branch tunnel several hundred feet in length. Their present tunnel has been driven too high to work the deeper part of this great channel by drifting, and has not fallen enough to work any portion by hydraulizing. This company has spent not less than \$60,000 in prospecting their ground, but it is now beyond any doubt a well known fact that they possess one of the richest, largest, and best prospected hydraulic gravel mines in the State.

Just think of a mine covering 360 acres of mineral ground with a tunnel 3,500 feet run under it lengthwise, 3,000 feet of which has all been run in gravel, most of it over 20 feet above bed rock, that has yielded on an average \$1.32 per cubic yard and by the many shafts raised by the company, and the many shafts sunk by adjoining companies, all of them in gravel throughout which color has been obtained from top to bottom, and you will be able to form something like a correct idea of the immense number of tons of gold slumbering in this immense basin.

Laporte, May 1st, 1874.

Notes of Travel in Colorado.

[By our Traveling Correspondent.]

Bobtail Tunnel.

In continuing my letter of last week the first enterprise I shall mention is the Bobtail Tunnel Company, which is an incorporation of \$100,000, capital stock. A. N. Rogers is President and Superintendent, and H. Messenger Secretary. The principal office is at 25 Nassau street, New York City. John Stanton, Jr., of New York City, is the Treasurer. This company's works, tunnel and mine, are located at the lower end of Central City, Colorado Territory. The company was formed to tunnel Bobtail hill in a southerly direction, to cut the different ore bodies of said hill at right angles at a depth sufficient to drain them of water and give them an outlet for their ore without hoisting. But it was especially run to tap the Bobtail mine. This tunnel is now in 1,150 feet to where it intersects the vein of the Bobtail mine. At a distance of 570 feet from the mouth this tunnel cuts the Fisk lode, which is now being worked through the tunnel. The tunnel itself is 6x7 feet in the clear, and was originally intended for a double track, but has only a single track for ore cars; it was begun in the year 1863, by the original company, but was not completed until about February 1st, 1873, being abandoned for nearly one year during that time. It is estimated to have cost \$50,000 so far as the Bobtail lode (1,150 feet).

The Consolidated Bobtail G. M. Co.

Was incorporated with a capital stock of \$1,053,000. Geo. A. Hoyt is President, John Stanton, Jr., is Secretary and Treasurer, and A. N. Rogers is Supt. The company have run west on their ore body 500 feet, and for a distance of 250 feet east, and have developed the mine at one point 60 feet below the tunnel. The ore body in this mine runs from 3 to 10 feet wide, over one-half of which is milling ore, running from \$5 to \$300 per ton in gold. Of the whole amount of ore they extract, about 6 per cent. is smelting ore, and this carries some six ounces of silver to the ton. At the present writing they are working some 30 men in their mine, and extracting about 18 tons of all grades of ore daily. This mine is opened so that they are enabled to work a force of 150 men, but they are keeping back their workings for reasons best known to themselves; but the principal reason is the adjustment of the matter of drainage with other mines, concerning which I

will not attempt to go into detail at this time. The corporation also own a

Twenty-Stamp Mill,

Run alternately by steam and water power. It is complete in every particular, is situated on North Clear creek, some three-fourths of a mile from the mine, and is reducing some 385 tons of ore monthly from their own mine. The company are having considerable ore reduced at outside mills, and are selling ore to still other reduction works. They pass all their blanketing through the pans, of which they have six. The tailings are all washed down, saved, and sold to the smelting works. They have complete concentrating works, and but little goes to loss about this mill.

The Briggs Mine

Is owned by J. S. and C. H. Briggs, the latter named being superintendent and general manager; is located in Central City. The Briggs brothers have owned and worked the mine for the last fourteen years; there are two ledges or ore bodies running side by side in this mine, 240 ft. in length, known as the Briggs and Gregory; the former pitches east and the latter west, at an angle of about 12 degrees. The ore is mined principally for gold, but also contain 15 ounces in silver to the ton, about 10 per cent. of copper, a trace of lead, antimony and bismuth. The gold averages about \$150 per ton.

The Present Development

Of this mine consists of one shaft sunk on the Briggs lode to a depth of 560 feet, and one on the Gregory 300 feet deep, each sunk on the dip of the vein. Both hoisting works are run by the same engine, which is of about 100 horse power. This mine gives employment to about 20 men on an average, extracting about 35 tons of milling ore per day, and from two to four tons of smelting ore daily. They also have a 25 stamp mill of their own (of double issue) that has a capacity to reduce some 35 tons every twenty-four hours. The same engine runs the stamps and batteries that runs the hoisting works. I was shown some very fine specimens of free gold and sulphurets taken from this mine, that would grace any cabinet; it has the appearance of a very successful mine.

The Gregory Lode,

Formerly owned by the Black Hawk Gold Mining company, is at present owned by E. S. Jackson, of Providence, R. I. Mr. George E. Congdon is the resident superintendent; the company own numerous mines and mills. Their principal workings at present are confined to the Gregory mines, Nos. 1, 2 and 3, which they are developing through two principal shafts. Steam hoisting works are erected over each, with machinery adequate for the work to be done. Their principal shaft is down 586 feet on the dip of the ore body, (an angle of about 15°), except the first 240 feet, which is down vertical. Shaft No. 2 is down 531 feet. The former mentioned shaft is in two compartments, and has one fourteen-inch Cornish pump. The ore body in this mine runs from two to twenty feet thick, and averages about six feet. The ore is worked for the gold. When working in force they extract about 210 tons per week, 20 per cent. of which is smelting ore. This they dispose of in the vicinity for about \$150 per ton. The other 80 per cent. extracted is free milling ore and will average about one ounce of gold to the ton, (or as they figure it by the cord at seven ounces to the cord). At present they are only working sixteen men; preparing however for a larger force and future development. They own and run

Two Fine Mills,

Which combined have 85 stamps. One of these mills, containing 65 stamps, is run by steam; the other, a 20 stamp mill, is run by water. Combined they have a capacity of reducing 350 tons per week. The machinery of both these mills and at their hoisting works are a credit to any district. The rebellious ore of this country would puzzle many a Nevada and California mill-man, but here, after years of experience, they have learned to treat them so as to average from 65 to 70 per cent. of the assay value.

The Boston and Colorado Smelting Company.

The principal office of the company is in the city of Boston. The location of these works is in Black Hawk, Colorado Territory, and is generally known as Professor Hill's works; these are the only works of the kind in the United States, and there are but four others in the world, two of which are located in Swansea. Professor N. P. Hill is the General Manager of these works. Richard Pearce, F. G. S., is the Superintendent of the metallurgical and smelting department and among the first of his class in this country, a thorough metallurgist and perfect gentleman. The works of this company cover an area of some twenty acres; and ten different buildings are brought into requisition in the process of separation of the precious metals.

The Matte Process

In use here is a modified form of Ziervogel's process, which consists of the mixing of the silver ore of an adjoining district (Griffith or Georgetown) with the auriferous pyrites, containing copper as well, from this district. It is first worked in ordinary reverberatory calciners, for the silver. The iron pyrites are first roasted in heaps, to relieve them of the sulphur, and are brought down to contain only about five per cent. of sulphur. Afterwards it is passed to the smelters, which are reverberatory, and have a capacity of fourteen tons each daily. They have three of these, but only working two at this writing. For fuel, wood only is used. This matte previous to September, 1873, was sent to

Swansea to be refined, but this is now done here. The value of this matte is about \$1,000 per ton in gold and silver. They employ some 40 men in all departments, end turn out about 1,000 lbs of silver per week, that is 997 fine on the average. Since November, 1873, they have shipped about 10 tons of silver of the above named purity. In addition to the above, their present gold yield is about 1,000 ounces per week.

Collom Black Hawk Dressing Works Company.

A reduction works in course of erection, and nearly completed, by the above named company, is located in the suburbs of Black Hawk city. It is an incorporation of \$50,000 capital stock. Wm. Hancock, President; Peter W. Crosier, Secretary and Treasurer; Daniel Peters, General Manager, and Charles Collom, Superintendent. The general office of this corporation is at Trenton, New Jersey. The object of this company in erecting these dressing works, is to receive custom ores of a low grade, that cannot now be treated in this district and be made to pay. Some \$30,000 is being expended in the remodeling and erection of these works. The process is a wet one. The ore is first broken by the Blake rock breaker, partially screened, then passed through Cornish rollers, screened again, and passed through a combination of figs, each self-acting, when the different metals, according to their specific gravity, are separated. The cost of this will be about three dollars per ton. These ore will concentrate to about one-fifth. The capacity of the works will, it is estimated, be 100 tons daily, employing some 12 men.

L. P. Mc.

The Mining Interests of Calaveras County.

The condition of the mineral interests of the county—especially that portion of it bordering upon the Mokelumne—is extremely favorable. Both quartz and gravel mining are being successfully prosecuted, and the outlook for each of those interests was never more promising than at present. While it is true that in some portions of the county the results of operations in quartz are anything but flattering, yet such remarkable developments have recently been made in the northern and eastern sections of the county that failure, in isolated instances, does not darken the prospect in the least. In the West Point, Mosquito Gulch, Jesus Maria and Sheep Ranch districts the utmost activity prevails. Work is not only progressing upon ledges previously located, but new discoveries are being made, machinery erected, and everything connected with the business of quartz mining betokens present success and confidence in the future. In the West Point district—not to mention names—there are about twenty producing mines, and if the eagerness with which capital is seeking investment in that direction indicates anything, the number will be largely increased before the season closes. Every part of the district is occupied, and development is being pushed forward with a vigor never before noticeable. The Mosquito district has become one of the most promising in the whole mineral belt. The late unexampled yield of the San Bruno, together with very favorable results from other mines, are attracting general attention and have greatly stimulated enterprise. The ledges can be worked without any great outlay of capital, and as excellent milling facilities are afforded the district offers inducements second to none.

In the neighborhood of Jesus Maria some very rich discoveries have lately been made, and there is more prospecting being done in that locality than anywhere else in the county. Several sales of mining property in that district have recently been made to capitalists, and operations are being energetically urged in every direction. That district will give a good account of itself this season. Work is progressing upon a large number of mines in the Sheep Ranch district, prominent among which is the Wallace & Ferguson—a mine that for average richness of rock is not surpassed by any on the coast. The ore pays from \$60 to \$80 per ton, and it is mined and milled at a light expense. There are several other paying mines in the district, but the gross yield is nothing in comparison to what it would be if the required milling facilities were afforded. Generally speaking, however, the improved appearance and brightening prospects of the Gwin mine are doing more to strengthen faith and confidence in the permanency and extent of our quartz interests than all other circumstances combined. The Gwin is the representative mine of the county, and the fact that it is now emerging from the cloud under which it has for some time rested, with every assurance of a prosperous future, is regarded as a sure precursor of more permanent development in other localities.

Gravel mining is rapidly taking its place again as one of the leading interests of the county. A new era has opened in hydraulic mining, especially, revolutionizing the former method of working and achieving the most unlooked-for results. It is found by the system now in vogue that ground that would not pay "water money," worked in the style of former years, can be made largely remunerative, and hydraulics are being instituted in every direction. The success met with stimulates research, resulting in the location and working of paying claims wherever the necessary water can be obtained. Taking everything into consideration, the present condition and prospects of the mining interests of the county are encouraging, more favorable, in fact, than for several years past.—*Calaveras Chronicle*.

MECHANICAL PROGRESS.

Another New Motor—A Marvellous Claim.

The "Keeley motor" is the latest novelty which, it is assumed, is to take the place of steam. Mr. John W. Keeley, of Philadelphia, is the "inventor," and a number of prominent engineers of Philadelphia, New York, Jersey City, etc., certify to having witnessed the exhibitions, and tender their names as references for the correctness of the wonderful claims which are put forth with regard to its efficiency and practicability. The medium employed is said to be a cold "vapor" of a density that enables it, when admitted to a cylinder, with a piston one and one-sixteenth of an inch in diameter, to raise a weight of 150 pounds suspended from a compound lever, connected as 1 to 42, which is estimated as equivalent to a pressure of 7,800 pounds to the inch. Yet with all that pressure, coupled with expansive energy, it is claimed that neither the vapor itself nor the cylinder in which it was confined exceeded in temperature the common air which surrounded it! The inventor has demonstrated a pressure of 10,400 pounds to the square inch—the utmost limit of safety—but has not yet reached the full capacity of the invention.

The force is said to be derived from a peculiar "mechanical device" hitherto unknown. The power is produced "without heat, electricity, galvanism, magnetism or chemicals." The whole thing is simple, inexpensive and universally applicable.

The principle of application is to work with a small generator capable of sustaining a pressure of 20,000 pounds per inch; but to reduce this extreme pressure by allowing the vapor to expand into an intermediate chamber, from which it may be used at common steam pressure in any ordinary steam engine, in place of steam. No fuel is employed!

It is intimated that the invention was suggested by the remark of Faraday, that "every drop of water contains force elements equivalent to a very powerful flash of lightning." Perhaps Mr. Keeley has succeeded in developing and controlling that "force element;" if he has not done that he seems to have succeeded in hmbngging a goodly number of mechanical engineers of good standing among their fellows. "Every share of the stock has been taken, the offers of money having been greatly in excess" of what was wanted.

Keeley is not much behind the well-remembered charlatan Paine, who claimed that by his invention he could, with a two-quart cup, drive the largest sea-going vessels across the Atlantic at the highest rate of sailing speed; but those who invested in his enterprise made as little money as will the "eminent engineers" who are taking stock in the "Keeley motor."

PAPER IN THE ARTS.—The numerous uses to which paper and paper pulp are applied in the various departments of general industry, form one of the most interesting chapters in the history of recent mechanical and chemical progress. We have paper doors and window blinds, paper billiard balls, boats, and wash basins, paper clothes and curtains; and, not the least important, as recent experiments have demonstrated, paper car wheels. From an exchange we learn that a Connecticut railroad is about to make trial of these new wheels, which have been known to car builders for some time, though their general introduction has been hindered by the expense. These wheels are made by the following process: Sheets of common straw paper are forced into a compact mass by a pressure of three hundred and fifty tons. The solid mass of paper thus formed is placed in a lathe and turned perfectly round. After which, a hub is forced into a hole in the center, under a pressure of twenty-five tons. This paper wheel, or disk, is now forced, under a pressure of two hundred and fifty tons, into a steel tire, with a one-half inch bevel upon its inner circumference. Two circular iron plates are then bolted on to the tire to keep the paper filling in place. By this arrangement the steel tire rests upon the paper only, and is thus rendered more elastic, a quality of great importance, as regards both the safety and comfort of travelers.—*Builder*.

THE DIAMOND SAW MACHINE for sawing stone, which was noticed in these columns some months ago, is still making its way into favor. Those which have been put into operation still continue to give satisfaction, and the invention is gradually working its way outward from the home region of the invention. This invention will most undoubtedly prove a most important advance step in the important industry in aid of which it has been devised.

ALUMINUM FOR BURNERS.—J. Kidd, of 27 Leadenhall street, London, has patented improvement in gas burners, which consist in the application to argand or other burners of aluminum pure and alloyed, together with an adjustable check valve to the burner which regulates the light.

UNDERGROUND RAILWAY PROGRESS IN LONDON.—The length of underground railways now in operation in London is about twenty miles, and they are being extended in various directions. The additional track now in progress of construction is about four miles. The rails are laid at from 20 to 40 feet below the street pavements.

Machine Combinations.

The combination of several functions in the same machine is one that has much to do with manufacturing machinery, and constitutes what we may term a principle in construction.

The reasons that favor the combination of several functions in one machine, and the effects that such combination may have on the product of machines, are so various that it has led to a great diversity of opinions and practice among both those who construct and those who employ machines.

It may be said too, that a great share of the combinations we see in machines, such as those to turn, mill, and bore, slot and drill in iron fitting, are due not to any deliberate plan on the part of the maker so much as to an opinion that such machines are novel, and represent a double or increased capacity.

So far as this combination in machines been carried, that in one case that came under the writer's notice, a machine was arranged to perform nearly every manipulation required in finishing the parts of machinery; completely organized, and displaying a high order of mechanical ability in design and arrangement, but practically of no more value than a single machine tool, because but one operation at a time could be performed.

To direct attention to certain rules that will guide opinions and practice in this matter of machine combination, the following propositions should be considered.

First.—By combining two or more operations in one machine the objects gained are economy in framing, the same supports answering double purpose, and a saving of floor room.

Second.—In a machine where two or more operations are combined the capacity of such a machine is only as a single one of these operations, unless they can be carried on at the same time without interfering one with the other.

Third.—Combination machines can only be used with success when one attendant performs all the operations, and when the change from one operation to another requires but little adjustment and rearrangement in each case.

Fourth.—The arrangement of the parts in a combination machine have to be modified by the relations between them, instead of being adapted directly to the nature of the work to be performed.

Fifth.—The cost of special adaption and the usual inconveniences of fitting combination machines when their parts operate independently, generally equals what is saved in framing and floor space.—*Journal of Franklin Institute*.

COMPARTMENT SHIPS.—Notwithstanding the numerous losses of compartment ships, confidence in their superior safety has by no means abated. The late disasters to the "Ville du Havre" and the "Europe" are fully understood. Both of these, though compartment ships, went down very suddenly—the former in twelve minutes, because the doors between the compartments were left open, and the latter from some unexplained carelessness, although her abandonment is now believed to have been unwarranted. In contrast to the two ships here named, we have only a few days since learned of the unnecessary abandonment of a third—the "Amerique"—which was encountered the next day by a passing steamer, with only six feet of water in her middle compartment, and safely towed into port. This latter case affords a good illustration of the value of compartments.

It is obvious that, if a vessel were divided into the proper number of water-tight compartments, the chances of loss from leakage or collision must be very much reduced. So well assured are shipbuilders of this fact that this plan of construction will be more generally followed than heretofore, and the number and strength of bulkheads materially increased. Heretofore six or seven compartments have generally been given to a ship 400 feet in length. The compartments are now, however, being increased to double or treble that number. As an extreme example in this direction we may instance the new British war steamer "Indefatigable," which is to have 127 water-tight compartments. Perhaps compartment ships may yet lead to the desired solution of the shipping-in-bulk question in relation to California wheat crops.

IMPROVED STEAM CARRIAGE.—Mr. Charles Randolph, of Glasgow, has invented an improved steam carriage, adapted to street locomotion, which is said to be free from the objections urged against steam carriages in general. It is 15 feet in length, and consists of three divisions, viz.: the driver's box in front, the boiler and engine house in the rear, with a compartment for passengers in the center. It is carried on four wheels, two at each end. When filled with passengers, and provided with water, etc., for a journey, its entire weight is only about $\frac{1}{2}$ tons, and it will travel at the rate of about eight miles per hour on the average. A few weeks ago this machine was tested in the presence of the Duke of Sutherland, Lord John Hay and others, and the result of the experiment was in every way satisfactory. Mr. Randolph anticipates that the mode in which he applies steam power to his carriage may be adapted to tramway cars, omnibuses, etc.

IMPROVED CULINARY TONGS.—This is a pair of wire tongs, of which the middle part of the lower prong is bent upward above the other, and has a coil formed in it to give it elasticity, so that the points are held closely together. A thumb piece is affixed to the bend, by pressing down which the prongs are forced apart.

SCIENTIFIC PROGRESS.

The Magnetic Metals.

It is well known that, besides iron, there are a few other metals possessing magnetic properties, viz: nickel and cobalt in a strong degree; manganese and chromium in a feeble one. In the *Philosophical Magazine* we find a remarkable article on this subject, by Mr. W. F. Barrett, F. C. S., in which he endeavors to point out the similarity of these metals to each other in their physical and chemical properties. Thus, as to specific gravity, that of the thirty-eight known metals ranges from lithium 0.50 to platinum 21.5, a difference of nearly 21; whereas those of the three strongly magnetic ones are iron 7.8, nickel 8.3, cobalt 8.5, where the extreme difference is only 0.7. Their specific heat is nearly identical; their atomic one is the same; so also their conductivity for sound, heat and electricity. Their dilation by caloric, and the amount they lengthen by mechanical strain, are also identical. The enormous cohesive power of iron, nickel and cobalt, in the solid state, signalizes these substances as the most tenacious of metals, and their melting point is only exceeded by the platinum group of metals. They are not volatile at the temperature of the hottest furnace, but only by the electric spark, when they yield very similar spectra. As to their chemical properties, the combining weight of iron is 56.0; nickel, 58.5, and cobalt the same. Chemists class these three metals in the same group, from the similarity of their chemical behavior, and also the identity of their combining energy or atomocity. What has been said concerning the likeness of iron, nickel and cobalt, in many respects holds true of manganese and chromium. The former has lately been used to replace nickel in the alloy of German silver. The compounds of all these five metals are conspicuous for the brilliancy of their colors. This uniform coincidence suggests the practical inference that nickel and cobalt might be obtained in a malleable and ductile condition when submitted to a process similar to that by which wrought iron is produced.

Method of Assaying Lead Ores.

The ore or other substance is oxidized, and its metals converted into sulphates before reduction; the best agent for this purpose being sulphate of ammonia. The ore is mixed with an equal or double weight of sulphate of ammonia, according as it is supposed to be poorer or richer, and the mixture is ignited in a small crucible of porcelain, covered to prevent spitting. The mass, when cold, is treated with boiling water, acidulated with sulphuric acid and muriatic acid. By this means the sulphates and oxides of iron, copper, etc., are dissolved, while the lead and silver remain insoluble. This portion is washed by decantation, the washings being passed through a filter. This filter is next dried, and its ashes added to the dried insoluble portion. It is then mixed with muriatic acid and powdered zinc, in order to reduce the sulphate of lead and the chloride of silver. The metallic deposit is washed with water which has been boiled, or acidulated with sulphuric acid, and is then pressed into a compact mass. This is dried and heated with from $\frac{1}{4}$ to 2 parts its own weight of a flux composed of 13 grammes carbonate of potassa, 10 grammes carbonate of soda, 5 grammes of melted borax, and 5 grammes of farina. The whole is covered over with dried chloride of sodium, and the heat is raised by degrees to redness. When the whole is in a state of quiet fusion, it is submitted for a moment to a higher temperature. This process serves for determining lead and silver in white lead, red lead, ores rich in gold and silver, also antimony, tin and copper. If, in the assay of ores of gold and silver, the amount of lead is insufficient, pure oxide of lead is added.—*Chemical Review*.

REDUCTION OF SILVER SALTS BY HYDROGEN.—Dr. Russell, F. R. S., communicates to the Chemical Society, that thoroughly washed and purified hydrogen causes a precipitation of metallic silver from a solution of silver nitrate, the precipitation occurring much more readily in saturated than in dilute solutions. The gas employed was usually procured by the action of a saturated solution of copper sulphate on zinc, or by the action of water on powdered zinc and tin. After it has passed for about half an hour through a saturated solution of the silver salt, a dull greyish deposit is produced, which is succeeded by a bright crystalline deposit. A clear solution, through which hydrogen had been passed, became turbid and gave a precipitate of silver when heated. Similar effects were obtained when the solution was exposed to an atmosphere of hydrogen instead of causing the gas to bubble through it. The author has conclusively proved that these phenomena are caused by the hydrogen replacing the silver in the silver nitrate, producing hydric nitrate. But a secondary reaction also takes place between the nitric acid and the precipitated silver, which results in the formation of silver nitrate. Dilute solutions of nitric acid have little or no action on silver, as hydrogen precipitates silver as readily from a nitric acid solution as from an aqueous solution. It has long been well known that hydrogen will precipitate from their solutions the platinum metals and gold, and the above observations with regard to silver add to its importance as a reducing agent.

The Nebular Hypothesis.

Prof. Van der Weyde, of New York, in a lecture before the American Institute, some three or four years since, expressed the opinion that the nebular hypothesis of La Place might be modified, by the application of the demonstrated doctrine of the conservation of forces, to such a degree as to be elevated into a theory. This modification consisting in the substitution of gravitation as the principal cause of the contraction of the nebula, instead of cooling by radiation, has been accepted by La Place; *ergo*, instead of taking as starting point a nebula, expanded to an enormous bulk for reason of its high temperature, and contracting by the loss of heat, we accept now a cold nebula contracting by the action of gravitation to millions of nuclei, which in their turn, by the operation of the same law, fall together into different centers of gravity. Then, by the mutual destruction of the larger portion of their motion, heat is generated, which is greater in proportion to the amount of matter precipitated and the distance through which it fell; all according to the well-established laws of the mechanical equivalent of heat.

By modifying La Place's hypothesis in this way, we dispose of the fatal objection made to it by Prof. Pierce, that it does not account for the disposal of all the heat. Indeed, starting with a nebula expanded by a high temperature to an enormous bulk, far beyond the orbit of Neptune, La Place supposes it to cool until more than ninety-nine per cent. of its mass is concentrated in the sun, of which the temperature is still far beyond our conception. What then must have been the original temperature? and where has all this heat gone? No doubt that this hypothesis, accepted as starting point entirely too much heat, and is unable to explain what has become of it.

We see then how the principles demonstrated by the experiment of Count Rumford, who boiled water by horse-power; of Mayer, who heated air by compression; of Joule, who raised the temperature of mercury and other fluids by agitation, have served not only to solve the greatest mystery in the evolution of our planetary system, but of the universe in general.

Diamonds Made of the Carbon of Sugar.

Mr. Emile Mouier (France) publishes a statement in regard to the carbon of sugar. When large white crystals of sugar are perfectly burned, they leave only one hundredth part of one per cent. of ashes; and when heated to about 1,800° Fahr. in a closed vessel, without contact of air, the hydrogen and oxygen are distilled off, mostly in the form of watery vapor, while a very pure carbon is left behind, the quantity of which, according to the formula for sugar C₁₂H₂₂O₁₁ (corresponding with 72 parts carbon, 11 hydrogen, and 88 oxygen), should be 42 per cent.; practically, however, less than half this amount (18 per cent.) is realized as a very pure carbon, which is so hard that it will cut glass like a diamond, while its hardness is greater in proportion as the sugar is purer. But being quite porous, those parts which cut the glass are crushed at the same time. Mr. Mouier has succeeded in increasing this hardness by mixing the sugar with syrup, about 25 to 30 per cent., to a paste, which is then introduced into a porcelain tube hermetically closed at one end, and only partially closed at the other, so as to give escape to the gases, while it is burned at a red heat. In that way he obtained a carbon cylinder much harder which could cut glass, and was only crushed with difficulty, but still porous.

Honey also gives a dense carbon of the same properties as that described, and we should like to see experiments made by inclosing honey or sugar in cylinders of refractory clay, and exposing them to the flames of the hydro-oxygen blowpipe, or to submit them, as soon as most gases have escaped, to great pressure and heat at the same time. It may not be impossible to produce black diamonds in some manner of this kind.

Some of our readers may be aware that white transparent diamonds can be made, very small to be sure, but still genuine diamonds, by the slow crystallization of the carbon out of certain carbon compounds of organic origin; and it is believed that this is the true origin of the natural diamond.—*Manufacturer and Builder*.

HYDROGEN A METAL.—M. Dumas has communicated to the French Academy some curious experiments of MM. Troost and Hautefeuille on the hydrates of mercury or combinations of hydrogen with that metal. These combinations, it is said, so strongly resemble those which constitute the amalgams of mercury with silver and other white metals, that it is hardly possible to doubt that they are themselves amalgams, and hence that hydrogen is a metal, a fact apparently indicated in many other analogies.

A NEW COMET.—The discovery of a new and very bright telescopic comet is announced. Its appearance was first announced to the Academy of Sciences at Vienna; but it has since been carefully observed in this country. On the 17th of April it rose at 2 A.M., east one-half south, and a half hour earlier on the 24th. At that rate of motion it would rise at this time (May 8th) about half-past 12 A.M. Its motion is towards north and east.

A TEST for sulphate of alumina is that good alumina should be neutral, and such is almost soluble in absolute alcohol.

Weekly Variations in Stocks.

[Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.]

For 6 days ending Wednesday, May 13, 1874.

NAME OF COMPANY.	IN MIN.	SHAR.	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.						
Alamo	300	6000	10 1/2	8 1/2	1/2	
Alta	3600	30000	5 1/2	4 1/2	1/2	
American Flat	100	5000	6 1/2	5 1/2	1/2	
Bacon M. & M.	100	5000	6 1/2	5 1/2	1/2	
Baltimore Con.	100	5000	6 1/2	5 1/2	1/2	
Belcher	1040	10400	8 1/2	7 1/2	1/2	
Best & Belcher	250	2500	2 1/2	2 1/2		
Bowers	300	3000	1 1/2	1 1/2		
Bullion	2500	25000	1 1/2	1 1/2		
Caledonia	5000	50000	1 1/2	1 1/2		
California	100	1000	1 1/2	1 1/2		
Chollar-Potosi	2500	25000	6 1/2	5 1/2	1/2	
Confidence	130	24500	7 1/2	6 1/2	1/2	
Consolidated Hill Quartz	345	34500	2 1/2	2 1/2		
Consolidated Virginia	1165	116500	7 1/2	6 1/2	1/2	
Cook & Geyer	1600	16000	8 1/2	7 1/2	1/2	
Crown Point	600	60000	8 1/2	7 1/2	1/2	
Danley	1200	12000	4 1/2	4 1/2		
Dayton	20	25000	6 1/2	5 1/2	1/2	
Eclipse	70	25000	4 1/2	4 1/2		
Empire M. & M.	15	50000	8 1/2	7 1/2	1/2	
Eschschuer	400	8000	2 1/2	2 1/2		
Fairmount	3000	12000	1 1/2	1 1/2		
Flowers	100	1000	1 1/2	1 1/2		
Franklin	2000	20000	1 1/2	1 1/2		
Globe	1200	12000	2 1/2	2 1/2		
Gould & Curry	400	4000	2 1/2	2 1/2		
Hale & Norcross	184	10000	5 1/2	4 1/2	1/2	
Imperial	2000	20000	1 1/2	1 1/2		
Insurance	2000	20000	1 1/2	1 1/2		
Jacob Little	3000	30000	6 1/2	5 1/2	1/2	
Justice	3000	21000	6 1/2	5 1/2	1/2	
Kentuck	95	30000	12 1/2	11 1/2	1/2	
Knickerbocker	1200	24000	4 1/2	4 1/2		
Kosuth	100	1000	1 1/2	1 1/2		
Lady Bryan	3500	35000	6 1/2	5 1/2	1/2	
McMeans	1500	15000	1 1/2	1 1/2		
Mint	3000	30000	1 1/2	1 1/2		
Nevada	3000	30000	1 1/2	1 1/2		
New York Con.	3600	36000	2 1/2	2 1/2		
Occidental	800	10000	2 1/2	2 1/2		
Ophir	1400	14000	18 1/2	17 1/2	1/2	
Phil Sheridan	1200	24000	2 1/2	2 1/2		
Pictou	2000	20000	1 1/2	1 1/2		
Rock Island	800	16000	6 1/2	5 1/2	1/2	
Seg. Belcher	160	600	7 1/2	6 1/2	1/2	
Seg. Caledonia	1000	10000	1 1/2	1 1/2		
Seg. Rock Island	2000	20000	1 1/2	1 1/2		
Senator	2000	20000	1 1/2	1 1/2		
Sierra Nevada	2000	20000	1 1/2	1 1/2		
Silver Hill	5400	54000	4 1/2	4 1/2		
South Comstock	2000	20000	1 1/2	1 1/2		
South Overman	2000	20000	1 1/2	1 1/2		
Succor M. & M.	1800	22800	2 1/2	2 1/2		
Sutro	2000	20000	1 1/2	1 1/2		
Texas	80	500	1 1/2	1 1/2		
Tyler	2200	33000	3 1/2	3 1/2		
Union Con.	803	20000	1 1/2	1 1/2		
Utah	100	2000	2 1/2	2 1/2		
Yellow Jacket	1200	24000	7 1/2	6 1/2	1/2	
NEVADA.						
Adams Hill	5000	50000	1 1/2	1 1/2		
Alta	800	30000	1 1/2	1 1/2		
Amador Tunnel	1000	10000	1 1/2	1 1/2		
American Flag M. & M.	3000	30000	1 1/2	1 1/2		
Arkansas	300	3000	1 1/2	1 1/2		
Baltimore	3000	30000	1 1/2	1 1/2		
Bowers	3000	30000	1 1/2	1 1/2		
Chapman M. & M.	3000	30000	1 1/2	1 1/2		
Charter Oak	1000	10000	1 1/2	1 1/2		
Chief of the Hill	3000	30000	1 1/2	1 1/2		
Chief East Extension	3000	30000	1 1/2	1 1/2		
Consolidated	10000	100000	1 1/2	1 1/2		
Consolidated South	25000	250000	1 1/2	1 1/2		
Eureka Con.	50000	500000	1 1/2	1 1/2		
Kroessler	12000	120000	1 1/2	1 1/2		
Louis	3000	30000	1 1/2	1 1/2		
Hayes	1000	10000	1 1/2	1 1/2		
Hermes	1000	10000	1 1/2	1 1/2		
Home Ticket	1000	10000	1 1/2	1 1/2		
Hunt & Hunt	3000	30000	1 1/2	1 1/2		
Ingomar	1000	10000	1 1/2	1 1/2		
Ivanhoe	3000	30000	1 1/2	1 1/2		
Jackson	5000	50000	1 1/2	1 1/2		
Josephine	5000	50000	1 1/2	1 1/2		
Juniata Con.	5000	50000	1 1/2	1 1/2		
K. K. Con.	1000	10000	1 1/2	1 1/2		
Kentucky	1000	10000	1 1/2	1 1/2		
Kosuth	1000	10000	1 1/2	1 1/2		
Lehigh	1000	10000	1 1/2	1 1/2		
Lillian Hall	1000	10000	1 1/2	1 1/2		
Louis	2400	24000	1 1/2	1 1/2		
McMahon	1000	10000	1 1/2	1 1/2		
Marion	3000	30000	1 1/2	1 1/2		
Meadow Valley	24003	240030	10 1/2	10 1/2		
Mercury	1200	12000	1 1/2	1 1/2		
Monitor-Belmont	2000	20000	1 1/2	1 1/2		
Murphy	2000	20000	1 1/2	1 1/2		
Newark	800	32000	1 1/2	1 1/2		
North Tunnel	2000	20000	1 1/2	1 1/2		
Pace & Panaca	2400	40000	1 1/2	1 1/2		
Peavine	1000	10000	1 1/2	1 1/2		
Phoenix	5000	50000	1 1/2	1 1/2		
Pioche	1000	10000	1 1/2	1 1/2		
Pioche West Ex.	3500	35000	1 1/2	1 1/2		
Pioche-Phoenix	4000	40000	1 1/2	1 1/2		
Portland	3000	30000	1 1/2	1 1/2		
Raymond & El	3000	30000	1 1/2	1 1/2		
Rye Patch	3000	30000	1 1/2	1 1/2		
Silver Peak	3000	30000	1 1/2	1 1/2		
Star West Con.	3000	30000	1 1/2	1 1/2		
Standard M. & M.	3000	30000	1 1/2	1 1/2		
Star Con.	18000	180000	1 1/2	1 1/2		
Starlight	6300	25000	1 1/2	1 1/2		
Starling	3000	30000	1 1/2	1 1/2		
Spring Mount	3500	35000	1 1/2	1 1/2		
Spring Mt. Tunnel	2000	20000	1 1/2	1 1/2		
Ward Beecher	200	20000	1 1/2	1 1/2		
Washington	200	20000	1 1/2	1 1/2		
Watson	200	20000	1 1/2	1 1/2		
Yellowstone	200	20000	1 1/2	1 1/2		
CALIFORNIA.						
Alpine	1200	12000	1 1/2	1 1/2		
Bellvue	3000	30000	1 1/2	1 1/2		
Calaveras	3200	32000	1 1/2	1 1/2		
Cedberg	2400	24000	1 1/2	1 1/2		
Consolidated Mill	2000	20000	1 1/2	1 1/2		
Jon. Amador	2000	20000	1 1/2	1 1/2		
Cottonwood Creek	2000	20000	1 1/2	1 1/2		
Endersberg M. & M.	2000	20000	1 1/2	1 1/2		
El Dorado	2000	20000	1 1/2	1 1/2		
Eureka	1600	16000	1 1/2	1 1/2		
Gillis	2000	20000	1 1/2	1 1/2		
Independent	1800	18000	1 1/2	1 1/2		
Keystone	1500	15000	1 1/2	1 1/2		
Mt. Jefferson	1500	15000	1 1/2	1 1/2		
Oakville	1500	15000	1 1/2	1 1/2		
St. Lawrence	1500	15000	1 1/2	1 1/2		
St. Patrick	1500	15000	1 1/2	1 1/2		
Tecumseh	3000	30000	1 1/2	1 1/2		
Yule Gravel	400	10000	1 1/2	1 1/2		
IDAHO.						
Empire	2500	25000	1 1/2	1 1/2		
Golden Chariot	2500	25000	1 1/2	1 1/2		
Ida Elmore	1200	10000	2 1/2	2 1/2		
Ingomar	720	10000	5 1/2	4 1/2	1/2	
Red Jacket	650	20000	12 1/2	11 1/2	1/2	
South Chariot	1000	10000	2 1/2	2 1/2		
War Eagle	1000	10000	2 1/2	2 1/2		
WHITE PINE.						
General Lee	1000	20000	1 1/2	1 1/2		
Mammoth	1800	36000	1 1/2	1 1/2		
Noonday	1000	20000	1 1/2	1 1/2		
Old Hidden	800	21333	1 1/2	1 1/2		
Silver Wave	2000	20000	1 1/2	1 1/2		
Ward Beecher	2000	20000	1 1/2	1 1/2		
UTAH.						
Deseret	2400	24000	1 1/2	1 1/2		
Wellington	2000	20000	1 1/2	1 1/2		
OREGON.						
Virtue	2000	20000	1 1/2	1 1/2		

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt.	Levied.	Delinq't.	Sale.	Secretary.	Place of Business.
Alps S M Co	Ely District	7	25	April 23	May 25	C F Balcum	426 Montgomery st
Danev G & S M Co	Washoe	9	50	Mar 31	May 5	G R Spinney	320 California st
Empire M Co	Idaho	6	150	April 18	May 22	W Willis	419 California st
Gould & Curry S M Co	Washoe	22	200	Mar 26	April 30	A K Turbow	Merchants' Ex
Ingomar S M Co	Ely District	7	25	May 4	June 10	C S Neal	419 California st
Justice M Co	Washoe	9	150	April 18	May 20	F Swift	419 California st
Lady Bryan M Co	Nev	2	50	Mar 31	May 4	F Swift	419 California st
Mahogany G & S M Co	Idaho	12	150	May 8	June 12	W F Bogart	419 California st
Mint G & S M Co	Washoe	10	10	May 1	June 3	D A Jennings	401 California st
Newark S M Co	Ely District	7	200	April 20	May 25	D T Bagley	401 California st
Pace & Panaca S M Co	Ely District	6	100	April 18	May 20	O A Sankey	458 California st
Phoenix S M Co	Eureka, Nev	14	25	April 21	May 25	J May Tre	419 California st
Pictou M Co	Washoe	5	25	April 20	May 23	S Phillips	408 California st
Portland M Co	Ely District	4	25	April 13	May 20	B J Gray	438 California st
Rock Island G & S M Co	Washoe	1	50	April 4	May 5	W Clark	418 California st
South Overman S M Co	Cal	6	50	April 27	May 21	R B Noyes	411 1/2 California st
St Lawrence M & M Co	Cal	8	100	Mar 10	April 17	D Verdenal	409 California st
St Patrick G M Co	Washoe	8	100	April 10	May 15	W H Watson	302 Montgomery st
Succor M & M Co	Cal	25	25	April 23	June 6	F J Hermann	418 Kearny st
Tecumseh G S & C M Co	Cal	5	100	April 22	May 26	W E Dean	419 California st
Utah S M Co	Idaho	5	50	April 17	May 22	L Kaplan	Merchants' Ex
War Eagle M Co	Ely District	11	100	May 5	June 5	F D Cleary	Merchants' Ex
Washington & Creole M Co	Ely District	11	100	May 5	June 5	F D Cleary	Merchants' Ex

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Atlantic & Pacific Cons G M Co	Cal	8	5	April 10
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MINING AT COLUMBIA HILL.—The *Transcript* gets the following from a correspondent:

W. W. Nichols has been running regularly for several weeks, with every prospect of a large clean up. The mines of Hawley & Hustler on Kennebec Hill, are working, and at the last clean up were paying first-rate. The Eureka Lake company on Columbia hill, cleaned up last week in Richardson's mine, No. 1, and took out two hundred pounds of amalgam, which it is judged will refort \$20,000. The other mines in the vicinity are running with a full head of water, and every appearance indicates that more gold will be taken out this season than for many years past. Mining work all along the Ridge is lively, and the miners feel well.

MARBLE QUARRY.—Work has been resumed on the Placer county marble quarry, situated near Colfax, and large quantities will be shipped to San Francisco, during the coming season. U. S. Senator Jones, of Nevada, is to have a magnificent vault erected at Lone Mountain cemetery, San Francisco, the marble for which is mainly supplied from this quarry.

The new quartz mill of the California Consolidated company, near Nevada city, started up on Monday. The company now have two mills at work.

PLACER COUNTY.

QUARTZ MINES.—*Herald*, May 9: The Orleans is developed by two shafts 100 ft. apart and 75 and 85 ft. deep, connected by a drift 75 ft. from the surface. The main drift is 135 feet from the west shaft, and still driving east with fine milling rock and an abundance of free gold in sight. The entire length of openings show a compact and well defined vein of sulphureted ore, averaging about 3½ ft. in width. About 500 tons have been extracted and milled at the St. Patrick and Pugh's mills, which yielded from \$22 to \$25 per ton. The value of this mine can be well appreciated when it is known that the rock can be mined and milled at an expense not to exceed \$1.50 per ton, with mill on the ground.

The St. Lawrence mill is pounding on ore from the Hathaway ledge, which belongs to the St. Lawrence company. The mill is a first-class 12-stamp, water power, capacity 24 tons per 24 hours.

The Pugh mill runs exclusively on custom work, and has not lain idle a day for the past year for the want of rock.

The St. Patrick mill is at present lying idle, but will start up in about two weeks on ore from the Crater mine, which is being rapidly opened up by shafts and levels. The stopes are being prepared for extraction of ores.

The Bellevue mine is about one half mile distant. This mining property consists of a series of parallel veins, situated on Buckeye Hill. We find extensive surface works in progress. The Bellevue company evidently mean business, 6 shafts being sunk. Steam, water, horse and man power the auxiliaries. The principal works are on the Buckeye ledge, No. 1 and No. 2 shafts. Mr. Werry, who is foreman of this property, piloted us through the mine. In the face and back of the lowest level (240 ft.) the ledge is about 20 inches, well sulphureted, with free gold visible in the rock. A connection will be made with No. 2 shaft 200 ft. west of No. 1 in about six weeks, giving a solid block of ore 100 ft. by 200 ft. by 20 inches, or about 2,500 tons of high grade ore. Other levels will be immediately opened. The company are also developing several other veins of the series with good results. The present work is simply one of development, no ore being extracted but such as being taken from shafts and drifts.

News from Dutch Flat says the prospects for a profitable mining season were never more encouraging. All the hydraulic mines are at work in full force, and their run promises to extend until much later in the season than usual, owing to the abundant supply of water, and the unusual depth of snow in the mountains at this season of the year. The same encouraging news comes from the large hydraulic mines on the divide.

IOWA HILL.—Everything looks prosperous thereabouts now-a-days, and a large force of men are employed on the canal and ditch. Money is plenty and everybody is jubilant, with a fine prospect in view when the water is accessible for working the rich gravel beds in that vicinity.

PLUMAS COUNTY.

WORKING.—*National*, May 9: The Dutch Hill Co. have twenty men at work, and the water, in all probability, is now through their ditch. With the immensely rich ground that the company are known to have, and the certainty of a good water season, they are sure of a mint of money.

SAN DIEGO COUNTY.

SAN DIEGO QUARTZ.—*Grass Valley Union*, May 10: The Bever Quartz Mining Company is an incorporation organized in this place to mine in Banner district, San Diego county. Work has been commenced on their location, under the superintendence of David Norrie, an experienced miner from this district. The company have recently received samples of rock from their claim, taken from the surface and a few feet below. The rock at first sight does not strike the observer favorably, as it does not show mineral, and but little trace of gold; but upon pounding it in a mortar very handsome results have been obtained in free gold. The district is coming into favor with mining men in different parts of the State, and it is confidently believed at no distant day it will take rank as one of the leading quartz mining districts of the State. A test of the rock from Bever mine has been made, and gives a result

of \$45 per ton, worked as by mill process. For rock that exhibited scarcely a trace of gold, this is an excellent showing. The vein from which the rock was taken is seven feet in width and would insure a good profit from a yield of \$10 per ton.

SISKIYOU COUNTY.

GOON RESULT.—*Yreka Union*, May 9: We learn that a company of Portuguese cleaned up in their claim on Cherry creek one day last week, some \$1,300 as the result of about ten days' run. It is expected that they will take out from \$12,000 to \$15,000 during the season.

SOLANO COUNTY.

MORE CINNABAR.—*Vallejo Chronicle*, May 9: Berry Shouse has struck a cinnabar ledge on his ranch, about 400 yards west of the St. John mine. He has now been at work developing the strike for several weeks. Parties who have just visited the place represent that there is every prospect that he has struck a regular lead. Of the richness of the ore which has thus far been taken out there is no question. In some of the pieces the virgin quicksilver is found. A shaft of about 35 or 40 feet in depth has been sunk, and a drift run about the same distance. There is now estimated to be between \$6,000 and \$8,000 worth of ore on the dump.

TRINITY COUNTY.

TRINITY CENTER.—*Cor. Journal*, May 9: Mining interests are flourishing. Some of the claims here are in full blast, while others are preparing for a heavy summer's work. Haskins, Rumpfelt & Co. are "making the fur fly," so to speak, on Shoo Fly hill, with their big pipe. Hall & Williams are at present busily engaged in repairs on their ditch, employing several men. Extensive caves have lately taken place in the banks of Bloss & Co.'s claim. E. Enwright is working his diggings to a good advantage.

Work on the ditch from West Weaver across the Oregon mountain is being pushed forward as rapidly as circumstances will permit. A force of 200 men is employed, and 30 more were expected to begin work on Thursday morning. The weather has been very unfavorable for the prosecution of this enterprise, but the company expect to have the water at work by the first day of June.

COPPER MINES have been discovered on Oak Run, from which lumps of pure copper, weighing from 2 to 6 pounds each, have been taken by prospectors.

TULARE COUNTY.

MINERAL KING MINES.—*Delta*, May 7: There are indications of stirring times close at hand. Many parties are already on the ground and in the vicinity, while the notes of preparation are everywhere heard in the towns of this and adjoining counties. Harry's Bend, on the east Kaweah, is the center of the district. Silver City is five miles west, on the direct route from Loveland's to Harry's Bend, via Dope Camp and Bruin's Retreat. There is no snow at Silver City, and only 5 ft. at Harry's Bend; and with ordinary weather, the trail will be clear to Silver City by the 15th or 20th instant. Several families are already going there, and cabins for others are being built. There is a good trail from Mount Hope to Silver City. A school will be opened at this place on or about the 15th of June. Whipsawyers, board and shake makers, by the score, are working up timber at the Bend, and find immediate sale for all they can produce. We should not be surprised to see a larger rush for these mines than has ever taken place in the State, and many fortunes will be suddenly made.

COAL.—*Times*, May 9: We were shown by Mr. T. C. Hunt, of the Exchange Hotel, some fine specimens of anthracite coal, found in the foothills about 20 miles from Visalia. This is quite a valuable discovery, and will, no doubt, prove to be a great source of wealth to this county. The vein has not been thoroughly examined, but there is no doubt but that coal exists in abundance. The wealth of our mountains is yet unknown. It is with those that first venture to be rewarded.

TUOLUMNE COUNTY.

ANOTHER CLEAN-UP.—*Independent*, May 9: The amalgamators at the Golden Gate mill cleaned up on the 3d instant, after a 5½ days' run. They crushed 38½ tons of rock, from which they extracted 33¼ ounces of gold, \$658.13, or \$19.25 per ton. The gold in this rock is so very fine that to save it care has to be used in crushing, and a light fall given to the stamps, which accounts for the small number of tons reduced per day. With a fall and a rush, such as is used in northern mills, where the gold is heavy, it would cause a waste and loss enough to make the difference between a paying and a non-paying mine.

The Alpha Table Mountain Co. is now running a gangway through the gravel, with excellent prospect. The channel is running direct for the Omega. Mr. Wyatt, Superintendent of the Omega, will start in as soon as the Alpha Co. strike their line. The Omega is expected to be the king-pin mine of Table Mountain.

FROM GARROTE.—*Cor. Independent*: The mining interests are looking up a little in this part of good old Tuolumne. Mr. Du Pratt is pushing ahead the tunnel on his claim as expeditiously as possible, and expects to strike the vein within 20 or 25 feet. L. K. Hough and Fred. Cope, who struck the rich pocket a while back, are now driving a tunnel to tap the pay shute at a greater depth. Woode & O'Flannigan are sinking a shaft on the Cosmopolitan claim, and expect to get good results for their labor. Lancy & Pool have discovered a very rich and extensive mine in Second Garrote; from present indications it bids fair to develop into one

of the best mines in this part of the county. I think I am safe in saying that they have six feet of vein matter that will yield 10 or 12 dollars per ton. Rocca is working a full force of men in his hydraulic claim; he uses about 800 inches of water, with a pressure of about 200 feet. Chandler & Beal, owners of the Keystone ditch, are putting down a large flume in their claim, and expect to commence washing on a grand scale, in a few days.

Nevada.

ELY DISTRICT.

RAYMOND & ELY.—*Pioche Record*, May 2: The cross-cut from 1,200-ft. station is now 142 ft. in length, and must very soon cut the ledge. The 10th level, 200 ft. above the lower one, has been run to the western line without finding ore to any great amount; bunches of good rock were scattered here and there, but were not of much importance. In the upper levels stoping is going on as usual, but with a reduced force. During the past week little ore has been shipped, it having been allowed to collect in the ore-house. At the mills and mine there are altogether about 700 tons collected—about 600 tons at the mills and about 100 at the mine. It is probable that the mills will resume crushing in the course of next week.

MEADOW VALLEY—No. 3.—Sinking has been resumed on the shaft and it is now a short distance below the point where the drift is started to connect with the Raymond & Ely 1,200-ft. level. On the 9th the eastern drift is now in 749 ft., just about opposite to the summit, or No. 5 shaft, with which a connection will be made. The stopes on the western side look about the same, and the usual quantity of ore is being raised from them.

The summit, or No. 5 shaft, is 1,030 ft. deep, and the work of sinking is going on as usual. At a depth of 1,002 ft. from the surface, a station will be opened and connection made with the drift on the 9th level of No. 3. At the mills, things are going on as usual, with no change of any moment to note.

WASHINGTON AND CREOLE.—The shaft from the Mazepa works has reached a depth of 750 ft., and about 140 ft. more to sink to connect with the lower level. There are 120 tons on the dump, which will be shipped in a few days to the Floral mill for reduction. Since our last report, the Superintendent has sent bullion below to the amount of \$1,350, being the closing shipments from the last crushing.

PORTLAND.—The Superintendent, Mr. A. J. Blair, has commenced shipping ore to the Newark, late the Amador mill, and has already sent about 50 tons.

HAYANA.—This mine is situated just over the shoulder of the hill east of the American Flag. The shaft is part of its depth perpendicular, and the remaining portion an exceedingly steep incline, varying but slightly from the vertical. At a depth of 270 ft. from the surface, a drift has been opened on both sides of the shaft following the line of the ledge. The eastern is in 16 and the western 25 ft. The face of both is occupied entirely by the ledge, most of which is good milling ore. The work of sinking the incline is carried on as speedily as possible. A good whim has been erected over the shaft, and by its means 8 or 10 tons of ore are being hoisted daily, and is being piled on the dump.

AMERICAN FLAG.—At this mine all is activity and bustle. During the past week 194 tons of ore were sent to the mill, making a total of 350 for the month. The mill is now and has been for the past two weeks running on the company's own ore. Above the 9th level the stopers are busily at work taking out some very good looking ore, of which a number of tons is being raised daily. In all respects the mine of late has greatly improved.

PIOCHE.—The shaft is now 750 ft. in depth. A considerable amount of ore is being taken out of the mine on shares, which method is both effectual and economical. We saw on the dump a pile of some of the richest ore we have seen in Pioche.

SILVER PEAK.—Five hundred and fifty ft. from the surface a station has been opened and a drift commenced, following the line of the ledge. It is in 30 ft., and the face of it shows 3½ ft. of good ore.

CHIEF OF THE HILL.—The faces of the drifts occasionally show some very rich ore, but at present not in sufficient quantities to pay.

Nevada.

WASHOE DISTRICT.

OPHR.—*Gold Hill News*, May 7: Cross-cut No. 2, on the 1,300 ft. level, has reached the east clay wall of the ledge, which at that point shows the formation of the ledge and east wall to be as solid and perfect as in any mine on the lode. Two drifts have been started from this cross-cut, one north and the other south, both of which are still running through ore that assays from \$180 to \$300 per ton. The winze, from the 1,300-ft. level, has made connection with the upraise from the 1,465-ft. level, giving a fine circulation of air in that portion of the mine.

SUTRO TUNNEL.—The main header to-day is in 5,868 ft., and the rock being somewhat softer, correspondingly better progress is being made. One Burleigh drill was put to work at this point on Saturday last, since which time, despite the delays incident to a first trial of new machinery with inexperienced hands, a very considerable advance over hand labor was the result. As soon as the carriages ordered shall have arrived, three drills will be put in operation, when a very considerable advance over present progress will be recorded. Drifting both east and west, on the line of the tunnel,

will be proceeded with at once. A portion of the machinery for the new air compressor for this shaft having arrived, it is expected that the Burleigh drills will be put at work in both east and west headings next month.

SILVER HILL.—The flow of water from the face of the south drift, at the third station level, is gradually subsiding, and the quartz in the face of the drift is of a very lively and favorable character for ore developments. The raise from the south drift at the first station level, in the old St. Louis chimney, is making rapid headway, encountering some very fine ore. This raise is being made for the double purpose of prospecting the ground through which it passes, and making an air connection with the old St. Louis works, thereby ventilating that portion of the mine.

CONSOLIDATED VIRGINIA.—The ore breasts north and south on both the 1,300 and 1,200-ft. levels continue to open splendidly, proving more and more the richness and permanency as well as the great extent of the ore body, which has now been proven to extend from the 1,000-ft. level down to the 1,400-ft. level, where the ore is more solid, the ledge wider, and the quality of the ore even richer than on the levels above. All the mills are kept steadily running on ore from the mine, and a dividend may soon be looked for.

UTAH.—Prospecting the body of ground lying between the old upper works and the 400-ft. tunnel level, has developed nothing new during the week.

CALEDONIA.—Raising up and cutting out the third compartment of the shaft from the third to the second station level is rapidly approaching completion. The repairs to the north drift on the second station level are nearly completed, and work in the cross-cut from this drift will soon be resumed.

YELLOW JACKET.—Sinking the main incline is making good headway, notwithstanding the extreme hard character of the rock penetrated.

BELOCHER.—Sinking the main incline is making slow though steady progress. It is now down 16 ft. below the 1,500-ft. level, the bottom in extremely hard blasting ground. The ore stopes on the 1,200 and 1,300-ft. levels are holding out and yielding handsomely. The ore breasts on the 1,400-ft. level are opening out splendidly and promising a rich yield for many months to come. Daily yield 550 tons of ore.

MINN.—Sinking the shaft is making rapid headway, the rock in the bottom blasting and blocking out finely. The rock from the shaft is being dumped in the ravine alongside of the hoisting works, so as to form a large and convenient yard for timbers, wood and other material for the use of the mine. This yard will be nicely arranged, having just slope enough to give the greatest ease in the handling and carrying of heavy timbers into the hoisting works and mine.

CROWN POINT.—Daily yield 550 tons of ore. The ore stopes throughout the entire mine are looking well and yielding the usual amount of good milling ore. The ore in the middle winze on the 1,400-ft. level continues of rich quality. Sinking the north winze on the 1,400-ft. level has been discontinued on account of water.

BALTIMORE CONSOLIDATED.—Sinking the main shaft is making steady progress, the rock in the bottom working out finely and the water giving less trouble than for the past two weeks. Three car loads of the spruce pine timbers for the foundation and frame timbers for the new machinery were shipped from Dutch Flat, California, on the 3d, and are expected to arrive at the mine to-day.

BUCKEYE.—In our report last week we stated that a prospecting drift south, which was in thirty feet, had been started at the first station. We should have stated that the drift was started at the point of discontinuation of the old works 400 ft. south of the old shaft. The drift is now in fifty-five ft., and will have about 150 ft. further to run to reach the point where it is expected that a chimney of good ore will be found.

SUCCESS.—The up raise from the east drift at the first station level in the mill shaft shows quite an improvement in the width of the ore vein, as well as the quality of the ore encountered. The ore vein is now 3½ ft. in width, of good milling ore.

GOULD & CURRY.—Sinking the double winze from the 1,700-ft. level is making the usual steady progress. The face of the north drift on the 1,700-ft. level is still in hard blasting ground.

McMEANS.—The main tunnel is in 680 ft., and the breast is in low grade ore, with indications of a near approach to the ledge. A fine stream of water issues from the mouth of the tunnel, sufficient to supply a strong air blast, arrangements for which are now being made, as the air is becoming too much deoxidized to enable lights to burn freely.

GLOBE CONSOLIDATED.—Sinking the main incline is progressing 2½ ft. per day. The main west drift on the 400-ft. level is making steady headway.

JULIA.—The main south drift at the 1,000-ft. station is in 298 ft. from the main west tunnel, the face is tough clay with some quartz. The east drift from the main south drift on the 1,000-ft. level is in 332 ft., the face is a mixture of clay, quartz and porphyry.

DAXTON.—The ore breasts on the first, second and third station levels are all looking well and yielding the usual amount of good milling ore, keeping both Woodworth's and Briggs' mills steadily running.

SIEBRA NEVADA.—New shaft down 410 ft. The sluice tunnel is completed. The raise from

Quicksilver and Borax.

The Post of this city tells the following story concerning the discovery of quicksilver on the property of the California Borax Company:

The California Borax Company, of Borax Lake, once had a good business in borax and sulphur, but the competition of other and more available fields gradually drove them out of the business, and for the past five or six years the California Borax Company has rested in its labors. It has preserved its organization and its property, and yet was held at little worth by the stockholders beyond the value of real estate and privileges owned by the company. During the renewed search for quicksilver, stimulated by the recent advances, the lucky thought struck some one to assay the dark, porous, coke-looking rock which covered much of the ground of the California Borax Company. The result of that first assay was so encouraging that other samples were assayed, with still more gratifying results.

A Well-kept Secret.

The facts were made known confidentially to a few friends, and the California Borax Company had an offer for their entire property. During the negotiations nothing was dropped which could put the Borax Company on its guard. On their side they had what they once believed astounding wealth in borax and sulphur, but these dreams of perpetual dividends had been dissipated for years, and an offer equivalent to \$10 a share for the stock all around seemed a very good chance of washing their hands of an unproductive property.

A Bad Bargain Consummated.

The sale was consummated with considerable satisfaction by the vendors, but no sooner was it concluded than they learned that they had sold for a song what is believed to be the richest and most promising quicksilver mine in the world. It is needless to say there was much dissatisfaction on one side and corresponding elation on the other. Those who were out thought that the "ins" should have given them a show, and the "ins" said that the Borax Company should have informed themselves of what their property was worth—the old company could not expect the lucky finders of the treasure to go to the directors and say: "Gentlemen, you have quicksilver at Borax Lake, and are neglecting a fortune." To make the matter more vexatious, some of the borax company have been intimately connected with quicksilver mining, and ought to have made the discovery themselves, but do not appear to have given it a thought. Yet, where there were large quantities of borax, of sulphur, of soda, soda springs and medicated waters, was not the unluckiest spot in California to look for cinnabar.

The Quicksilver Deposit.

The sulphur banks are found to contain, by assay, 40, 50 and in some cases, 60 per cent. of the valuable liquid metal. The assays of ore taken almost promiscuously from chunks of the material of which these banks are composed yield more than the selected area of the New Almaden ever did even in its best days. Add to this that the prices which now rule in the quicksilver market are double, or more than double, what the New Almaden got for its production when a little of its stock was a small fortune. Two car loads of this sulphurous ore have been brought to the city and will shortly be reduced, which will solve the last problem. Can the ore be easily reduced, or is it rebellious? Riotte & Luckhardt, the assayers and analysts, say that from the facility with which it assays, so far from being rebellious, it will, in their judgment, prove as easy to work for quicksilver as it is for sulphur. The new owners are in high spirits, and will, as soon as they have satisfied themselves with the preliminary experiments, erect first-class reduction works, furnaces, etc., and go into the business on the largest scale.

Good News.

The prospect of a large increase in the production of quicksilver is good news for miners, for unless new and important discoveries had been made, either the business of silver mining must atop at its present limits or the price advance to that point which would prevent all milling of low grade ores. This question of quicksilver for the future is one that has harassed the miners for years, and during the past few months the advance in price has made it assume the most formidable proportions. The question of who is the seller and who the buyer is secondary. The fact that hundreds or thousands of tons of ore yielding from 40 to 60 per cent. of metal are lying in loose banks in Lake county, ready for shipment to any reduction works that can resolve them into a merchantable article, is the important fact. New Almaden only produced 11,042 flasks in 1873, and New Idria and the Redington 11,708 flasks between them. All the other quicksilver mines in the State, including Cerro Bonito, San Luis Obispo county, which produces about 50 flasks per week, do not produce over 500 flasks per month. The New Almaden yielded, in 1865, with 47 per cent. ore instead of five per cent., which it is now working on, 47,194 flasks. If the Borax Lake answers to its present promise it will, when fully developed, and the requisite works erected, yield 100,000 flasks a year, and be a far more valuable property than all the present quicksilver mines in the world.

John Barrett and seven of his friends, among whom there is one of the wealthiest stockbrokers on California street, are the lucky owners. If they will only work the mines diligently,

and let prices be ruled by demand, instead of by restricting the supply, the Pacific coast will benefit not only by their wealth, but by the stimulating effect it will have on silver mining generally.

The Property.

The area of the borax company's estate, which it has now parted with, is 4,000 acres, well wooded, finely watered, and nine miles of frontage on the lake. There are many buildings on the ground, but most of them have gone to wreck for want of care and occupation. The site is very beautiful for residences, hotels and saunteria, and when the mining business makes ample returns, there is no doubt the company will build up a town that, while profiting by the business of the mine, will become a pleasant and fashionable resort.

The Belmont Mine.

As usual, our report of the Belmont mine (as well as all other mines we have mentioned in the district,) in last week's issue, was fully as correct as though the lower workings had been personally visited from day to day. The paper went to press in the afternoon of Friday, with the report of the mine, which was obtained as best it could be, from time to time, on what could be relied on, and our own examination of the several drifts some eight or nine weeks since, with a little prophecy combined. On the following day (Saturday) specimens were brought into town of a very high grade, indeed decidedly more favorable indications than were extracted from the Cassel deposits in December last; the ore being free from wire silver, and will yield considerably higher, in our judgment. The drift in which this body of ore was found is in the Transylvania ground, there being some fifty or seventy feet in length of ledge drifted alongside of that shows ore of high grade. Of course, it is impossible to say what it will yield to the ton by mill process, but in all probability the entire ledge will average from \$125 to \$175 per ton. As progress is made the same quality of good ore is found. The distance in drift from the Canfield shaft is so great that the air has become foul, rendering the running of it rather slow. Some little distance ahead, north, a winze is being sunk in the Transylvania ground, for the purpose of furnishing air, which will occupy several days in accomplishing. Once that is completed, more men will be put to work and more rapid progress will be made. The stock, to-day, should be worth \$10 or \$12. From the Moore & Martin ground ore is being steadily raised, on which the Monitor-Belmont mill is kept running most of the time.—Belmont Courier, May 2.

PANAMINT MINES.—M. J. Byrnes, one of our Inyo pioneer prospectors, has for several months been out at Panamint and came in from there a few days ago. He says that truly that district has the most promising outlook of any he has seen in all his wide prospecting experience. The Jacobs' five-stamp mill machinery is being taken in there and will be set in operation at the earliest practicable moment. This mill is calculated to crush fifteen tons of ore per day and concentrate in proportion, down to about one ton in ten, the pulp then to be shipped to Los Angeles or San Francisco for final reduction. The same system is also to be adopted with the twenty-stamp mill, for the building of which preparations are now being made. These two mills will thus afford quite an item in the way of freights. The toll-road through the cañon and the Los Angeles subscription-road connecting with it, will be completed in about thirty days. In fact, the latter is now ready for use. Nothing is being done about the road direct from Passamores', but it is a matter of considerable importance to the rest of the county that that road should be put through. Its cost will probably not exceed \$1,500. There is plenty of wood and water in Panamint, but not a spear of grass nearer than Passamores', so that Kern and Los Angeles counties will furnish all the provender for the district, unless this road is built.—Inyo Independent.

HOW TO SET THE HOUSE ON FIRE.—1st. Rub your furniture with linseed oil, and preserve carefully the old greasy rags used for this purpose, in a paper box in an out-of-the-way place. 2d. If the fire in the stove does not burn well, pour benzine or kerosene on it from a well-filled gallon can. 3d. When you light your cigar or the gas, throw the burning match—no matter where, and don't look after it, even if it gets into the waste-paper basket. 4th. Put a burning candle on the shelf of a closet, and forget all about it. 5th. Always read in bed until you fall asleep, with a burning candle near you. 6th. Especially for builders: Put the ends of the wooden beams into the flue walls; and if you build hot air furnaces, be careful to use as much wood as possible in their construction. 7th. Always buy the cheapest kerosene you can get.—Builder.

IMPORTANT TO SNAKES.—An English exchange says that carolic acid is a deadly poison to snakes, and experiments have proved that a few drops are sufficient to cause almost instant death to the dreaded cobra, and suggests that it might be invaluable in India and other tropical countries.

PRESERVING WOOD.—The nature of a new invention consists in filling the pores of the wood with lime, or a mixture of lime and sand.

Eureka Bullion.

The Eureka Sentinel, of the 3d inst., in an article on the mines, speaks as follows of the bullion and charcoal:

The week's coal receipts have been as follows: Eureka Consolidated, 13,000 bushels; Richmond, 13,054 bushels; Ruby, 4,000 bushels; Hoosac, 8,000 bushels; in all, 38,054 bushels; an increase over last week of 5,615 bushels, which must be accounted a very good result, indeed, and one which bespeaks the animation pervading this one arm of our industrial pursuits.

The bullion product for the same period has been: From the Eureka Consolidated furnaces, 700 bars, aggregating 91,000 pounds; and from the Richmond, 1,467 bars, making 124,695 pounds, or a total of 215,695 pounds of crude bullion. These figures give an increase over the amount produced last week of 16,060 pounds.

The shipments by Pritchard's Fast Freight Line, for the same time, were: From the Eureka Consolidated, 177,950 pounds of crude bullion; and from the Richmond, 100,287 pounds of refined bullion; in all, 258,237 pounds, showing an increase of 143,837 pounds over and above the quantity shipped at the date of our last report. From the Newark mill, per Superintendent Baron, there were received, on last Monday, at the office of Wells, Fargo & Co., at this place, two bars of silver bullion, 416 fine, weighing 2,029 ounces; and on Wednesday, two bars, 635 fine, weighing 1,707 ounces. The value of the latter was \$1,399 71-100.

MORE CINNABAR.—The Vallejo Chronicle says: Berry Shouse has struck a cinnabar ledge on his ranch, about four hundred yards west of the St. John mine. He has now been at work developing the strike for several weeks. Parties who have just visited the place represent that there is every prospect that he has struck a regular lead. Of the richness of the ore which has thus far been taken out, there is no question. In some of the pieces the virgin quicksilver is found. A shaft of about thirty-five or forty feet in depth has been sunk, and a drift run about the same distance. There is now estimated to be between \$6,000 and \$8,000 worth of ore on the dump. Shouse has now got eight men employed on the mine. If further developments shall justify, he will erect a smelting furnace.

HIGHLAND.—The Pioche Record says: "On Monday we took a trip over to Highland and found the newly-located village of Williamsburgh flourishing gaily. The sound of hammer and saw was heard wielded by the men engaged in erecting new buildings, and everybody appeared busy and hustling around. The mill started on Thursday last and worked very smoothly, and on Monday morning about 200 pounds of amalgam had been collected and was rapidly increasing. We did not go up to the mines, but were told that they were looking very well. After a long period of depression, from all appearances, Highland will yet come out all right. We hope that this will prove to be so, for it will not only be greatly to the advantage of the Highland Consolidated, but also to Pioche."

FILING HANDSAWS.—In filing handsaws that are intended to cut only one way, the majority of mechanics file toward the handle, which leaves the teeth with more bevel on the back than on the front, which is caused by the taper of the file. A few persons file their saws toward the point, which gives more bevel to the front or cutting side of the teeth. Some think that the back side of the teeth should be filed nearly square across, and that the saw will cut equally well and remain sharp much longer. The front side of the teeth should be beveled to suit the timber; soft wood requires more bevel than hard wood.

DEEP SEA SOUNDINGS IN THE PACIFIC.—Despatches to the Navy Department report that the United States steamer "Tuscarora," Commander Belknap, engaged in taking deep sea soundings, left Honolulu March 18th, and arrived at Yokohama, Japan, April 22d, having made 72 casts—the deepest of which was 3,287 fathoms. She will now examine the southeast coast of Japan, and from thence carry a line of soundings to Tonago, Aleutian Islands, and from thence complete the arc of the great circle to the point reached last fall, from Puget Sound.

SALES OF MINERAL LANDS.—Sales of mineral lands under the Acts of 1866, 1870 and 1872, reported to the General Land office to March 1st, 1874, amounted to 44,292 acres, as follows: Arizona, 210 acres; California, 28,031; Colorado, 23,250; Idaho, 7; Montana, 916; Nevada, 1,740; New Mexico, 52; Oregon, 1,346; Utah, 4,801. In the Central City District of Colorado there have been 500 entries, with an average of two acres to each entry. Many of these entries contain less than a quarter of an acre.

TO MAKE HAIR CURL.—The method employed by professional workers in hair is as follows: Wet the hair to be curled, wrap it smoothly around a cylindrical stick or tube of proper size, tie it in place, then put it in water and boil it two or three hours, remove it from the boiler, wrap it carefully in newspaper and bake it in a moderate oven for an hour. Thus treated, it will stay in curl permanently.

SMELTING WORKS are being erected at Hurlston, seven miles north of Heber City, Utah.

The Stickeen Mines.

Purser Vanderbilt, the courteous officer of the steamer "California," has given us the following items of interest from the above mines:

On the last trip of the "California," about 60 men were brought to Fort Wrangel. The steamer "Otter," which sailed from Victoria a few days subsequent to the "California," also took away a number of persons destined for the reported auriferous regions. There are at Fort Wrangel a large number of persons waiting anxiously for the river to open. At Wrangel the weather is reported beautiful and spring-like. Under the vernal influences of the sun and wind, all the snow and ice have disappeared from the vicinity. Everything indicates an early opening of the river.

Mr. Sylvester, the expressman, arrived at Wrangel on the evening of the 26th ult., from the diggings. He made the round trip in 21 days, and was 11 days in coming down. He reports that the weather is rapidly moderating, and every indication is fair for the early clearing of the Stickeen. Ice and snow in many places had already begun to thaw. Four hundred men were in the gold-bearing regions at the time of the messenger's arrival. About that number were scattered along the route between Wrangel and the mines. Most of them the messenger found engaged in building boats. As soon as the river shall open, these persons will launch the crafts, place in their stock of provisions and ascend the stream without any difficulty. Should the present genial weather continue, it is confidently anticipated that there will be a general breaking up of the ice in the river within two or three weeks at the furthest. Sylvester brought down 250 ounces of gold dust on his last trip, which had been taken out during a few weeks preceding his arrival at the mines. Fires were being built every day in order to thaw out the ground and thus enable the miners to commence operations, such was the prevailing degree of anxiety to test the diggings. The messenger found every one in high spirits and confidently awaiting the coming of spring. Wherever mining was being done, from \$12 to \$30 per day is realized per man. From all that can be determined from present prospects, it is confidently thought that the precious metal exists in large quantities in those regions; at least, all appear in good hopes, and are willing to take their chances. Within the next 30 days there will be from 1,000 to 1,200 men at the diggings, and the result of mining operations will then be known to a certainty. Large quantities of provisions were found by the messenger scattered along the river, which had been thrown away by those persons who were eagerly pressing their way towards the mines. Provisions in the mines were quite scarce, and as a natural consequence, dear. There are quantities of provisions at Wrangel, which will be forwarded to the mines immediately on the opening of the river.

For the present, the steamer "Eliza Anderson" has been hauled off the river. Only the steamer "California" and "Otter" are touching at Wrangel. Two steamboats—engines and machinery for one of which were cast at the Willamette Iron Works—are now being constructed at Victoria. These boats are being built with express reference to run on the Stickeen river. Both are rapidly approaching completion, and will be ready to run by breaking up of ice. Intense excitement prevails everywhere concerning these mines; and the \$4,000 in dust brought down by the expressman only tends to confirm their predicted richness, and to add to the general feeling. On the next trip of the "California" a large number of gold fevered individuals will be landed at Wrangel, both from Portland and Victoria.—Victoria Advertiser.

A WATER-PROOF PAPER, transparent, and impervious to grease is obtained by soaking good paper in an aqueous solution of shellac in borax. It resembles parchment paper in some respects; if the aqueous solution is colored with aniline colors, very handsome paper, of use for artificial flowers, is procured.

AN INDELIBLE AND UNBLEACHABLE INK for writing and printing on cotton and woolen fabrics is made of equal parts of copperas and vermilion, powdered and sifted, then ground with linseed oil and finally pressed through linen; the thick paste thus obtained being used.

BLADEN MINES.—Some one in San Diego expresses the opinion that within six months from the commencement of earnest work, more bullion will be taken monthly from the Bladen mines than has ever been taken from all the mines of San Diego county.

FOR sizing lace curtains, make a strong solution of four parts of borax, in hot water, to which add twelve parts of white shellac, and three parts of starch and isinglass, the latter two being first reduced to the form of a jelly by hot water.

BRANHAM & Co. have purchased the Diamond Mountain claims in Lassen county, and intend putting up hydraulic works as soon as the snow is melted away sufficiently to admit of approach.

DURING the month of April bullion to the aggregate value of \$1,760,285.75 was shipped from Virginia City by Wells, Fargo & Co.

GOOD HEALTH.

Extract of Meat.

In a report by Dr. Koechlin on the nutritive value of bread and of extract of meat, submitted to the Chemical Section of the Societe Industrielle de Mulhouse, and published in their Bulletin for January, 1874, we find the following details and opinions given: The trial of mixing extract of meat with bread is worthy of attention. This extract, which until lately was considered the perfection of concentrated food, did not increase the nutritive qualities of bread in doses of from five to twenty grammes a day given to a carnivorous animal. When the product first appeared in commerce, it became the object of general infatuation, which still exists with some people. Numerous trials of its nutritive properties have been made, and science has now obtained results which somewhat diminish the high opinion at first entertained of it. It has been proved: 1st, that in large quantities the extract of meat becomes a poison; 2d, that it cannot be looked upon as a true aliment but only as a condiment. Kemmerich having fed some rabbits upon Liebig's extract, they invariably died when given a dose representing from 800 to 1,200 grammes of meat. The writer himself, having consumed fifteen grammes of the extract per diem for three days, experienced very severe palpitations. Other experiments have proved to him that these dangerous effects were not attributable to the creatine and other nitrogenous principles of the extract, but to the salts of potash, of which it contains about one-third of its weight. In small quantities these salts have a beneficial action upon the digestion, and promote the circulation of the blood, but in larger doses they bring about paralysis of the heart. Many doctors can certify to the ill effects consequent on an abuse of the extract of meat. The right quantity to use is two and a half grammes for a basin of soup, and five grammes, or a dessert spoonful, per diem. Secondly, it is not an aliment. The same experimenter fed two young dogs of the same age, one with pure water, and the other with water containing five grammes of extract. To his great astonishment the dog fed upon the extract died on the twelfth day much wasted, while the other was still very lively. He attributes this effect to the salts of potash, which hastened the action of denutrition.

Liebig himself admitted that the extract alone was not an aliment, and chemistry has arrived at the same conclusion, since the nitrogenous principles of the extract at a degree of oxidation are higher than those which form animal tissues, and it is well known that our organs are meant to oxidize and not to reduce the principles furnished by digestion. Moreover, the creatine, which is the principal nitrogenous element of the extract, is a crystallizable substance, organic but not organized, and this latter seems to be the only substance proper to reconstitute our tissues. But the extract of meat decidedly possesses an agreeable flavor—that of good bouillon; this taste sharpens our organs and excites the stomach to act upon the other aliments. This is precisely that which constitutes a condiment; that is to say, a substance which facilitates the utilization by the stomach of other really alimentary substances. The same author has proved this by new trials. Two dogs were fed with meat which had been boiled and strained; to one was given half the meat, to which was added a corresponding quantity of extract, whilst a little salt only was added to that of the other. The dog fed upon the extract fattened rapidly, while the other became lean. These effects could be produced at will on the one dog or the other, by changing their food. The substitution of mineral salts for the extract gave nearly the same results, and shows the importance of the salts of potash in this product. The conclusion to be drawn from these experiments and others, which have led to the same results, is that the extract of meat is not a real food, but a precious aid to digestion and to the whole system. If the quantity of five grammes per day be not exceeded, it possesses over other stimulants, such as coffee and alcohol, the advantages of favoring nutrition, by facilitating the digestion of other food, and it is thus a valuable substance for convalescents, or persons weakened by chronic illness. As for its economical use, it is always restricted to the preparation of soup when butchers' meat is difficult to procure; and also in those cases where there is no time to cook meat; and under this last head it is to be hoped that it will in time come into use by our laboring population, in whose kitchens the time and the knowledge necessary in the preparation of a good soup, or *pot-au-feu*, are often wanting.

According to Pettenkoffer, the air in our houses becomes unwholesome when the carbonic acid in it, provided it be derived from the respiration of animals, rises from the normal proportion of 4 parts in 10,000 to 1 part in 1,000. The experiments of Dr. Angus Smith and Dr. Hammond have shown that the organic matter in the air, which increases in proportion to the amount of carbonic acid, is by far a more deadly impurity than the gas.

Putrid blood injected into the veins of a living animal is not mortal unless several drops are used; but the blood of an animal thus poisoned causes death in less than two days, in each minute quantities as a trillionth of a drop.

LAUGHTER AS A MEDICINE.—A short time since, two individuals were lying in one room, very sick, one with brain fever, and the other with an aggravated case of the mumps. They were so low that watchers were needed every night, and it was thought doubtful if the one sick of fever could recover. A gentleman was engaged to watch over night, his duty being to wake the nurse whenever it became necessary to administer medicine. In the course of the night both watcher and nurse fell asleep. The man with the mumps lay watching the clock, and saw that it was time to give the fever patient his potion. He was unable to speak aloud, or move any portion of his body except his arms, but, seizing a pillow, he managed to strike the watcher in the face with it. Thus suddenly awakened, the watcher sprang from his seat, falling to the floor, and awakened both the nurse and fever patient. The incident struck the sick men as very ludicrous, and they laughed heartily at it for some fifteen or twenty minutes. When the doctor came in the morning he found his patients vastly improved; said he never knew so sudden a turn for the better, and now both are up and well. Who says laughter is not the best of medicines? And this reminds the writer of another case. A gentleman was suffering from an ulceration in the throat, which at length became so swollen that his life was despaired of. His household came to the bed to bid him farewell. Each individual shook hands with the dying man, and then went away weeping. Last of all came a pet ape, and shaking the man's hand, went away also with its hands over its eyes. It was so ludicrous a sight that the patient was forced to laugh, and laughed so heartily that the ulcer broke, and his life was saved.—*The Sanitarian*.

HYGIENE OF DWELLINGS.—Remarkable testimony as to the permeability of the ground, and of the foundations of our houses, has been given by gas emanations into houses which had no gas laid on. I know cases where persons were poisoned and killed by gas which had to travel for twenty feet under the street, and then through the foundations, cellar-vents and flooring of the ground-floor rooms. As these kinds of accidents happened only in winter, they have been brought forward as a proof that the frozen soil did not allow the gas to escape straight upwards, but drove it into the house. I have told you already why I take frozen soil to be more air tight than when not frozen.

In such cases the penetration of gas into the houses is facilitated by the current in the ground-air caused by the house.

The house being warmer inside than the external air, acts like a heated chimney on its surroundings, and chiefly on the ground upon which it stands and the air therein, which we will call the ground-air.

The movement of gas through the ground into the house may give no warning that the ground-air is in continual intercourse with our houses, and may become the introducer of many kinds of lodgers. These lodgers may either be found out, or cause injury at once, like gas; or they may, without betraying their presence in any way, become enemies, or associate themselves with other injurious elements, and increase their activity. The evil resulting therefrom continues till the store of these creatures of the ground-air is consumed. Our senses may remain unawares of noxious things which we take in, in one shape or another, through air, water or food.—*Pettenkoffer, Sanitarian for May*.

EUCALYPTUS AS AN ANTI-MIASMATIC.—If the statements made in the journals and newspapers of America and Europe, in regard to the influence of the eucalyptus in preventing malarious disease, are to be relied on, there is no longer any occasion for the human family to be afflicted with diseases of that character. An excellent opportunity of putting the question to the test is afforded in California, where there are many districts esteemed malarious, which are remarkably well adapted to the growth of the tree. Indeed there is scarcely a locality on this coast where the tree would not grow. It is easily cultivated and its growth is remarkably rapid. The trees which have been planted about the dwellings, amid the ancient oaks of Oakland and Alameda, and which are only six or seven years old, already tower up above the surrounding forest and at a distance look like so many lofty steeples. Apart from sanitary considerations, there are many inducements to plant the eucalyptus over the valleys and plains of the Pacific slope. Not to mention the relief they would afford to the eye of the beholder, they would give shelter to cattle, protect the earth from the parching sun, supply a source of lumber and fuel, and possibly modify the climate and invite rain to some valleys now almost uninhabitable for want of it.—*Pacific Medical and Surgical Journal*.

LIME WATER FOR WASP STINGS.—Dr. Darnville writes to a French journal that some time ago he was stung on the head and face by a number of wasps. The pain was great, and he had no ammonia at hand, nor was there a drugget near by. Recollecting the fact that lime water was good for burns, it occurred to him to try it for the relief of the burning sensation produced by the stings. It answered the purpose perfectly, and he has since advised its use in some twenty cases of wasp stings, and it has always caused an instant cessation of the pain. The remedy is a simple one, and worth "making a note of."

USEFUL INFORMATION.

How Chromos are Made.

Chromo-lithography is the art of printing pictures from stone, in colors. The stone used is a species of limestone, found in Bavaria, which is wrought into thick slabs, with finely polished surface. The drawing is made upon the slab with a kind of colored soap, which adheres to the stone, and after the application of certain acids and gums, enters into chemical combination with it. When the drawing is completed, the slab is put on the press and carefully dampened with a sponge. The oil color, or ink, is then applied with a common printer's roller. The parts of the slab which contain no drawing, being wet, resist the ink, while the drawing itself, being oily, repels the water, but retains the color applied.

In a chromo, the first proof is a light ground-tint, covering nearly all the surface. It has only a faint, shadowy resemblance to the completed picture. The next proof, from the second stone, contains all the shades of another color. This process is repeated again and again, occasionally as often as thirty times. The number of impressions does not necessarily indicate the number of colors in a painting, as the colors and tints are greatly multiplied by combinations created in the process of printing one over the other. In twenty-five impressions, a hundred distinct shades may sometimes be produced. The last impression is made by an engraved stone, which produces that resemblance to canvas noticeable in all the finer chromos.

The production of a chromo, if it is at all complicated, requires several months, sometimes several years, of careful preparation. At every stage of the process equally great skill and judgment are required. The mere drawing of the different and detached parts on so many stones is of itself a work that requires an amount of labor and a degree of skill which, to a person unfamiliar with the process, appears incredible. Still more difficult, and requiring still greater skill, is the process of coloring. This demands a knowledge which artists have hitherto almost exclusively monopolized, and in addition to it the practical familiarity of a printer with mechanical details. "Drying" and "registering" are as important branches of the art as drawing and coloring. On proper registering the entire possibility of producing a picture at every stage of the progress depends. Registering is that part of a pressman's work which consists in so arranging the paper in the press that it shall receive the impression on exactly the same spot on every sheet. The difference of a hair's breadth would spoil a picture, for it would hopelessly mix the colors.

The paper used is white, heavy "plate paper," of the best quality, which has to pass through a heavy press, sheet by sheet, before its surface is fit to receive an impression.

After the chromo has passed through the press it is embossed and varnished, and then put up for the market. These final processes are for the purpose of breaking the glossy light, and of softening the hard outlines which the picture receives from the stone. These processes impart to it the appearance of a painting on canvas.—*N. Y. Tribune*.

Household Hints.

At this season of the year it is important for all householders to be on their guard against the insidious attempts of the various species of ants and the detestable cockroaches to invade the kitchen and pantries or store rooms. Sprigs of wintergreen will make the small red ants leave their cherished haunts. Borax powdered and put into the crevices where cockroaches abide will finally cause them to disappear, but we have found concentrated lye melted into a sort of paste and applied with a knife a more expeditious mode of destroying these noxious insects. Scalding alum water is also certain death to cockroaches.

To take stains out of mattresses, apply a paste of soft soap and starch over the spots, and wash it in with a damp sponge; if not clean at first, put on another paste, and repeat this until the spots disappear.

Most householders have felt the need of a receipt for mending knives, or rather for fastening knives and forks to their handles. The following mixture is recommended for this purpose in the *Scientific American*: Mix together one pound of rosin and eight ounces of sulphur, and keep it either in bare or reduced to powder; mix one part of this powder with half a part of iron filings, fine sand or brickdust, and the cavity of the handle is to be filled with this mixture. Heat the stem of the knife or fork and insert it hot, and when cold it will be found tight.—*Ec*.

SULPHIDE OF CADMIUM FOR COLORING SOAP.—The coloring power of the above mentioned material is so great that its price is of little importance. It is, however, frequently adulterated with zinc white, which may be readily discovered by digesting the suspected substance in acetic acid, filtering, and adding a solution of carbonate of soda, which produces a white precipitate if zinc be present.—*Sc. Am.*

There is a piece of track on the Kansas Pacific railway that is 30 miles long without a curve, and no grade that is more than three feet to the mile. The light of an engine can be seen for a distance of 14 miles on this strip.

Looking Into Death's Eyes.

The power of the eye is most strikingly illustrated by the fact that when two bodies of infantry meet in a charge of bayonets, the front rank on one side or the other almost invariably gives way directly the bayonets are crossed; that is before the cold steel enters the body of either party. The front ranks give way, the rear ranks are generally broken, and a rout ensues. The dreadful passion and fixed resolve in the front rank on one side overpowers that of their antagonists, whose hearts fail before them. Calculations have been made to supersede this, by the order that each soldier's bayonet shall not take the man directly in front of him in the enemy's ranks, but the next man to the left. A systematic mutuality of reliance was thus provided, and the effect of the enemy's eyes unspersed. It was a horribly clever idea. But in vain; the eye of the weaker will only shimmer, and wavers between the two—trembles for the man who gives the preference to the man whose bayonet point is within a few inches of the *juste milieu*. Between the two he generally falls or takes to flight. The single minded glare of the devil of war reflects the perfidious horror of the cold steel point. It is remarkable, on examining the dead bodies on a field of battle, after there has been a successful charge of bayonets, how few have been killed by the point in charging thrusts. The men have died from thrusts during flight, or from the clubbed, i. e. butt-end blows, or have been pierced when on the ground, or trampled to death.

How to Soften Hard Putty.

It is well known that the common putty, with which glass window panes are fixed in their frames, is made of powdered chalk and linseed oil. When old, it becomes so hard that, in case its removal is necessary, a chisel and hammer must be resorted to. In fact, it becomes like a stone, harder than the wood itself, pieces of which often break off unless peculiar care is taken in removing the putty. This hardness becomes a serious inconvenience when a large pane, say of valuable plate-glass, has to be removed for the purpose of repairs in the wood-work, or for some other cause. Here the use of chisel and hammer on the putty surrounding the glass may cause serious damage along the edges, or even total fracture. An agent to soften the putty in such cases, so that it may be removed with ease, is, therefore, of some value. This may be effected with a paste of caustic potassa, easily prepared by mixing the caustic alkali, or even carbonate of potash or soda, with equal parts of freshly burnt quicklime, which has previously been sprinkled with water, so as to cause it to fall into powder. This mixture is then mixed with water to a paste, and this is spread on the putty to be softened. Where one application is not sufficient, it is repeated. In order to prevent the paste from drying too quickly, it is well to mix it with less water, adding some soft-soap instead.—*Am. Homestead*.

GALVANIZED IRON.—The zinc in galvanized iron exists in two states. The state which constitutes its value is that of an actual alloy with the iron, but besides there remains a considerable quantity of zinc which is merely adherent mechanically. A method has long been required for ascertaining with facility, and a certain degree of accuracy, the extent to which the zinc has combined with the iron, and if this combination is perfect throughout the plate. Mr. T. Bruce Warren has recently discovered a mode effecting this desideratum. When mercury is rubbed over a perfectly galvanized iron plate, it adheres nowhere; but if part of the zinc is merely mechanically attached, in that place the mercury forms an amalgam with it and attaches itself firmly. To estimate the exact amount of zinc combined with the iron, Mr. Warren detaches a sample from the particular set of plates or wires to be tested, cleanses it with dilute sulphuric acid, and then immerses it from four to eight hours in mercury. The difference between the weights before and after immersion will be the amount of uncombined zinc. The piece is then heated in a deoxidizing flame, and the weight once more taken; the amount lost will, in this case, represent the quantity of zinc which was actually alloyed with the iron.—*Ec*.

IMITATIONS OF LEATHER.—A process has recently been introduced by which paper and cloth, or either of these materials separately, are prepared so as to answer in many cases as a valuable substitute for leather, not only possessing the color and appearance of the latter, but being proof, for all practical purposes, against injury from water, perspiration or moisture, the same as leather.

In this process the cloth or paper is first covered upon one or both of its surfaces with lithographic ink, corresponding in color to that of the leather intended to be imitated. The lithographic ink is applied to the surface of a stone, and the material to be prepared is placed upon this stone and subjected to the ordinary transfer operation of a lithographic press. The material being now removed from the stone, and the inky surface allowed to dry, a coating of shellac varnish, or other effective water-proof substance is applied to both sides. A superior article is made by applying a series of coats of lithographic ink, one after another, waiting for each successive coat to dry. In this way, morocco, or sheepskin, either green, blue, black or red, is almost perfectly imitated in external appearance.



W. B. EWER..... SENIOR EDITOR.

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San Francisco:

Saturday Morning, May 16, 1874.

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THE SACRAMENTO SMELTING WORKS.—Two of the representatives of the new smelting works in Sacramento, who went to the Utah mining district to purchase ore, returned on Saturday, and report that on account of the severity of the past winter in Utah the season is about four weeks late, and none of the miners had ores ready for delivery yet. They made such arrangements, however, as will give them a full supply of ores in about a month, and then the smelting works will be put in operation and kept steadily at work.

CARSON MINT.—The following shows the business of the U. S. mint at Carson, Nev., during April, 1874:

	Ounces.	Value.
Deposits of gold.....	18,191.684	\$245,612.71
Deposits of silver.....	230,247.045	267,145.27
Total deposits.....	248,438.729	\$512,758.98
Coinage executed and bars manufactured.....		\$475,774.97

TOUR ROUND THE WORLD.—Professor J. D. Whitney, formerly of the California Geological Survey, is about to start on a tour round the world. He has come east with his family, and will sail for Europe about the first of June. —*Boston Globe*, May 5th.

THE clean-up of the Tuolumne hydraulic mine, formerly the Ronch and Ready claim, in Table mountain, last Saturday, after fifteen days' work at an expense of \$400 for labor, resulted in \$2,000.

PLACER mines have been discovered on the headwaters of the Bruneau river, Elko county, Nevada, about 70 miles northeast of Elko. They are only "Chinese diggings."

THE bad condition of the roads in Little Cottonwood cañon prevents the shipment of much ore from the mines.

A PROSPECTION season is expected in Cherry Creek district. Some of the ore from leading mines is very rich.

The Burleigh Drill and Air-Compressor.

It is only within the past two years that the Burleigh rock drill has been in use on this coast, and only during the past year that it has become so favorably known among us. There was of course some prejudice against these machines among the common miners, who imagined that their places would be declared vacant in favor of machinery. Like all labor-saving machines however, when really practical, these drills are now coming into very general use. The first place they were put in operation on this coast was at the Yellow Jacket mine, Gold Hill, and the favorable results attained there induced the Belcher mine to adopt them also, and now quite a number of mines are using them.

At the Yellow Jacket mine in Nevada, they are using one No. 3 pump, and one 5x12 engine, run by a No. 2 air-compressor. At the Belcher they have four drills also, two mining and two stopping, run by a No. 4 compressor. This same compressor runs two 7x12 engines which hoist about 100 tons of ore per day from the lower part of the mine. At the Gould & Curry they have two mining and two stopping drills and one double-gear 7½x8 engine which are run by a No. 4 compressor. In the Consolidated Virginia mine they have two stopping drills. At this mine they are now engaged in putting up a building in which to set a Burleigh air-compressor. This compressor will furnish air for running a 25-horse power engine in the lower levels—wherever it may be required—and also several Burleigh drills. The compressed air now used in the mine for running drills is brought in a pipe all the way from the Gould & Curry works. The Overman has a No. 3 compressor and two mining drills. In the Sutor tunnel they are using 22 of these drills and 12 more have been ordered. Some of these are mining, some stopping, and some jumper drills. They use a No. 3 air-compressor to drive the drills.

In California, the Mariposa Mining Co. are using one mining and two tunnel drills with two No. 2 and one No. 4 compressor. At the Gold Run Ditch and Mining Co. they are using three tunnel and one mining drill and a No. 2 compressor. At the Cedar Creek Mining and Water Co. in Placer county, they have a No. 2 compressor and two mining and one tunnel drills. At the Idaho mine, Grase Valley, they have a No. 4 compressor, and four mining drills have recently been shipped there. At the Little Emma tunnel in Utah, two mining drills are in operation, and they have sent for three stopping drills.

Many of these companies have duplicated their orders, showing that the machines give satisfaction. In tunneling at the Gold Run Ditch and Mining Company's property by hand, the average progress was less than five feet per week, and with the use of these air-compressors and drills the progress was increased to from 25 to 30 feet per week, and that at a reduced cost. At the Cedar Creek Co.'s tunnel at Dutch Flat, they are running a flume tunnel under the hill to tap the immense beds of gravel 2,900 feet in. The rock in Dutch Flat has always been known to be very hard, the men in many cases having been paid from \$60 to \$100 per foot to run a small tunnel 5x5 for a four-foot flume. With the aid of one of these machine drills they are now progressing at the rate of 25 feet per week, and in this case will soon be able to run the flume in to commence working from their first shaft.

MINING PIPES.—E. C. Ross & Co. are manufacturing six miles of twenty-two inch iron pipe for the North Fork Mining Company, at Dutch Hill, Plumas county, for the conveyance of water from the Feather river to the mine. The *Appeal* says that this is the largest job of the kind ever undertaken in this State, and involves an expenditure of \$80,000. This line of pipe will require 320 tons of iron, which will fill thirty-two freight cars. The iron is loaded on the cars at Pittsburgh, Pa., and the freight on the same will amount to about \$9,000.

MINING ACCIDENT NEAR SEATTLE.—On the 7th inst., an accident occurred at the Renton coal mine, near Seattle, resulting in the death of Andrew McKeckney, Superintendent of the mine. McKeckney was engaged in nailing down a strip of iron upon the railway in the main tunnel, when a loaded car broke from its fastenings and came down upon him, bearing him against another car and passing over his body, crushing his skull and body.

SMELTING WORKS IN SAN JUAN.—About 60 of the mining companies in San Juan district offer from five to ten tons of ore each, of a specified value, to assist any one erecting a smelting furnace of not less than ten tons capacity, in that district. The ore is to be furnished on the dumps of each mine as soon as the furnace is erected.

RICH.—The Salt Lake *Tribune* states that two tons of ore from the Mono mine recently sold for over \$14,000 per ton. That sounds like the assays from new discoveries in new districts.

ICE CONSUMPTION.—The consumption of ice by the men employed in the Belcher mine amounts to over 1,500,000 pounds annually.

Proposed Extension of Time for Necessary Work on Claims.

We have frequently called attention of late to the fact that if the necessary amount of work required by law was not done in mining claims by the 10th of June, 1874, said claims would be open to relocation, the same as new discoveries. It is now proposed to extend this time for one year from the 10th of June, viz., to the 10th of June, 1875. The original law of May 10th, 1872, provided that on each claim located after the passage of the Act until a patent was issued for it, not less than \$100 worth of labor should be performed or improvements made each year. On all claims located prior to the passage of the Act \$10 worth of labor must be performed or improvements made each year for each one hundred feet along the vein.

On the 1st of March, 1873, an amendment to the original act was approved, which extended the time from the first annual expenditure or claims located prior to the passage of the act, to the tenth day of June, 1874. As this date is nearly at hand, in many cases the miners have done, or commenced to do the work as required by law. Others, however, will probably wait until the last day before commencing work.

A bill is now being considered by the committee on mines and mining in Congress, which extends this time for the first annual expenditure for one year. It is as follows:

A BILL to amend an Act approved March first, eighteen hundred and seventy-three, amendatory of the Act entitled "An Act to promote the mineral resources of the United States," passed May tenth, eighteen hundred and seventy-four.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Act approved March first, eighteen hundred and seventy-three, amendatory to the fifth section of the Act entitled "An Act to promote the mineral resources of the United States," passed May tenth, eighteen hundred and seventy-two, which requires expenditures of labor and improvements on claims located prior to the passage of said Act, is hereby so amended that the time for the first annual expenditure on claims located prior to the passage of said Act, shall be extended to the tenth day of June, eighteen hundred and seventy-five.

This bill has not yet become a law, but some action will probably be taken upon it immediately, in view of its importance.

THE MINING BILLS IN CONGRESS.—Senator Sargent thinks that the action changing the reference of the mining bills in Congress from the committee on mines and mining, to the committee on the judiciary, is improper. He asked consent to submit a few remarks on the reference of the bill and said: I shall not detain the Senate long, especially as the question is not now debatable. I will say, however, that in my judgment the only question raised is a question of policy and not of law. All this legislation originated with the mining committee of the respective Houses, and those committees are peculiarly fitted by their constitution, by their knowledge of this subject and the experience of some of their members, to pass on the question. On consideration by the committee, however, it has been ordered that the subject be referred to the committee on the judiciary. I can only hope that the committee on the judiciary will look at the policy of the measure as well as at any question of law which may be suggested.

NEW MINES.—The Winnemucca *Register* states that old Gilbert, the veteran prospector, has struck it at last. For over four years he has been working alone on the eastern slope of Table Mountain, 60 miles south of this place, and we are pleased to know that his perseverance and untiring energy have at last been crowned with success. John Guthrie, who is interested in the mine, brought to our office, last Thursday, a large specimen of the ore, which is a mass of black sulphurets and horn silver. Five hundred pounds of the ore was sent to Austin last week, and the millmen who worked it returned Mr. Gilbert a net profit of \$400. The ledge proper is about four feet wide. The mineral stratum from which the specimen above referred to was obtained is about twenty inches wide. As is usual in all such cases, when it became known that a rich strike had been made, everything resembling quartz, for miles in all directions, was at once located. We are told that this new district is abundantly supplied with wood and water.

It is rumored in the city of Los Angeles that the Southern Pacific Railroad Company will, at an early day, commence the erection of machine shops on the ground near where the track crosses the Los Angeles river, in the eastern part of the city.

The stakes for the Los Angeles and Truxton Railroad are planted and negotiations for grading the road-bed are progressing. The Los Angeles press is rejoicing in the prospect that before many months that city will have two railroads to tide-water.

RUMOR has it that some good new placers have recently been discovered near the Japa camp, in Lower California. Some of the miners have made from five to fifteen dollars per day. A good deal of coarse gold is found.

MINING has commenced in good earnest at the Yakima mines, and some men have started up the river in a canoe to prospect the bars and creeks putting in above the Swauk.

Quicksilver Discoveries.

The high price of quicksilver within the past few months has had the effect of encouraging prospecting to a wonderful degree, and from all quarters of the Coast Range we hear of new discoveries of cinnabar ore. The hills are covered with prospectors, and claims are being staked off in all directions. Unfortunately, however, capital to develop these claims is not so abundant as the claims themselves. The prospectors are mostly poor men, who hope to dispose of their discoveries to parties able to develop the same into paying properties. Mines of this character are even more uncertain than quartz, which fact works against prospectors, for they must be able to show more than a simple hole in the ground and a few boulders of cinnabar, to induce moneyed men to pay them any attention.

If one out of ten of these quicksilver mines recently discovered should turn out to be really good mines, and have proper reduction works erected upon them, the price of quicksilver would rapidly decline. As it is, however, very few of them have as yet produced enough quicksilver to have any effect on the market.

Some of the new quicksilver mines are, however, being disposed of, and although the prices are not "fancy," they are sufficiently remunerative for prospectors. Extracts from the County Records, of Napa county, for last week, show the following sales of this class of property:

May 5th.—T. Dye to J. M. Davis, "Nancy" quicksilver ledge, near Mountain Mill House, Napa county—\$1,000.

May 5th.—J. H. Kellogg to J. M. Davis, "Blacksmith" quicksilver ledge, near Mountain Mill House, Napa county—\$1,000.

May 5th.—J. W. Brown to J. M. Davis, "St. Joe" quicksilver ledge, near Mountain Mill House, Napa county—\$1,000.

May 5th.—William Amesbury to J. M. Davis, "Dacotah" quicksilver ledge, near Mountain Mill House, Napa county—\$1,000.

E. T. Armstrong and T. N. Spencer to J. M. Davis, "Lizzie" quicksilver mine, near Mountain Mill House, Napa county—\$2,000.

A correspondent of the *Napa Reporter* states that Mrs. Rahlwing is about to sell her interest in the Bella Union mine for \$15,000, a much larger price than any of the others. The sale is not yet consummated however.

The *Colusa Sun* says: We learn that matters are assuming a lively appearance in the Coast Range. The quicksilver excitement continues to increase, and the indications prove of the most satisfactory character. A stage line has been placed in regular operation, between Colusa and Allen and Bartlett springs, which is receiving a very liberal support both in the way of passengers and freight.

The attention of our readers is called to a letter in another column describing the quicksilver mines of Cambria, San Luis Obispo county. These mines are new and but little is known about them.

Another article in another column gives the details of the discovery of extensive deposits of quicksilver at the sulphur banks in Lake county. The new company to work these mines expects to be in working order by September.

Cinnabar discoveries have recently been made in Fresno county, near Cerro Bonito, and work is being done on some of the claims.

STICKEN MINES.—The steamer Isabel, says the *Tacoma Tribune* of the 31st ult., sailed from Victoria on her first trip to Wrangel, the little boat being freighted down almost beneath the water's edge. She carried up 137 passengers, 130 tons freight, 16 mules and 12 horses, bound for Cassiar. The Otter is not yet down from the north, and there is no news from the mines. All the boats to run on the Sticken have gone except the Hope, and she will start in another day or two. Victoria steamers, boarding-house keepers and merchants are doing a rushing business, occasioned by this excitement, and the town has lost its entire floating population.

LABOR VS. MACHINERY.—The Mexican miners at Pachuca have attempted to burn the buildings of the New Barron mine because of the introduction of machinery by Mr. Barron, the ignorant natives believing that it would deprive them of the means of earning a livelihood in the future. Probably the men who carried the ore up from the mine in sacks strapped on their backs were afraid the hoisting works would leave them in want of a job. As foreigners become interested in these Mexican mines, however, the old fashioned customs will have to give way to improved machinery and methods of working.

At four o'clock in the afternoon on the 9th, 350 kegs of eastern powder were fired in the Enterprise claim, at Sucker Flat, which prepared an immense amount of gravel for washing purposes. One day this week 610 kegs of California powder were exploded in the Blue Point mine, which proved a great success.

OWING to some mistake made in the survey for the drifts running from the Consolidated Virginia, and the main south drift on the 1,300-ft. level of the Ophir, for purposes of ventilation, no connection has yet been made, and it is now thought that it will take until the first of the month to connect the two drifts.

Our Gravel Mines and Foreign Capital.

That English capitalists have been very much imposed upon, and often egregiously swindled in their mining ventures in the Pacific States, there can be no doubt. Nevada lead off as early as 1865 with her bogus silver mines, bleeding the Eastern cities as long as blood would flow; and Utah followed with her "salted" mines and false deposits, capping the climax with the gorgeous affair of the Emma, in which some of our leading men suffered somewhat in reputation for honesty, if they ever possessed any. This last affair was rather more than John Bull, with all his well-earned reputation for endurance in paying calls and writing for dividends, could stand. He tossed his burly head and uttered such a roar of rage and defiance that sent the mining harpies scampering in all directions. Many of these fellows were Americans, but they found willing and efficient helpers on the other side, who by their position and influence did more toward deceiving the British public than their American confederates. But whoever were to blame for these

Base Transactions

In some cases, and in others, when the intention of the vendors were good, but where all parties were deceived as to values, and in the more numerous instances where the property is really good, but the stock has been so fearfully "watered" as to leave but a small margin of profits to the shareholder, the disastrous results to the unquestionably good properties since offered in that market are all the same.

The foreign investors, smarting under their numerous and heavy losses in American mining ventures, fail to discriminate, and without due reflection set us down as sharpers, and our mines as bogus. Now, if they could be brought in reason on the actual state of facts, and calmly consider the situation, they would not be long in finding out their mistake, especially so with regard to California, which should not be confounded with Nevada, Utah, and the rest of the Pacific slope, as is the case with the people on the other side of the Atlantic. If these gentlemen would take the pains to investigate, they would find that their losses from

California Investments

Are exceedingly small, whatever they may have been in other localities of the United States. It is safe to assert that a very large majority of the companies organized abroad on the mines of California are paying better dividends than any of their home investments. This is more especially true with regard to our gravel mines held in England. Take for example the "Sweetland creek," "Birdseye creek," "Dutch Flat and Cedar creek," "Little York," "North America" and "Blue Tent." All of these are owned and operated by English companies, and all but the three last named are paying good dividends, even on their very large capitals, and for the current season promise much larger returns. The North America and Little York properties are known to be rich in the precious metal; and as the difficulties attending the first year of their operations under the new management have been overcome, it is confidently believed that a very prosperous year is before them.

The Blue Tent.

The last gravel mine placed on the London market, is considered by all who have seen it, inferior to no hydraulic mine in the State.

Having occasion to visit that section a few days since, the writer took pains to make a careful examination of it, and is forced to say that the property possesses, in the highest degree, every element of success. It is situated five miles northeast of Nevada City, and comprises an area of 600 acres of auriferous gravel, 500 acres of which are covered by United States patents. The great "Blue Lead," which traverses the State from north to south, is cut at this point by the South Yuba river, which now flows 500 feet below the old river bed. On the south bank of this stream, and occupying a bend of the river which sweeps around in a crescent for nearly one and one-half miles, lies the great gravel bed owned by the "Blue Tent Consolidated Hydraulic Gold Mines of California, Limited." From the river bluff the ridges rise very rapidly going south, until the south line of the property is reached, where the gravel is quite 1,000 feet in depth; and as the rim rock is visible on either side a distance of 3,500 feet apart, and as the extent of the claim along the channel is 5,000 feet, it is not difficult to estimate the number of cubic yards of gravel contained therein.

Professor Silliman, in his

Report on this Property.

Makes the following estimate: "Taking the gravel bed at 2,000 feet wide, by 4,900 feet long, and measuring 120 feet from the bed rock up for the blue strata, gives 43,555,555 cubic yards. The upper gravel above the zone of 120 feet may be safely stated at 350 feet deep, which would give 372,310,804 cubic yards, or a total of 415,866,359 cubic yards of gravel." In computing the value of the gray or upper gravel, he puts it at 10 cents per cubic yard, and for the lower or blue gravel, the value is placed at 50 cents. On this data the value of the Blue Tent property becomes as follows: 43,555,555 cubic yards at 50 cents, is \$21,777,777; 372,310,804 cubic yards of gray gravel at 10 cents per cubic yard, is \$37,231,080, or a total gross value of \$59,008,857. Deduct, he says, 25 per cent. for working, or \$14,752,214, which leaves a net value of \$44,256,643.

With regard to outlets, Mr. Geo. D. McLean, Superintendent of Sweetland Creek hydraulic mine, in a report on the property says: "The rim rock circles with the river, which latter forms mainly the north boundary of the property. Traversing at irregular intervals the precipitous slopes intervening, and connecting directly and indirectly the rim rock with the river, are Johnson's, Gopher, Cody, Sailor and Enterprise ravines. Owing to the sloping profile of the country, and the confluence of these ravines with the Yuba, the wealth of this deposit is laid open along its entire width for more than a mile upon the river, the receptacle of the debris. The washings are all situated towards the northern margin of the estate, so as to be readily available in sluicing the deep gorges or cañons mentioned tributary to the Yuba."

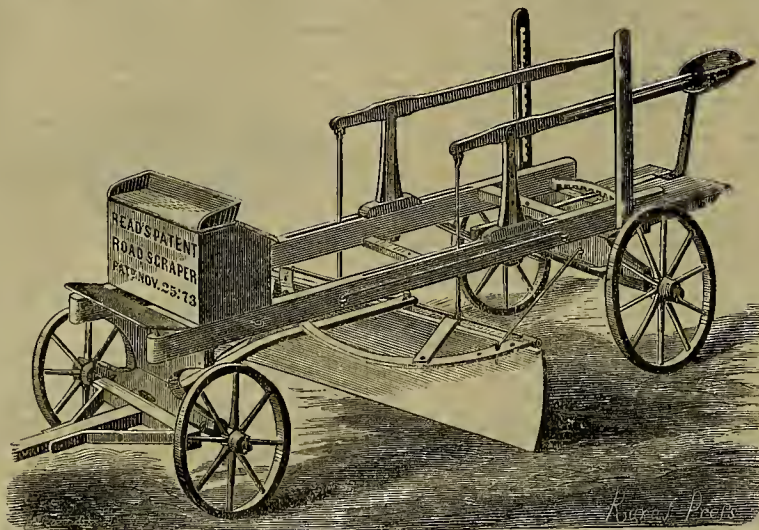
Water Supply.

The property possesses two ditches with a combined capacity of 800 inches of water for four months, a supply entirely inadequate to operate even one of their numerous outlets. But in order to supply this deficiency as far as possible, the company have arranged with the South Yuba Canal Company for a limited supply until their projected ditch is completed, and were recently using, in addition to their own, 1,500 inches of this water per day, at a cost of \$4,000 per month. At present there are only two outlets completed, but even with these double the present quantity could be advantageously used, and by opening other outlets the amount could be multiplied to many thousand inches, every additional inch increasing the yield of gold dust. In order to obtain

inches of water, under a pressure of 300 feet. The bank here is two hundred feet high, and yet the pipes are at work 200 feet above the bed-rock, the gravel being too deep to work advantageously in one "bench." The plan has been adopted to work off the surface to a depth of 250 or 300 feet, and to follow with another system of works down to the bed-rock. This will be done next year through a bed-rock tunnel, to be constructed from Enterprise ravine. It is estimated that there has been washed from the different claims comprising the property, up to the present time, about 6,000,000 cubic yards of ground, almost entirely from the gray or upper stratum, which gave a gross yield of \$800,000, or a little over 15 cents per cubic yard. The 37,000 cubic yards of blue gravel removed yielded \$10,100, or 28 cents per cubic yard.

A Chance for Capital.

Now, this magnificent prospect does not stand alone, but has numerous peers now in full operation in California, and hundreds more equally as valuable if the same amount of capital and enterprise were expended on them, to say nothing of the vast unwrought fields of the score of counties which form that grand gravel belt of California. This claim is merely cited as a representative mine of its class, and we invite our English cousins to reconsider hasty judgments and follow the example of their enterprising countrymen of the Blue Tent, by selecting properties of the same character, when there can be no risk if proper caution is used in the selection and judgment exercised in the management and direction afterwards.



READ'S ROAD-MAKING MACHINE.

an ample supply, a canal and reservoir system has been located, surveyed and a portion of the work already completed, and by the expenditure of some \$100,000 more 5,000 inches of additional water can be brought on the mine. The required funds, it is understood, are on hand in the London office, and the work will soon be vigorously prosecuted to completion.

Col. C. W. Tozer, the able and courteous superintendent, states that he expected to make very

Handsome Returns

To the shareholders this season. Notwithstanding all the disadvantages under which he has had to labor, in overhauling and rebuilding the works, constructing tunnels, laying flumes, etc., and paying out some \$30,000 for extra water, he says that if the funds for the construction of the new ditch had been placed in his hands early in the spring, the work would now have been completed, and the company realizing largely in excess of what they now are, besides saving the cost of extra water. Up to the time the present company became possessed of the property, in July last, it had been worked separately by the owners of the different claims, as well, perhaps, as it could have been done in segregated lots, and by men cramped for means to properly develop and supply their mines with water. But a marked change has taken place under the new management, which is shown by the extensive and substantial improvements on the premises; in fact, the energy and intelligence everywhere displayed evince the presence of a master-mind in the direction.

Improvements on the Claim.

Since Col. Tozer became superintendent he has expended some \$25,000 on the property. He has just completed a bedrock tunnel 400 feet long, seven feet wide, by seven feet high, leading from Sailor's ravine to the washings in the South Yuba claim. Here is being employed one of Fisher's hydraulic machines, which flows 750 inches of water under a pressure of 150 feet. From the mouth of the tunnel to the river there is a very complete and ingenious system of flumes, drops and undercurrents, the boxes being eight feet wide, and the undercurrents, of which there are four, are 36 feet long, 20 feet wide, the largest in use, with six falls or drops aggregating over 500 feet.

The Principal Works.

However, are on the Enterprise claim, some distance to the eastward of the South Yuba claim. Two of Fisher's and one of Craig's machines are in operation here, which use 1,500

The Stickeen Mines.

The Stickeen mines still continue to attract considerable attention. The reports from there continue to be contradictory, though they are mainly favorable. A citizen of Portland, recently from the Stickeen country, gives the following list of prices when he left the diggings: Flour is \$1 per pound; bacon, \$1.25; beans, \$1.25; coffee, \$3; tea, \$3; and no sugar for "love or money." Most of the miners have on hand a good stock of supplies—sufficient to last until the 1st of June. He left the mines on the 15th of April. The weather is warm and pleasant, and the grass two or three inches high at the latter place, and there is every indication of the continuance of a warm temperature. The snow is going away very fast on the southern sides of the various mountain ranges, and high water in the Stickeen river will make navigation more sure. Many claims are being located along Dease creek, the expense being \$2.50 for recording and \$5 for a miner's license. The creek claims are 100 feet in length and the width of the stream, be it what it may, where the claims are located. Land claims are 100 feet square. A man named Nelson, who went from Portland last winter, is making \$18 to \$25 per day, and can work but a few hours at a time.

As contradicting this report we give another which states the case differently. Mr. John Ladd, a resident of Portland, Oregon, has written to his wife from the Stickeen diggings, under date of April 11th and 13th, and the *Herald* has been permitted to make extracts therefrom. He says the weather is beautiful, but very cold. The ground is covered with snow about two feet deep, and beneath that it is frozen for a depth of from four to twenty feet. The beautiful valleys in which he was told he would find the diggings have all resolved themselves into a bleak and desolate plain of rocks, which are piled one above another in the most fantastic and astonishing forms. Mr. Ladd states that he has visited Thiebite creek, and after prospecting about for some time he returned to Dease's creek, where, with one hundred and fifty others, he is now prospecting for a claim. He says he has obtained prospects ranging from a few cents to as high as thirty-five cents to the pan, but he has not yet seen anything that would tempt him to remain in the country. Speaking of the extent of the mining camp, he simply refers to the fact of a large number of prospectors being scattered all over the country, and still no reports of discoveries of any kind reach the central camps. He does not think any really rich mines will ever be discovered so far north, as the shortness of the season will make the gold cost more than it is worth to take it out. The claims already being worked have an average of about two feet of pay dirt, with light stripping. In some places the pay gravel is covered with such a depth of earth that it will not pay the miners to delve after it. Mr. Ladd tells his friends not to think of starting to these mines, as they would undoubtedly live to regret it, and desires to warn all others that are in any way inclined to go thither. The river is fully open, and with the three steamers running to Buck's Bar, the miners from all parts of the coast will flock in and thoroughly test the value of these much-lauded mines.

Read's Road-Making and Ditching Machine.

We herewith present another California labor-saving machine, which we learn has been practically tested in several important counties in the State, and received the favorable opinion of all who have seen it work. The machine is adapted to all kinds of scraping—for turning roads whether on level or side hill ground, cutting ditches, leveling rivers (wherever scrapers can be used), and especially for leveling off land so as to allow of an equal flow of water for irrigation purposes. It may be operated with from six to eight horses, according to the work it has to do.

Our engraving gives an excellent view of the machine. By means of the two levers on either side of the seat in the rear, either end of the scraper can be raised to accommodate to the nature of the ground; while by another contrivance which will be readily seen, the scraper can be adjusted to any desired angle with the line of motion. When the scraper is working at an angle to the travel of the wagon, a side draft will be created, which requires to be counteracted. For this purpose the rear wheels are so constructed that the man who works the levers can crank the wheels to the right or left, to counteract the side draft, by the lever on the platform, with his feet, with perfect ease.

Gen. Bidwell was among the first to adopt its use. J. A. Klyser & J. G. Heald, of Cloverdale, road builders, are using the machine in Sonoma, Mendocino and Lake counties, for building wagon roads. W. L. Overhizer, of Stockton, an extensive farmer and prominent Granger, has secured the right for San Joaquin county for the purpose of building ditches and roads. The machines are manufactured by the Kimball Manufacturing Co. of this city, and sold by Wiester & Co., 17 New Montgomery street, to whom application can be made, for further information, either personally or by letter. R. F. Read, the inventor, is the traveling agent.

VISALIA BRANCH RAILROAD.—The Visalia Branch Railroad Committee, after waiting upon Mr. Stanford and obtaining his consent to connect at the Southern Pacific at any point most convenient to Visalia, have received subscriptions to the stock of the same, and announce \$50,000 taken already. This will undoubtedly secure the building of the road at an early day. The road will be about seven miles in length, and will probably be in operation within a few months.

LITTLE ROCK TOWNSHIP, Nevada county, is expected to make very large returns of gold this year. There is plenty of water and all the gravel mines are running full handed.

The river and harbor appropriation bill, as passed by the House, provides for extending the survey of the Sacramento river to Tehama, instead of Colusa, as originally provided.

A Rival for California and Australia.

The upper valley of the Madeira river contains, approximately, 400,000 square miles, marvelously rich in every product of the South America. Its eastern and central parts, the Bolivian provinces of Cordillera, Obiquitos, and the Beni, were first settled by the Jesuits, who penetrated northward from their settlements in the valley of the Rio de la Plata, and organized numerous "reductions" of the native tribes and founded many prosperous towns. These, however, were always either upon the banks of navigable streams or within easy reach of them. Lying in the extreme eastern part of the Madeira valley is the mineral Brazilian province of Matto Grosso, abounding in valuable agricultural products and gold and diamond washings. It is, owing to its inaccessibility, very thinly populated, but promises to be in the future one of the most prosperous States of the Empire of Brazil. It is also one of the, at the present, most unprotected frontiers of that country, being almost at the mercy of the States of the Plata valley in case of war. Ascending the upper central and western rivers of the Madeira valley, we reach the richest of all the slopes of the Andes, well populated by the Spanish race, mixed with Quichua and Aymara Indians; the Indian element being probably the best which can be found on the Western Continent, and capable of a high degree of civilization. Its power of increase is extraordinary, surpassing even that of the Mexican Indian races, which are so fecund. The Bolivian part of the Madeira valley contains about 2,500,000 people, the Indian blood slightly predominating. At the date of Bolivian independence, in 1825, the population was less than 1,000,000. Out of the present inhabitants some 2,000,000 are in the valley of which we treat, living within comparatively easy reach of the navigable streams which swell the volume of the river Madeira. The country in which they live is, without exception, the richest on the globe, in everything that nature gives to man. Its mineral wealth cannot be equalled within any equal area upon the Western Continent. The number of silver mines opened there during the rule of Spain might appear fabulous were they not registered in the archives of the State. They exceed 10,000. From the banks of the little streams which feed the Beni branch of the Madeira, gold may be washed almost anywhere; and we have little hesitation in stating that this auriferous district will yet rival, if not surpass, the fame of Australia and California combined. In fact, the whole slope of the Andes, in an immense sweep of 1,000 miles, extending from Cuzco to Matto-Grosso, is a vast gold placer.

THE LORRAINE BRICK.—The silver brick which is to be forwarded to Sir Lamhton Lorraine by citizens of this portion of Nevada, in testimony of their appreciation of his noble humanity in the Santiago de Cuba affair, is now completed and will be sent away as soon as a suitable box has been manufactured in which to ship it. The bricks weigh over fourteen pounds, Troy, and was purchased by contributions of one dollar each, made by citizens of this town, Gold Hill and Carson—no man being allowed to contribute over one dollar. The brick is very handsomely proportioned, pure and smooth. The upper surface is polished until it is as bright as a mirror, while the bottom and sides were left just as the bar was taken from the mould. The inscription, which is as follows, is engraved on the polished face in old English text and old-style Roman letter: "Blood is Thicker than Water. Santiago de Cuba, November, 1873. To Sir Lamhton Lorraine. From the Comstock mines, Virginia; Nevada, U. S. A." This inscription is surrounded by a neat ornamental border, which runs round the whole face of the brick. The brick was polished and engraved by M. M. Frederick, the well-known jeweller of this city, and a finer job could not have been done in any city in the Union. The lettering is most beautiful and perfect. The brick will be on exhibition in the window of Mr. Frederick's jewelry store for a day or two, pending the making of a suitable box in which to place it.—*Virginia Enterprise*.

PAYING OFF.—Several of our leading mining companies yesterday paid off their workmen, and, during the afternoon, there was to be seen marching into the Bank of California a regular procession of miners, each with his check in his hand. Coin will now be plentiful for a week or two. The employees of the Imperial and Yellow Jacket mining companies were paid off on Saturday last. The pay-roll of the Imperial company footed up \$15,000, and the Yellow Jacket \$12,000. The employees of the Crown Point Mining Company were paid off yesterday. The disbursements made by the company for the month of April amounted to \$80,000.—*Virginia Enterprise*.

GOLD BARS TO BE ISSUED.—The following is the full text of a bill which has passed the Senate and awaits the decision of the House: *Be it enacted, etc.,* That the Treasurer may from time to time transfer to the office of the Assistant Treasurer at New York, from the hullion fund of the assay office at New York, the refined gold bars bearing the United States stamp of fineness, weight and value, or bars from any mint offering gold coin or hullion of a standard equal or above that of the United States, and may apply the same to redemption of coin certificates, or in exchange for gold coin at not less than par, subject to such regulations as he may prescribe.

Mining Progress in Spain.

According to official reports published on the subject, there has of late been considerable progress in the mining industry of Spain. Thus, from the district of Gurracha (Melega), we learn that the exports of iron ore to England in 1872, amounted to 27,000 tons, against 2,000 tons in the preceding year. It is stated that there exist all along the coast great masses of rich ore, requiring little capital to convert them into profitable mines. Lead has also been largely exported, the production having much increased. The ore is raised by steam power, all the principal mines having imported small steam engines for that purpose, but the drainage of the whole is undertaken by a special company, and a central pumping engine draws, through the medium of subterranean communications, the water from all the mines. This, at a certain level, is also accomplished by means of a tunnel or adit driven through the mountain containing the ore, at the sea level. So abundant is the ore in this hill, that there are, in the part which is being worked, no less than 32 mines at present yielding mineral, many of them producing immense fortunes for their owners. About one-half of the mountain is said to be still virgin, and throughout the whole district, mining is susceptible of great improvement. The concessions of ground may be easily and cheaply procured, and properly worked, give the best hopes of profit. The ores are now smelted in clay blast furnaces of the rudest construction, with long condensation flues. Cupellation or extraction of the silver is not practised in the district, the very rich lead being sent to Carthagena to be desilverized. The exports of iron ores from all parts of Spain to the United Kingdom in the five years from 1868 to 1872, were as follows: 1868, 88,700 tons; 1869, 99,816; 1870, 170,085; 1871, 302,282; 1872, 631,134, thus showing a considerable augmentation. It is mentioned that the mines situate at El Rohledad (Melaga) are especially worthy of attention, as they contain the richest magnetic iron ore in the province. So highly magnetized are these ores, that it is stated a solid block some tons in weight, on being struck with a heavy hammer, immediately acquired extraordinary pole conditions, and the particles of iron about it, and within reach of its action, assumed upon it that peculiar hissing appearance, common to all powerful magnets.

IDAHO PLACERS.—A. J. Smith, who left this city a few weeks since, ostensibly for the purpose of paying a visit to the "land of Pike," now confesses that the trip he took was altogether of a different kind. He went to hunt some placer mines somewhere in the direction of Idaho, of which he had information. He found the mines all he had anticipated, made his location, and left two men to hold his claims and prospect further as the snow should disappear. At the time of his visit about four feet of snow covered the region about the mines. The gold is fine, the largest pieces being smaller than grains of blasting powder, but it is of good quality, being worth \$18 per ounce—such, at least, was the sample exhibited to us. We are informed, however, that specimens weighing two or three dollars have been found in the mines. The gravel prospects from four to seven cents to the pan on the surface, the deepest hole sunk by Mr. Smith being but four feet in depth. He has no idea how deep the ground may be, not having looked for the bed-rock. There is an abundance of water on the ground for either sluicing or working by hydraulic process; with plenty of fell and all else required for successful mining, except timber. The mines are in a timberless region, but little will be required, except lumber for sluices. The gravel deposit is described as being of a deep red color, like that seen in many places in California. The exact location of the mines is not made public, but Mr. Smith will shortly return to the diggings, and if they are all that he now believes them to be he will make known their whereabouts.—*Virginia Enterprise*, May 5th.

DEEP MINING.—Deep mining is necessarily becoming the rule in most of the older and many of the new mining districts. The deepest artesian boring in the world is that near Berlin, where the auger has been driven 1,270 meters. The discovery of rich deposits of silver in some Bohemian mines, has led to the deepening of the shaft to 1,200 meters, or 4,000 feet. This is a new disproof of the vague assertion that metalliferous veins give out in depth. But it is in coal mining that the greatest developments in deep working are now taking place. In Belgium the shafts descend 100 meters (330 feet) every 10 years, on the average, and individual mines, of course, are carried down more rapidly. One in Belgium is more than 3,000 feet deep. In some remarks before the Society for the Encouragement of Mineral Industry, in Paris, Prof. Gruner said that the extraction of coal throughout the world amounted to 240,000,000 tons yearly, which might be valued at 10 francs at the mine. This gives a total value for coal of \$480,000,000 (gold), while all other mining products taken together do not exceed \$320,000,000 in value.

HEAVY PLATE.—The largest plate that has been rolled in Scotland from a single pile was rolled at the Blackhairn Ironworks, Glasgow, lately. The dimensions are—23 feet six inches long, four feet wide, and one inch thick. The weight of pile going in the furnace was 4,400 pounds—nearly two tons,

Mining Suit.

The Mahogany Gold and Silver Mining Company have brought suit in the Fourth District Court against Henry G. Blankmen, Thomas J. Owens and Joseph B. Blankman. The company alleges that at a meeting of Board of Directors, held on the 9th of April last, at which were present O. H. Bogart and the defendants, H. G. Blankman and Owens, Owens advocated this purchase by the company of a large number of shares of the stock of the Challenge Mining Company, under pretence that the purchase would be advantageous and in his views he was supported by Blankmen, but they were opposed by Bogart. Cooper and Hull, also members of the Board, although not present, were well known to be opposed to the proposed purchase. The company charges that Owens and Blankmen were owners of a large number of shares of the stock, and had agreed to purchase, at a mere nominal price, a great number of shares in case they could sell the same to the company, through its Board of Directors, for a large price. Finding they could not procure the consent of the Board to the purchase of the stock, Blankman and Owens conspired to get possession of the books and papers, and to take pretended proceedings to remove Bogart from his office of President of the Board, and also from his office of trustee, and to put in the defendant, Joseph B. Blankman, a son of H. G. Blankmen, in his place (who it was well known would obey the wishes of his father).

Plaintiff further avers that Owens and H. G. Blankmen held a pretended meeting of the Board of Trustees; that the plaintiff had no knowledge of what transpired, except what is derived from entries made by Owens in the book of the Board, wherein it is stated that the office of trustee held by Bogart was declared vacant, J. B. Blankman elected in his place, and H. G. Blankman elected President. Subsequently the defendants took possession of the books, and a large amount of money belonging to the plaintiff; and on the 15th of April, pretending to act as trustees of the company, they made a contract to purchase for the company 7,725 shares of the stock of the Challenge Mining Company, at \$1.25 per share; that they took the sum of \$9,656.25 out of moneys belonging to the plaintiff, which they used in payment of the shares. The defendants then offered to surrender the possession and to resign their offices, provided the company would purchase of them 2,500 shares of the stock of the Challenge Mining Company; that in view of the injury to the business of the plaintiff, O. H. Bogart, the President, acceded to the proposal, but without authority from its Board of Trustees, and paid to defendants \$17,500, being the sum of seven dollars per share, and received certificates of stock for \$2,500 shares; that the market price of the stock at the time of the purchase was not to exceed five dollars per share. Thereupon the defendants delivered over to the company its books and moneys, except \$9,656.25, which was used in the pretended purchase of stock of the Challenge Mining Company. The company asks judgment for \$9,656.25 paid for stock, \$17,500 paid by Bogart, and for \$10,000 damages.

THE STICKEN MINES.—Mr. W. M. Vance, of this city, furnishes the *Call* with a letter from Julien Smith, a friend of his, dated Fort Wrangel, April 20th. The letter says: There is little known here about the mines, except that there were some good prospects got last fall; but there is nothing yet discovered to justify a big rush here. There are here end in the mines about 800 men, and that is more than enough for the present; and I would earnestly advise any one who thinks of coming here to wait till there is something more definitely known. From all I can learn, this is a very bad country to travel over. It is about 180 miles up the river to Buck's Bar, and the current, like all mountain streams, is very rapid; and for the present the only mode of getting up is by canoes. Then the trail is through brush and swamp for about eighty miles to Dease Lake. I will write again when I have looked through the mines.

PRICE OF WATER.—The miners up about Moore's Flat have struck for lower water and as a consequence times are rather dull up there at present. It seems that the Ditch company which supplies Moore's and Woolsey's Flats is still charging the old rates there—12½ cents an inch—though along the ridge, 20 miles and more below, they have reduced the price to eight cents, and the miners held a meeting on the 25th at which it was determined not to work the mines till the Ditch Co. will sell them water at the reduced rate. It is thought the miners will carry the day, as the North Bloomfield Co. agree to run a branch ditch in there if sufficient inducement is held out.—*Foot-hill Tidings*.

THE YELLOWSTONE PROSPECTORS.—An expedition of prospectors, which left Boseman, Montana, some time since, to explore the Yellowstone and Tongue river country, are reported by Captain Sweitzer, commanding at Fort Ellis, to be retreating up the Yellowstone, with frequent skirmishes with the Indians. They turned back near Tongue river, after a fight, and have reached a point about 195 miles from Fort Ellis. One man was killed and two wounded, and a considerable amount of stock was killed. A number of Indians are reported killed, and their stock captured.

The Transit of Venus.

This most important expedition that has ever been sent out by the United States is nearly ready to start, its object being the observation of the transit of Venus, which occurs on the 8th of December next. Eight parties are to be sent out from the United States, and, as above noted, arrangements have been completed to compare and exchange their results with the experiences and observations of the German, French, Russian and English expeditions. Three of the parties are to be established in the northern and five in the southern hemisphere. The observations are to be made at Wladivotok, in Siberia, under charge of Prof. Hall, of the Navy. Another party will proceed to Asia, and there they will divide. One party, under Professor Davidson, of the Coast Survey, is to make the observations at Nagasaki, Japan. The other, under Prof. Watson, of Ann Harbor, Michigan, will proceed to Peking, China, and there make their observations of the transit. The corps who are to observe the transit of Venus in the southern hemisphere are to sail from New York in the United States sloop-of-war *Suclara*.

This vessel has been docked at the Brooklyn Navy Yard, and is being thoroughly prepared for the long voyage she is to make. Her upper decks have been entirely rebuilt, and her guns taken ashore. On the upper, or spar-deck, eight large staterooms have been built, for the accommodation of the scientific gentlemen of the expedition. The after part on each side of the stern has been built out, making two large windows, and enlarging the Captain's room materially. Below, on the next deck, a ward-room pantry has been built under the Captain's room, and six fine, large staterooms have been built, on each side of the wardroom, for the accommodation of the *Suclara's* officers. A partition has been run across the vessel, dividing the wardroom from the steerage. On each side of the steerage five staterooms have been built, for the use of petty officers of the vessel. Still further forward is the berth-deck, where the men are to sling their hammocks and quarter.

After the *Suclara* sails from New York she will proceed first to Rio Janeiro, and making a short stay there, will cross to Cape Town. At Cape Town the last preparations for the comfort of the expedition will be made, and stores will be taken on board to last until the vessel reaches New Zealand. From Cape Town the *Suclara* will proceed to a group of islands called Crozette's Islands. There a party of observers, under Captain Raymond, of the Army Engineer Corps, are to be landed, and the *Suclara* will return for them on her home voyage.

From the Island of Desolation, Captain Chandler is to proceed to New Zealand, by way of Sydney. At Tasmania he will leave a party under Lieutenant Peters, United States Navy, to make observations of the transit and other scientific explorations. From Tasmania the *Suclara* will go to the Chatham Islands, in the Southern Indian Ocean, and there Captain Chandler will land another party under Professor Smith, of the Coast Survey.—*N. Y. Times*.

Colusa Quicksilver Mines.

The Colusa *Sun* has the following: From all we can learn, we are satisfied that the country round White Sulphur Springs is the richest in cinnabar of any district in the United States. Mr. Bartlett, an experienced miner, in a letter to us this week says: "There is great excitement here on account of recent discoveries made by Lovelace and Noble on the west side of Bear valley. They have found the richest prospect I ever saw. The ore will go from 20 to 30 per cent., and they say it came from the croppings. Mr. Caswell, of the Buckeye, was called upon to examine their discovery, and he reports very favorably. He had some four or five pounds of the ore that would assay some forty or fifty per cent. I start out soon on a prospecting tour. The Buckeye is the best mine in this part of the country. They are reckoning about two hundred pounds of quicksilver daily. The Ahhot mine is good, and I think the present company will make a good thing of it. The Chapin mine is also good. They intend putting up a furnace at this mine. They have enough ore in sight to pay for the work."

Cinnabar is being taken out of two tunnels in this mine, and they have out now about one hundred tons, estimated to yield ten to fifteen per cent. on the average. It is the intention of the company to put up a furnace in a short time. When the three furnaces now contemplated shall be in operation, we shall ship several thousand pounds of quicksilver daily from Colusa. And if the new discoveries prove as rich as indications warrant us in believing they will, several other furnaces will be put up during the summer.

GOLD AND SILVER.—One ton (2,000 pounds avoirdupois) of gold or silver contains 29,163 troy ounces, and therefore the value of a ton of pure gold is \$602,799.21, and a ton of silver, \$37,704.14. A cubic foot of pure gold weighs 1,218.75 pounds avoirdupois; a cubic foot of pure silver weighs 556.25 pounds avoirdupois; \$1,000,000 gold coin weighs 3,658.8 pounds avoirdupois; \$1,000,000 silver coin weighs 51,925.9 pounds avoirdupois. If there is one per cent. of gold or silver in one ton of ore, it contains 291.63 ounces troy, of either of these metals.

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To be held under the auspices of the

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Opening on August 18th, 1874.

The Board of Managers herewith announces that a grand industrial fair will be held in the city of San Francisco for 30 days, opening on August 18, 1874.

In view of the increasing commercial and manufacturing importance of San Francisco, its contiguity to and close connection with the various countries bordering on the Pacific, the managers have constructed a Pavilion, having a floor area of 150,000 feet, and have invited to it all who are disposed to come and exhibit. All exhibitors will be placed on the same footing. Motive power will be furnished free.

The building will be open day and evening, and every facility will be extended to exhibitors and visitors.

Application for space must be made without delay to the Secretary of the Board of Managers, 27 Post street, San Francisco, and all inquiries will be answered and information extended promptly.

No space can be secured unless applied for before the 20th of July next. A. S. HALLIDIE, Pres.
13v28-3m J. H. CULVER, Sec'y.



The object of this school is to impart a thorough education in business affairs. It is open to persons of both sexes and of all ages. There is an English Department for those not sufficiently advanced for the Business Course. Sessions continue day and evening throughout the year. Students can enter at any time. All wishing to be successful should secure a practical education at this College. Send for "Heald's College Journal," and learn full particulars. Sent free to all by addressing E. P. HEALD, Pres. Business College, San Francisco, Cal.
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In the Carnival, a Grand Ballet, led by the charming Mlle BONFANT.

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Dress Circle and Orchestra, \$1 00
Dress Circle and Orchestra, Reserved, 50
Balcony, 50
Balcony, Reserved, 25
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ja24-tf

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—BY—

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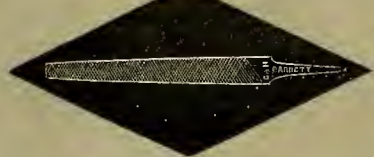
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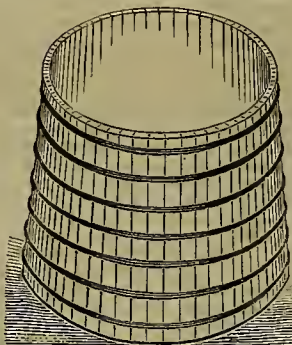


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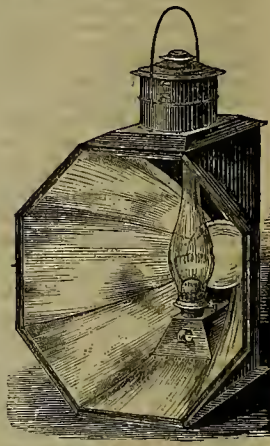
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BUY BARBER'S BIT BRACE.

The Quicksilver Mines of San Luis Obispo County.

EDITORS PRESS:—From time to time brief notices have been published concerning the mines in the San Simeon district, located near this place. These accounts have simply given the public to understand that there are deposits of cinnabar in this range of mountains, without specifying particularly either the locality or the extent of the mining region. Your correspondent came here for the purpose of looking at these mines, and after two days of laborious riding on horseback he is prepared to make a report.

The San Simeon District

Embraces an extensive tract of country lying in the coast range a few miles east of Cambria. None of the discoveries date farther back than three or four years, and all the developments have been made within the last two. It is remarkable that so much has been done and so little said about it. The best known claims in the district are on Pine mountain, thirteen miles northeast of this place in the range of mountains known as the Santa Lucia. It is a beautiful mountain, completely covered with immense forests of pine and oak, and distinct from the surrounding hills in this particular. Here are located two parallel ledges running north-west and southeast, dipping to the east on an angle of about 80°.

The Pine Mountain Company.

In July, 1871, Mr. O. Haskins, while looking for timber in this range, made the discovery of cinnabar. He was well acquainted with this character of ore and saw at once he had dropped on a good thing. He returned to Cambria, where a company was organized and arrangements made to prospect. This company took up 2,000 feet on the ledge and men were set to work drifting into it. Quantities of the ore were sent to Hewston and Garnett of San Francisco. The returns showed an assay of 6½ per cent. in quicksilver, which, of course, was highly satisfactory. This attracted the attention of parties in San Francisco, who took a bond on the claim for six months for the purpose of fully prospecting it. After expending two thousand dollars, the claim was abandoned and it reverted to the original locators. Since that time a shaft has been sunk on the ledge to a depth of 50 feet and an 80-foot drift run in on that level, developing a mine rich in cinnabar with an average width of 40 feet. The ledge is well defined, with regular walls of serpentine and talc. The matrix on top is of a yellowish cast, similar to that of the celebrated Almaden mine. On going down it becomes hard with spar feeders, running across the veins at regular intervals. These feeders in places are solid, blood-red metal. The company have a number of hands employed at present lifting ore from the lower drift, which is very rich. The principal owners are Haskins, Russell, Van Gordon, Layton, Forrester, Lingo, Palmer and Proctor of Cambria.

The Jeff Davis

Is the name of the adjoining claim on the same ledge. It has one chimney 80 feet in diameter, and exhibits abundance of good metal. Very little has been done to develop it. The claim embraces 1,600 feet. A company is running a tunnel in to tap the vein at a considerable depth, with good prospects.

The Santa Maria,

Located still farther north on the same ledge, is a claim of 1,200 feet. Here the ledge is mostly covered by a break in the hill. A drift 500 feet long will tap it at a depth of 300 feet.

The Gibson and Phillips.

This is a consolidation of claims of 3,200 feet, extending north on the same hill. The character of the ore is the same. This claim was recently bonded to J. M. Thompson, of San Francisco, for \$40,000. They have done considerable work here, developing an excellent mine with large quantities of pay ore in sight. The owner is now making arrangements for erecting furnaces on the ground. There are 2,000 tons of first-class rock on the dump ready for reduction. The above embrace all the locations on the Pine mountain ledge.

Eight hundred feet below on another ridge of mountains is the "Little Almaden." The principal claims here are the Phil. Sheridan, owned by Messrs. Brewster, Land & Head, of San Francisco, the Buckeye and the North Star, all of which show good metal. The Phil. Sheridan has 500 tons of pay ore on the dump.

Other Lodes.

About one mile south of Pine mountain, in the same range, and running parallel, are other lodes, the first of which is known as the Quien Sabe.

This mine has more and richer metal in sight in the croppings than any other in the whole district. It seems to be a solid mountain of metal. On the day of my visit it was raining, and the sight presented at this place was indeed wonderful. The hill for hundreds of feet was red with cinnabar. I have traveled over the entire mining regions of this coast and I never saw so much wealth lying exposed to the elements before. This is owned by a few poor men, who have managed to drive a tunnel in a long distance, at a depth of 400 feet from the croppings. Good metal is exposed along this tunnel for a distance of 220 feet. Large quantities of ore can be extracted here with little labor. This mine is for sale, but it will

take a fortune to purchase it, so confident are the owners of success.

The Todos Santos

Is an extension of the Quien Sabe, and looks extremely rich in cinnabar. It belongs to the claims recently located, and but little has been done to prove its value. The lode seems to be very wide and rich. Thousands of tons are exposed to sight in the chimneys and croppings. It is owned by a few individuals, some of whom belong here. It is easy of access, and work is now being prosecuted upon it vigorously. Parts of the ledge are a sort of conglomerate, while other portions are rich in metal. Cinnabar is even found in the pebbles that make up this conglomerate.

The Keystone.

Among the early locations made in this district is the lode known as the Keystone, one mile further south and still lower down. Cross & Co., of San Francisco, agents of English capitalists largely engaged in mining on this Coast, purchased this claim (1,200 feet) one year ago and have gone to work in dead earnest to prove its richness. A shaft has been sunk to a depth of 160 feet on an incline with the ledge, with satisfactory results, laying bare large bodies of metal and showing better as they advance. A tunnel 250 feet long taps this shaft. There are 500 feet of drifts in the mine in different parts of the ledge. Twenty miners are employed and the force will soon be much increased. The company has a furnace in course of construction whose capacity will be 20 tons per day. Large quantities of good ore are also on the dumps at this mine. The Home company's claim is considered a very excellent one, and joins the Keystone on the north. It is owned by Cambrians, who feel very sanguine over the prospects. They are too poor to put up reduction works and they hope to get capital interested.

All these mines lie due east of San Simeon bay, a distance of about seven miles. The altitude is 3,000 feet. A thousand pounds of surface ore on the Keystone ledge, worked by Jno. Roach, of San Francisco, yielded 53 pounds of pure quicksilver.

Recently, discoveries have been made at the head waters of Santa Rosa creek, six miles east of Cambria, which attract considerable attention just now; it is the same character of mineral as above described. The facilities for working these mines are unusually favorable. There is plenty of wood and water close by and they are all accessible.

The fact is, there is no estimating the extent of these deposits. It is a vast belt of mineral reaching for miles and miles, and a short time will demonstrate that the true wealth of San Luis Obispo county is not in its milch cows or pastures, but rather in the mineral sealed up in the granite vaults of the mountains, and ready to be extracted by the hard-handed miner, who will here find scope for his most exaggerated imaginings. The mines I have mentioned are only a few of the many discovered here, on which work is being prosecuted at present. There is, perhaps, no place on the coast that affords better chances for the prospector than this, or that promises surer returns for his labors. It has been wholly neglected by the press. Here is a new field for idle capital to operate in, with almost a certainty of large returns. Let it flow in and the world will soon hear of a new Eldorado.

ALSTON.

Cambria, San Luis Obispo county, May 18.

THE Tuolumne Democrat reports that the clean up of the Tuolumne Hydraulic mine, formerly the Rough and Ready claim in Table Mountain, last Saturday, after fifteen days' work at an expense of \$400 for labor, resulted in \$2,000 of the prettiest gold ever caught in a flume, and it costs over \$20 to the ounce.

A COPPER mine has been discovered near Unionville, Nevada.

THE Hoosac furnace has been started up again.

PATENTS & INVENTIONS

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., May 12, 1874.

FOR WEEK ENDING April 28, 1874.

LIFE BOAT AND SAFE.—Oliver C. Reid, S. F., Cal.

FARM GATE.—Ezra L. Brooks, Smith Ranch, Cal.

AIR COMPRESSOR.—Wm. H. Fauntleroy, Eureka, Nevada.

COTTON AND HAY PRESS.—Walter W. Inman, Lone Pine, Cal.

ORE-DRESSING APPARATUS.—Jas. Scrimgeour, Emma Mine, Utah.

BUNGS.—William Webster, S. F., Cal.

TRADE-MARK.

GRAIN BAGS.—Edington Detrick, S. F., Cal.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent licensees for Pacific coast inventors transacted with perfect security and in the shortest time possible.

METALS.

WEDNESDAY M., May 13, 1874.

Pig Iron is very much depressed. The general Metal market quiet. Quicksilver strong.

Scotch Pig Iron, 30 ton	\$42 50
White Pig, 30 ton	40 00
Refined Bar, had assortment, 30 lb	32 50
Refined Bar, good assortment, 30 lb	32 50
Boiler, No. 1 to 4	4 50
Plate, No. 5 to 9	5 50
Sheet, No. 10 to 13	5 50
Sheet, No. 14 to 20	5 50
Sheet, No. 24 to 30	5 50
Horse Shoes, per keg	8 00
Nail Rod	8 00
Norway Iron	8 00
Roller Iron	8 00
Other Irons for Blacksmiths, Miners, etc.	4 50

QUICKSILVER, per lb. 1 35

Brass, 30 lb	50
Copper, 30 lb	50
O. N. P. 30 lb	55
Sheathing, 30 lb	25
Sheathing, Yellow, 30 lb	25
Sheathing, Old Yellow	10 50
Composition Nails	25
Composition Bolts	25

LEATHER.

WEDNESDAY M., May 13, 1874.

Jointed Leathers are very scarce in New York and not over plentiful here. It is reported that some 2,000 cases of fine skins were lost in the French steamer *Europe*. Prices have consequently advanced east, and are still higher. Trade is much better than previously noted and now is comparatively active.

City Tanned Leather, 30 lb	25 00
San Cruz Leather, 30 lb	25 00
Country Leather, 30 lb	25 00
Stockton Leather, 30 lb	25 00
Jointed, 8 Kil, per doz	50 00
Jointed, 11 to 14 Kil, per doz	55 00
Jointed, second choice, 11 to 14 Kil, per doz	55 00
Cornellian, 12 to 16 Kil	57 00
Cornellian Females, 12 to 14 Kil	60 00
Cornellian, 14 to 16 Kil	65 00
Seamerville, 15 Kil	60 00
Simon, 18 Kil, per doz	61 00
Simon, 20 Kil, per doz	65 00
Simon, 24 Kil, per doz	72 00
Robert Calif, 1 and 9 Kil	25 00
French Kips, 30 lb	1 00
California Kip, per doz	40 00
French Sheep, all colors, per doz	8 00
Eastern Calf for Backs, 30 lb	1 00
Sheep Roams for Topping, all colors, per doz	9 00
Sheep Roams for Lining, per doz	5 50
California Russell Sheep Linings	1 75
Best Jointed Calf Boot Legs, per pair	5 00
Good French Calf Boot Legs, per pair	4 00
French Calf Boot Legs, per pair	4 00
Harness Leather, 30 lb	2 00
Fair Bridle Leather, 30 lb	45 00
Skirting Leather, 30 lb	34 00
Welt Leather, 30 lb	20 00
Buff Leather, 30 lb	19 00
Wax Side Leather, 30 lb	17 00
Eastern Wax Leather	20 00

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Should see to it that their Notices are advertised legally in the MINING AND SCIENTIFIC PRESS, at much less cost than the usual rates of daily publications. Every person interested in the prosperity of legitimate mining enterprises should favor such practical economy. Send for circular of convenient dates for advertising, free blanks, and a copy of the New Code Corporation Assesment Law.

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Portable Mills.

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BOLTING CLOTHS MADE UP.

Eureka Smut Machines, Bran Dusters, Mill Irons, Spindles, Bails, Drivers, Steps, Regulating Screws, Silent Feeders, Pulleys, Proof Staffs, Hoisting Screws, Bails and Pins, Conveyor Flights, Plaster and Leather Belting.

Mill Picks, Mill Picks Dressed, Mill Stones Re-paired and Rebuilt.

Mill Stones Balanced with FELLENBURG'S PATENT BALANCE, of which I am sole proprietor for California, Oregon, and Washington Territory.

Hooker's Patent Direct Acting Steam Pump.

W. T. GARRATT,

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streets, S. F.,

Sole Proprietor & Manu-

facturer for the Pacific

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SIMPLE, CHEAP AND

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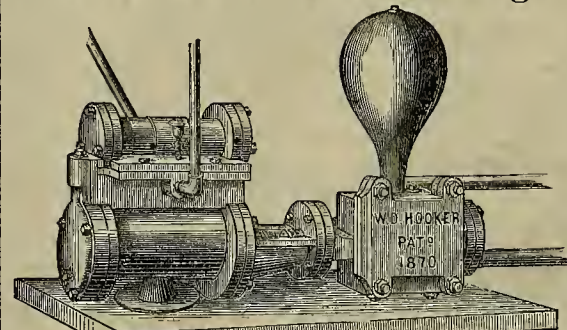
Adapted for all pur-

poses for which Steam

Pumps are used.

The Best Pump in Use.

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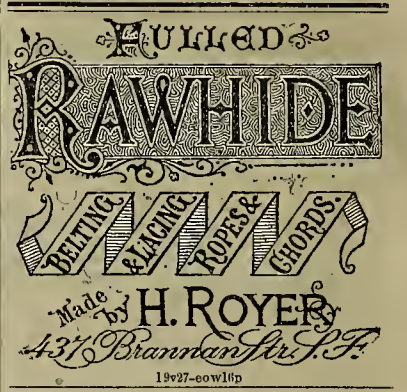
N. B.—Also manufacturer of Hooker's Deep Well and Double-Acting Force Pump. Received the Silver Medal awarded at the last Mechanics' Fair in San Francisco.



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Literary Album.....	6 00	
Opdon Society.....		
1 the Year Round.....		
London Ill. News.....	15 00	

Continued from Page 309.

this tunnel up to the gravel beds is also finished. A portion of the timbers have arrived, and the erection of the hydraulic works has been commenced. Daily yield of ore, 60 tons. The erection of the foundation for the new machinery is making steady progress.

HALE AND NORCROSS.—Cross-cutting and prospecting on the 1,900-ft. level still goes steadily on without any important change or development. The cross-cuts on this level show the ledge to be immense, being now prospected over 180 ft. in width, and no indications of the east wall yet.

LEO.—The ore vein is not quite so wide as it was, but its excellent quality still continues. Its present width varies from a foot to fifteen inches.

KOSUTH.—The main north drift from the west tunnel at the first station level is in 240 ft. the entire size of the drift for the last 20 ft. being in ore of a fine quality. This drift has yet 60 ft. to run to reach the north line of the Dayton, and the body of ore opened is undoubtedly a continuation of that found on the second and third station levels of the Dayton mine. Cross-cuts have been run both east and west from this drift which have cut the ledge to the width of 80 ft. without reaching the east or west walls of the ledge.

CHOLLAS-POTOSI.—Daily yield 130 tons of ore, assaying \$32 per ton. The ore breasts and stopes are all yielding well. The repairs on the head of the hoisting engine are completed and work has been resumed at both the fourth and fifth station levels. The face of the main south drift at the fifth station shows considerable more quartz, and that of a much more lively and favorable character than has been encountered for some time.

NEW YORK CONSOLIDATED.—The water in the shaft is reduced to within 200 ft. of the bottom by the use of tanks. The new steam pump is almost completed, and will be in perfect working condition in a couple of days more. It is expected that the shaft will be drained ready to resume sinking by Monday next. As soon as the water is drained a station will be opened at the 550-ft. level, and drifts started to cut and prospect the ledge. Sinking the shaft will also be resumed as soon as the station is completed.

SAVAGE.—Cross-cutting the ledge on the 1,900-ft. level is still continued, without any new developments to report. The ledge on this level is wide, well defined and shows a large body of solid quartz, but no permanent body of ore as yet.

KNICKERBOCKER.—Sinking the shaft is going on at the rate of three feet per day. The seam of quartz before spoken of in our reports, still continues in the bottom of the shaft, and is of a very lively and favorable quality.

OVERMAN.—The main west drift on the 1,200-ft. level is still pushed vigorously forward, the face in vein material. No new ore developments to report.

IMPERIAL-EMPIRE.—Sinking the main incline is making steady progress. The main east drift on the 1,850 ft. level is still driven vigorously ahead.

LADY BRYAN.—New shaft down 130 ft. and sinking making good progress. The new hoisting works are fast approaching completion, and the erection of the new hoisting and pumping machinery is making rapid progress.

NEVADA.—Still continuing the main south drift ahead. The face of the drift is now in porphyry, the ore vein being left to the right. A cross-cut is started from the main tunnel, about 50 ft. south of cross-cut No. 1, which is now in 20 ft. in quartz all the way and no sign of west wall as yet.

WOODVILLE.—Sinking the incline is making steady headway. Both the up-raises from the north drift on the 300-ft. level are making the usual good headway.

SOUTH COMSTOCK.—Not sinking at present, but a cross-cut east is commenced at the 190-ft. level, in order to test the ledge at that point.

DANEY.—The main west drift, at the 400-ft. level, is in a distance of 30 ft. in good running ground. This drift will have about 250 ft. to run to reach the ledge.

LADY WASHINGTON.—The erection of the new machinery is making steady progress. Retimbering and repairing the shaft is almost completed.

ERIE.—The timbers having arrived for the shaft, work is actively resumed.

KENTUCK.—The east cross-cut on the 1,500-ft. level from the Crown Point is still pushed vigorously ahead, the face in quartz and porphyry mixed.

BULLION.—The north drift from the 1,700-ft. level of the Imperial is still making steady progress.

TYLER.—Putting in a new station at the 300-ft. level has occupied the entire week.

SOUTH STAR.—New shaft down 122 ft. Width of ledge in cross-cut at 100-ft. level not yet ascertained.

FLORA.—Water impedes operations considerably at winze No. 2. Ore assays range from \$10 to \$25 per ton.

ROCK ISLAND.—Sinking the new shaft is making steady headway. Now down 110 ft.

SUTRO.—Tunnel being driven ahead for the ledge, and making good progress.

SCIENTIFIC PRESS.—The attention of our readers is called to an interesting article on the Mining Interests of Northern Sierra, on the first page of this issue, from the SCIENTIFIC PRESS, San Francisco. This is the ablest, most instructive and influential Mining Journal published in the Great West, and should be liberally patronized by all our mining friends. *Mountain Messenger*, April 25.

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Owing to the time necessary to mail the present large edition of the *M. & S. Press*, we are obliged to go to press on Thursday evening—which is the very last hour we can receive advertisements.

Benjamin Mill and Mining Company.—Location of principal place of business, San Francisco, California. Location of works, Devil's Gate District, Lyon county, Nevada.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 1) levied on the 17th day of March, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Armstrong, Wm.	unissued.	325	\$16 25
Benjamin, F. A. Trustee.	33	250	13 00
Benjamin, F. A.	unissued.	7,150	357 50
Bourke, Terry.	unissued.	1,300	65 00
Booth, G. A.	unissued.	508	25 40
Brinson, J. M.	unissued.	325	16 25
Findley, O.	unissued.	884	44 20
Gould, J. M.	unissued.	225	11 25
Hosmer, Charles.	28	500	25 00
Hosmer, Charles.	29	500	25 00
Hosmer, Charles.	30	500	25 00
Hosmer, Charles.	31	500	25 00
Hosmer, Charles.	32	500	25 00
Hymann, Samuel.	unissued.	1,300	65 00
Leavitt, Leander Trustee.	1	100	5 00
Leavitt, Leander Trustee.	2	100	5 00
Leavitt, Leander Trustee.	3	100	5 00
Leavitt, Leander Trustee.	4	100	5 00
Leavitt, Leander Trustee.	5	100	5 00
Leavitt, Leander Trustee.	6	100	5 00
Leavitt, Leander Trustee.	7	100	5 00
Leavitt, Leander Trustee.	8	100	5 00
Leavitt, Leander Trustee.	9	100	5 00
Leavitt, Leander Trustee.	10	100	5 00
Leavitt, Leander Trustee.	11	50	2 50
Leavitt, Leander Trustee.	12	50	2 50
Leavitt, Leander Trustee.	13	50	2 50
Leavitt, Leander Trustee.	14	50	2 50
Leavitt, Leander Trustee.	15	50	2 50
Leavitt, Leander Trustee.	16	50	2 50
Leavitt, Leander Trustee.	17	100	5 00
Leavitt, Leander Trustee.	18	100	5 00
Leavitt, Leander Trustee.	19	100	5 00
Leavitt, Leander Trustee.	20	100	5 00
Leavitt, Leander Trustee.	21	100	5 00
Leavitt, Leander Trustee.	22	50	2 50
Leavitt, Leander Trustee.	23	50	2 50
Leavitt, Leander Trustee.	24	50	2 50
Leavitt, L.	unissued.	500	25 00
Morrison, J. Y.	unissued.	624	31 20
Mitchell, R. J.	unissued.	299	14 95
Myers, J. G.	unissued.	325	16 25
Macken James.	unissued.	2,600	130 00
McClean Hunt.	unissued.	650	32 50
Norton, Geo. M.	unissued.	4,550	227 50
Smith, F. B.	unissued.	299	14 95
Sylvester, D. L.	unissued.	325	16 25
Shaefer, E.	unissued.	325	16 25
Smiley, Geo. W.	unissued.	650	32 50
Smith, N. T.	unissued.	1,300	65 00
Snyder, A. W.	unissued.	2,600	130 00
Upham, W. B.	unissued.	325	16 25
Van Brunt, R.	unissued.	1,300	65 00
Waters Arthur.	25	50	2 50
Waters Arthur.	26	50	2 50
Waters Arthur.	27	30	1 50
Wells, D. R.	unissued.	1,248	62 40
White, J. C.	unissued.	325	16 25
Wright, J. A.	unissued.	325	16 25
Wright, J. W.	unissued.	325	16 25

And in accordance with law, and an order of the Board of Directors, made on the 17th day of March, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of said Company, Room No. 7, No. 401 California street, San Francisco, Cal., on Friday the 15th day of May, 1874, at the hour of 12 o'clock m., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

LEANDER LEAVITT, Secretary.
Office—Room No. 7, No. 401 California street, San Francisco, Cal.

POSTPONEMENT.—The above sale is postponed until Monday, the 18th day of May, 1874, at the hour of 12 o'clock m., at the office of said Company, Room No. 7, No. 401 California street, San Francisco, Cal. By order of the Board of Directors.

LEANDER LEAVITT, Secretary.
Office—Room No. 7, No. 401 California street, San Francisco, Cal.

Calaveras Gold Mining Company.—Location of principal place of business, San Francisco, State of California. Location of works, Washington Mining District, Calaveras county, State of California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 5) levied on the 18th day of May, 1874, an assessment of fifty cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, in San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 16th day of June, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 5th day of July, 1874, to pay the delinquent assessment together with costs of advertising and expenses of sale.

T. B. WINGARD, Secretary.
Office—No. 318 California street, San Francisco, Cal. (Room No. 13.)

Continental Silver Mining Company.—Location of principal place of business, San Francisco, State of California. Location of works, near Treasure City, White Pine County, Nevada.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 5) levied on the 4th day of May, 1874, an assessment (No. 5) of \$1.20 per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, 118 Front street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 16th day of June, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the 30th day of June, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

THEODORE BLANKENBURG, Secretary.
Office, 118 and 120 Front street, San Francisco, California.

Diamond Silver Mining Company.—Location of works, East Tintic Mining District, Just County, Utah Territory. Principal place of business, San Francisco.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 1) levied on the 10th day of April, 1874, an assessment of ten cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Treasurer, J. H. Fish, at the office of the Company, No. 123 Post street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 1st day of June, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 28th day of June, 1874, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

O. G. MILLER, Secretary.
Office—No. 123 Post street, San Francisco, Cal. ap28

Geneva Consolidated Silver Mining Company.—Principal place of business, City and County of San Francisco, State of California. Location of works, Cherry Creek Mining District, White Pine County, State of Nevada.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 2) levied on the 25th day of March, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A. J. Snyder.	31	38	19 00
A. J. Snyder.	32	38	19 00
A. J. Snyder.	33	38	19 00
A. J. Snyder.	34	38	19 00
A. J. Snyder.	35	38	19 00
A. J. Snyder.	36	38	19 00
A. J. Snyder.	37	38	19 00
A. J. Snyder.	38	38	19 00
A. J. Snyder.	39	38	19 00
A. J. Snyder.	40	38	19 00
A. J. Snyder.	41	38	19 00
A. J. Snyder.	42	38	19 00
A. J. Snyder.	43	38	19 00
A. J. Snyder.	44	38	19 00
A. J. Snyder.	45	38	19 00
A. J. Snyder.	46	38	19 00
A. J. Snyder.	47	38	19 00
A. J. Snyder.	48	38	19 00
A. J. Snyder.	49	38	19 00
A. J. Snyder.	50	38	19 00
A. J. Snyder.	51	38	19 00
A. J. Snyder.	52	38	19 00
A. J. Snyder.	53	38	19 00
A. J. Snyder.	54	38	19 00
A. J. Snyder.	55	38	19 00
A. J. Snyder.	56	38	19 00
A. J. Snyder.	57	38	19 00
A. J. Snyder.	58	38	19 00
A. J. Snyder.	59	38	19 00
A. J. Snyder.	60	38	19 00
A. J. Snyder.	61	38	19 00
A. J. Snyder.	62	38	19 00
A. J. Snyder.	63	38	19 00
A. J. Snyder.	64	38	19 00
A. J. Snyder.	65	38	19 00
A. J. Snyder.	66	38	19 00
A. J. Snyder.	67	38	19 00
A. J. Snyder.	68	38	19 00
A. J. Snyder.	69	38	19 00
A. J. Snyder.	70	38	19 00
A. J. Snyder.	71	38	19 00
A. J. Snyder.	72	38	19 00
A. J. Snyder.	73	38	19 00
A. J. Snyder.	74	38	19 00
A. J. Snyder.	75	38	19 00
A. J. Snyder.	76	38	19 00
A. J. Snyder.	77	38	19 00
A. J. Snyder.	78	38	19 00
A. J. Snyder.	79	38	19 00
A. J. Snyder.	80	38	19 00
A. J. Snyder.	81	38	19 00
A. J. Snyder.	82	38	19 00
A. J. Snyder.	83	38	19 00
A. J. Snyder.	84	38	19 00
A. J. Snyder.	85	38	19 00
A. J. Snyder.	86	38	19 00
A. J. Snyder.	87	38	19 00
A. J. Snyder.	88	38	19 00
A. J. Snyder.	89	38	19 00
A. J. Snyder.	90	38	19 00
A. J. Snyder.	91	38	19 00
A. J. Snyder.	92	38	19 00
A. J. Snyder.	93	38	19 00
A. J. Snyder.	94	38	19 00
A. J. Snyder.	95	38	19 00
A. J. Snyder.	96	38	19 00
A. J. Snyder.	97	38	19 00
A. J. Snyder.	98	38	19 00
A. J. Snyder.	99	38	19 00
A. J. Snyder.	100	38	19 00

And in accordance with law, and an order of the Board of Directors, made on the 26th day of March, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of said Company, Room No. 14, No. 302 Montgomery street, San Francisco, California.

JEFFERSON GOLD AND SILVER MINING COMPANY. Location of principal place of business, San Francisco, Cal. Location of works, Brown's Valley, Yuba county, California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 2) levied on the 26th day of March, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A J Snyder	31	10	\$5 00
A J Snyder	38	10	5 00
A J Snyder	39	4	2 00
A J Snyder	47	266	133 00
A J Snyder	53	50	25 00
A J Snyder	54	50	25 00
A J Snyder	55	50	25 00
A J Snyder	57	10	5 00
A J Snyder	58	10	5 00
A J Snyder	59	10	5 00
A J Snyder	60	10	5 00
A J Snyder	61	10	5 00
A J Snyder	62	10	5 00
A J Snyder	120	3	1 50
A J Snyder	121	2	1 00
Max Armer	107	3	1 50
Max Armer	119	6	3 00
Geo H Thompson	118	2	50
N D Rideout	12	10	5 00
H A Charles	81	2	1 00
C L Low	69	5	2 50
S Kline	74	10	5 00
J Hecach	41	10	5 00
Mrs J Hoesch	67	5	2 50
J S Belcher	45	10	5 00
M J Lord	62	10	5 00
M J Lord	68	1	50
M J Lord	71	2	1 00
M J Lord	90	2	1 00
M J Lord	122	1	50
M J Lord	126	1	50

And in accordance with law, and an order of the Board of Directors, made on the 26th day of March, 1874, that the parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, Nos. 214 and 215 Pine Street, San Francisco, Cal., on the first day of June, 1874, at the hour of 12 o'clock M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

W. D. HUBBARD, Secretary.

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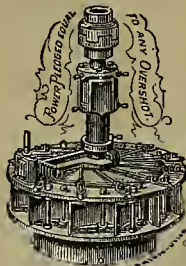
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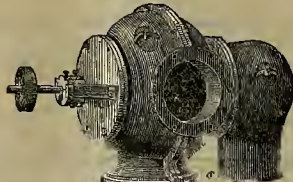
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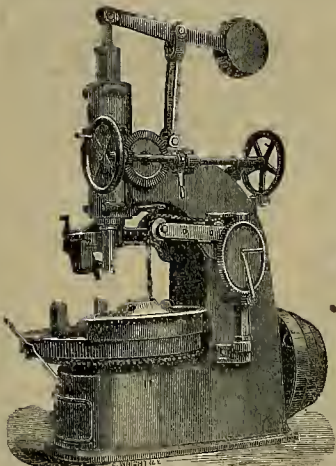
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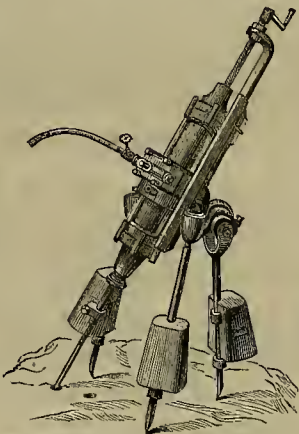
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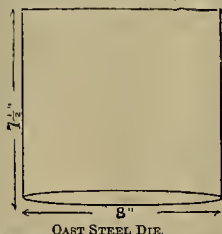
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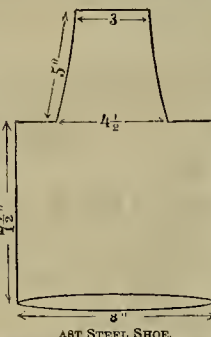
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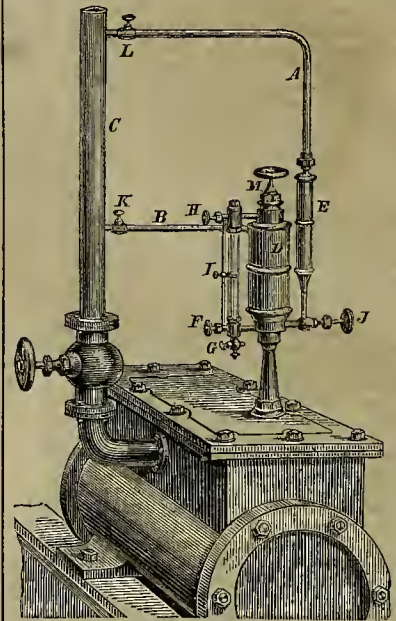
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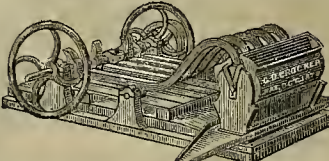
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This machine, complete, weighs 1,500 lbs. Has an iron frame, five steel arms with stamps weighing 17 lbs. each, which strike 2-3 blows per minute, in a mortar provided with screens on both sides, and crushes FINE 600 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$600.

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17v26-1f

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MACHINIST,

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Repairing done on very Reasonable Terms and in the best manner. No. 32 Fremont street, S. F. 19v28-5m

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AMERICAN TURBINE WATER WHEEL.



Recently improved and submitted to thorough scientific tests by James Emerson, showing the following useful effect of the power of the water utilized, being
THE HIGHEST RESULTS EVER KNOWN.
Percentage of part gate, $\frac{1}{2}$ 50.03; $\frac{3}{4}$ 69.64; $\frac{5}{8}$ 78.73; $\frac{1}{4}$ 82.53; $\frac{3}{8}$ 82.90. Percentage of whole gate, 83.14.
Mr. Emerson says: "These are the best average results ever given by any Turbine Wheel in my experience."
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Sole Agents for the Pacific States and Territories.
ap25-tf

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I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been heated in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.
His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled
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Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.
The Machine itself is also an infringement on another patent owned by the same parties.
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DIRECT-ACTING STEAM PUMP,
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—AND—
Chemical Apparatus,
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Quartz Crushing & Ore Sampling
MILLS.
Nos. 413 & 415 Mission st., bet. First & Fremont, S. F.

Ours is the OLDEST, LARGEST and MOST EXTENSIVELY KNOWN establishment of this kind on the Coast.
Our mills are under the direct supervision of one of the most experienced Samplers and Millmen in the country, and we purpose carrying on the business upon a scale commensurate with the wants of the mining public.
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ja31-tf "JIM" WHITLATCH, Sup't.

Varney's Patent Amalgamator.
These Machines Stand Unrivaled.
For rapidly pulverizing and amalgamating ores, they have no equal. No effort has been, or will be made to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits.
They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.
This Amalgamator Operates as Follows.
The pan being filled, the motion of the muller forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular flow between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.
Settlers made on the same principle excel all others. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed.
Mill-men are invited to examine these pans and settlers for themselves, at the office, 229 Fremont Street, San Francisco

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For all Laboratory and Manufacturing Purposes
H. M. RAYNOR,
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Platinum Scrap and Native Platinum purchased.
Quicksilver.
Parties working Quicksilver Ores can obtain the right to use highly successful patented improvements for condensing fumes and working soot, by addressing
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Sampler and Crusher of Ores,
NO. 11 DRUMM STREET,
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AUBURN MILL COMPANY,
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Purchase Silver Ores in quantities of ten tons and upward, delivered on board the cars at San Francisco or Oakland at the annexed Net Rates, WITH NO CHARGE FOR SAMPLING OR REDUCTION. On lots of less than 10 tons, freight to Reno will be deducted.
Special Rates for Gold Ores.
On Gold contained in Silver Ores to the amount of \$30 and upwards, 63 per cent. will be paid. When less than \$30, and above \$10, the amount will be added to the Silver value. Sacks promptly returned free of charge. Ores sampled by Battery or Sampling Mill as shipper may elect, and returns made promptly by cheque on San Francisco.
Rates:

Assay Value	Per Cent	Assay Value	Per Cent	Assay Value	Per Cent	Assay Value	Per Cent	Assay Value	Per Cent
\$ 60	25	\$ 90	38	\$125	47	\$160	57	\$ 200	66
86	25	93	39	129	48	175	58	263	67
70	28	95	40	137	50	183	60	275	68
73	30	98	41	147	51	200	61	285	70
76	31	100	42	152	52	210	62	300	71
80	33	107	43	158	53	220	63	320	72
84	35	112	44	164	54	230	64	340	74
88	37	119	45	168	56	240	65	400	75

And on intermediate values in proportion.
C. A. LUCKHARDT, Agent.
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Silver-Plated Copper Amalgamating Plates, for Saving Gold.
Of all sizes and in any quantity, furnished to order. Full instructions sent for operating. Particular attention given to plating goods for Builders, Plumbers, etc. Hotel and Restaurant work replated.
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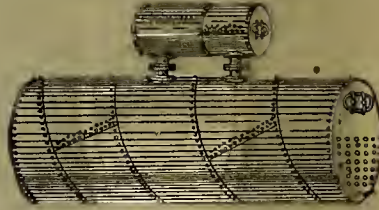
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ADVANCES MADE
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Ores worked by any process.
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For all Laboratory and Manufacturing Purposes
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Quicksilver.
Parties working Quicksilver Ores can obtain the right to use highly successful patented improvements for condensing fumes and working soot, by addressing
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THE
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Corner Howard and Beale Streets,
Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.
Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Oak Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.
All kinds of Machinery made and repaired.
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OFFICE, ROOM 10, No. 605 OLAY STREET.
Correct information from the Mines of the Company can always be obtained by application at the office.
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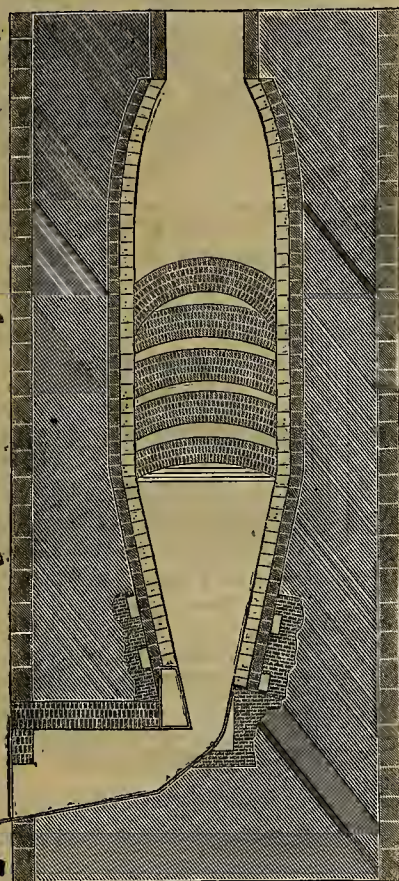


Fig. 1.—Cross Section of Furnace, Walls and Vapor Way Arches.

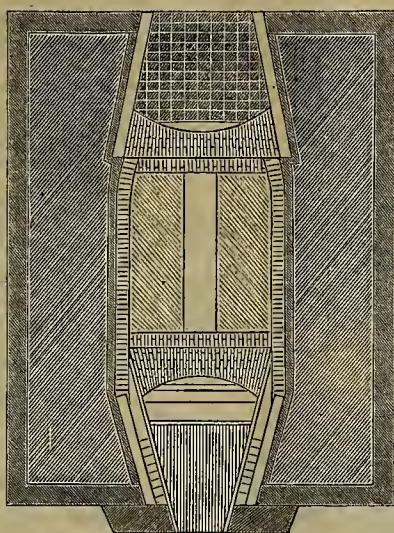


Fig. 3.—Horizontal Section at Fire-Grate Level.

THIS FURNACE REDUCES CINNABAR, AND

WORKS CLOSER TO AN ASSAY

And at **LESS COST** per ton than any other furnace. It will work continuously Twelve to Twenty-four months without stopping.

No Man Has Ever Been Salivated

Or otherwise affected by the mercury about the furnace, either in operating it or making repairs. For full particulars, plans, etc., apply at

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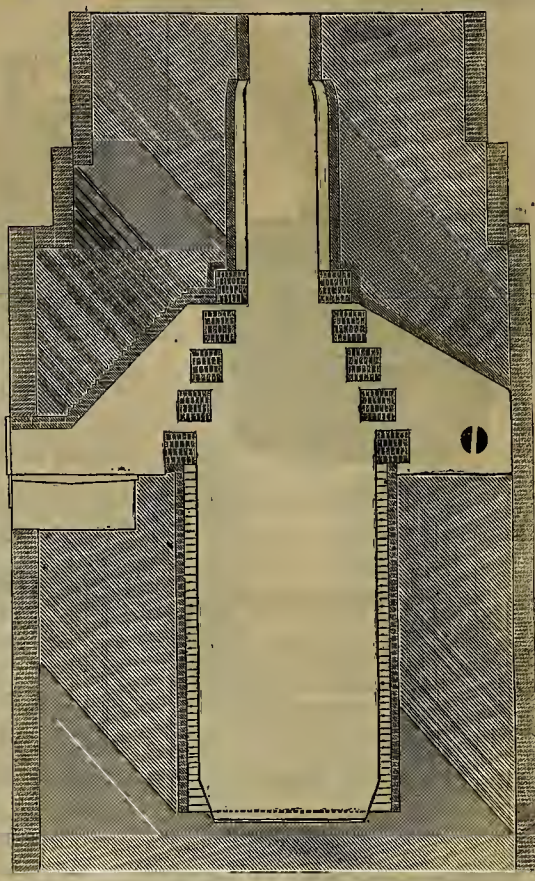


Fig. 2.—Cut Transversely from Fig. 1.

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SPORTING,

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POWDER,

OF SUPERIOR QUALITY, FRESH FROM THE MILLS. It being constantly received and transported into the interior, is delivered to the consumer within a few days of the time of its manufacture, and is in every way superior to any other Powder in Market. We have been awarded successively

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By the MECHANICS' INSTITUTE and the STATE AGRICULTURAL SOCIETY for the superiority of our products over all others.

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We wish to call the attention of miners and others of our readers to a few points of superiority of the HERCULES POWDER over all other strong explosives.

FIRST—Its strength is greater than that of any other in use. The materials of which it consists are compounded upon strictly scientific principles, and not a simple neutral absorbent employed that will hold a quantity of nitro-glycerine. It is the opinion of the best chemists to whom the matter has been submitted, that no mixture has been employed that so thoroughly promotes the whole tremendous force of the explosives employed, and at the same time neutralizes the offensive gases caused by the explosion. With this Powder one half the time is saved that is lost by using any other strong powder, before you can resume work after a blast.

SECOND—UNIFORMITY.—The materials of the mixture are chemically prepared, and therefore greater uniformity can always be depended upon and the best results attained. This is a great advantage over any that varies in its strength, as those must which are mixed with any natural earth.

THIRD—SAFETY.—So perfect is this mixture that no accident can happen with it from premature or accidental explosion, if persons will half follow the rules laid down for its use. No powder has ever been invented where so few accidents have happened with it in proportion to the quantities which have been used.

FOURTH—CARTRIDGES.—It is well known that nitro-glycerine has a tendency to decompose by volatilization. These are the "fumes" that are smelted on going into a close warm drift or room where nitro-glycerine powders are stored. To prevent the escape of these "fumes" an almost hermetically sealed cartridge is employed, and so effectual is it that some cartridges filled with Hercules were exposed to a blazing California sun for six months last summer, with no perceptible loss of strength. This is a great advantage over the open porous paper usually used for cartridges.

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QUERY—IS THIS WORTH SAVING? WE SHOULD TELL YOU. TRY IT. Sold by the CALIFORNIA POWDER WORKS, 314 California Street, San Francisco, Cal. Also, all grades of Black Powder, Fuse, Shot, Caps, etc.

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Fire and Earthquake Proof, can be placed in any part of the house with perfect safety. Light and strong, so substantially put up as to render them impossible to be shaken down by earthquakes; can be used as Heaters and Ventilators, and are unquestionably superior to anything of the kind invented in the United States. Are recommended by all architects and Fire Insurance Companies.

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THE ONLY SAFE BLASTING POWDER IN USE.

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GOLD SULPHURETS, ETC., AT THE HIGHEST RATES.

OR WORK THE SAME FOR OWNERS' ACCOUNT.

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THE ONE-PLUNGER JIG,

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Separates in one and the same operation—1. galena and sulphide of silver; 2. pyrites or blende; 3. tailings, containing no valuable parts; or, 1. gold; 2. pyrites; 3. tailings (quartz, etc.) containing no valuable parts; or, 1. copper; 2. tailings, containing no valuable parts. The One Plunger Jig can be combined with existing stamp-mills with highly important advantages, as after amalgamation it will recover completely all fine metal and all base ores and all mercury out of tailings. It concentrates all fine metal ores to such cleanliness that low grade ores can be shipped, after concentration, as first-class ores. Its feed and discharge are automatic. Its construction offers better guarantee against loss and repairs than any other apparatus in use. For particulars, apply to the inventor, **F. CAZIN,** Mining and Civil Engineer, Denver City, Col. L. Box 2225. 13v28 1y

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A FRESH SUPPLY OF

EASTERN IRON KEG POWDER,

Manufactured by the World-Wide Known

LAFLIN & RAND

POWDER COMPANY.

PATENT SAFETY FUSE,

Electrical Blasting Apparatus, Electrical Fuse, Rubber Tubing,

LEADING AND CONNECTING WIRE CAPS, ETC.,

AND EVERYTHING IN THE LINE OF

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and Progressive Industry.

BY DEWEY & CO.,
Patent Solicitors.

SAN FRANCISCO, SATURDAY, MAY 23, 1874.

VOLUME XXVIII
Number 21.

Cazin's Automatic Continuous One-Plunger Jig.

We illustrate this week, for the benefit of those of our readers interested in the subject of concentration of ores, Cazin's automatic continuous one-plunger jig. The principle applied in the machine is the same as applied in all successful ore separators of whatever description—the acting on the difference of specific gravity. The improvement embodied in this new machine is not based on any new principle. All features which had been proved as the most efficacious were maintained, and only the mechanical part was improved, simplified and rendered more effective, requiring less power by a construction closely adhering to true mechanical principles. The distinction of this machine from other contrivances lies only in the mechanical application of well recognized principles.

"A, in the drawing, Fig. 1, the perspective view, represents the trough or vessel on which the sieves for effecting the separation are arranged. The vessel is of suitable length, preferably with nearly semi-cylindrical bottom, and is stationary, secured on an supporting frame, B. At the ends the bottom is closed, except that the water-supply pipe, C, enters on one end, and that openings for the out-flow of water and waste rock are on the other end, at proper places. An inwardly opening valve shuts the end of the pipe. The upper part of the trough, A, contains a longitudinal partition, D, which, however, does not reach down to the bottom, serving merely to separate the plunger, E, on one side, from the sieves on the other. The plunger is a flat plate, pivoted at one end to the vessel, while its other end is, by a pitman, a, an oscillating crank and shaft connected with a slotted lever, b, in the slot of which the wristpin of a crank on the opposite shaft works. The plunger is thereby vibrated up and down. Whenever it moves up, the water is sucked in through the pipe, C, and drawn down through the sieves. Whenever it is coming down, it forces the water in the trough up through the sieves. The latter motion should be quicker than the former, for which object the wristpin of the crank is nearer the pivot of the lever, b, when swinging the same down, and further away from the pivot when swinging up. Transversely the trough has a partition between every pair of sieves, and also at the end of the last sieve. These partitions absolutely divide the trough into separate chambers for the collection of the several kinds or grades of ore, being only sufficiently recessed on top to permit the necessary vibrations of the plunger. The motion of the plunger being greatest near its connection with the shaft, c, a larger amount of water will be forced through the first sieve than through the next, etc.

Instead of there being only one sieve, there is a row of sieves. The sieves are not shaken in the water (jigged), but the sieves are steady, and the water is pushed through the sieves from below. The tailings are not scraped off, but a moderate

stream of water carries them off automatically. The action is not interrupted in order to scrape off first tailings, and then concentrated material, but the concentrated material passes through the sieves and valves continuously.

body is not square and apt to leak, but half-circular, drawn together by hoops. The machinery is not a special one for each sieve, but there is only one mechanical contrivance to move the water from under all the sieves, consisting in

Fig. 2 is a section through a b in Fig. 3; Fig. 3 is a section through c a in Fig. 5; Fig. 4 is a view of the discharge, showing the slide or gate, l, by which the quantity of water is regulated so as to keep all the sieves covered, and the escapes m1 m2 m3, corresponding to l and m in Fig. 7; Fig. 5 is a horizontal plan; Fig. 6 is a section through i k in Fig. 7; and Fig. 7 is a section through g h in Fig. 5.

The inventor, a mining engineer, claims that not only will this jig recover the entire percentage of useful material contained in the current of equal sized mineral rock and water fed unto it, and will do that work continually, automatically, without manual help, to an amount of one ton per hour, but also will, where quartz mills conduct their tailings, after amalgamation, into Cazin's jig, sieve, without any extra trouble, every particle of gold, silver, mercury, copper and lead, escaping after amalgamation, thus acting as a settler of superior quality. In some special cases it would be more advisable not to amalgamate under the mill, but first to concentrate by Cazin's jig, and to eventually roast and amalgamate subsequently. The apparatus will condense the metals and ores to such cleanness as to make them marketable and fit for shipment, as the best selected hand-pieces of clean metal or metallic ore would be, concentrating low grade ores of all kinds into first-class ores. By careful treatment the different metals and ores may not only be separated from waste rock, but be

separated, also, one from the other, as far as their specific weight differs, and the particles do not contain them in chemical or mechanical union. The inventor's address may be seen by referring to advertisement in another column.

GOLD COINAGE.—The director of the Mint, Mr. Lindermann, has addressed a letter to Senator. Sergeant, urging that the present charge for the coinage of gold should be abolished. Among the reasons are the following: First, the coinage charge reduces the Mint value of bullion, thereby encouraging its export to London and other foreign markets, where no charge is made for coinage. Second, the coinage of the standard metal being indispensible, the cost should fall equally upon all, and not upon the producers of the bullion. Third, a very small premium in London or Paris will cause gold bullion to be sent there merely for the on turn, whereas coin will not be exported, except when required to adjust foreign balances, and then only when it is the cheapest article obtainable for the purpose. Fourth, the repeal of the gold coinage charge would serve to retain the mixed bullion in this country for separation and coinage. Fifth, the small loss to the revenue which would result from a relinquishment of this charge would be made good by additional receipts from charges on molten refining, which have been imposed by the Coinage Act of 1873, which together with a gain on the subsidiary coinage now nearly defray the expenses of the entire Mint establishment.

A stock company, with a capital of \$50,000, is being organized in Colorado City, for the purpose of establishing a geological cabinet on a large scale. This is money well invested.

Fig. 11.

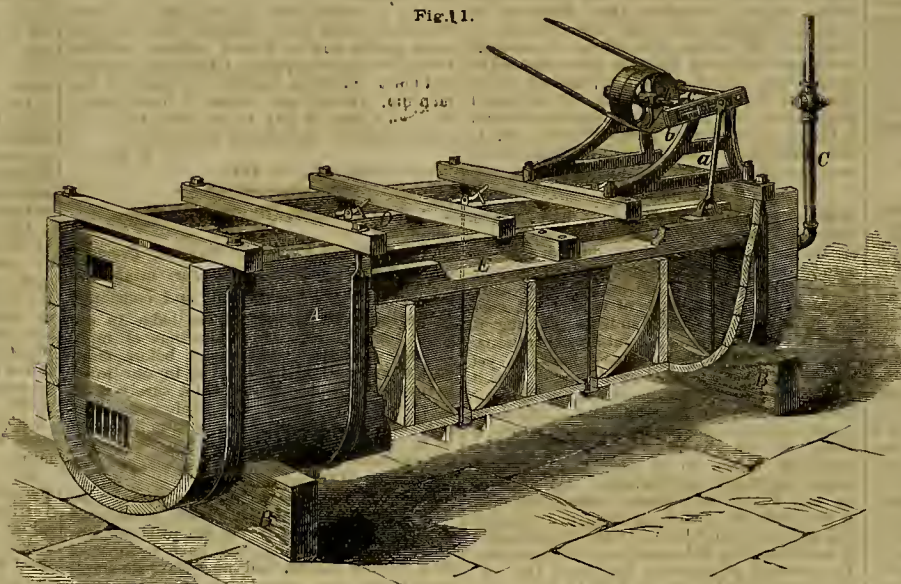


Fig. 2.

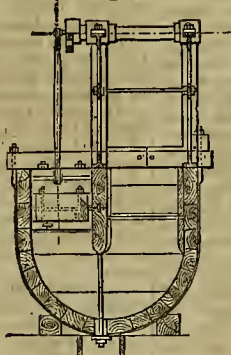


Fig. 3.

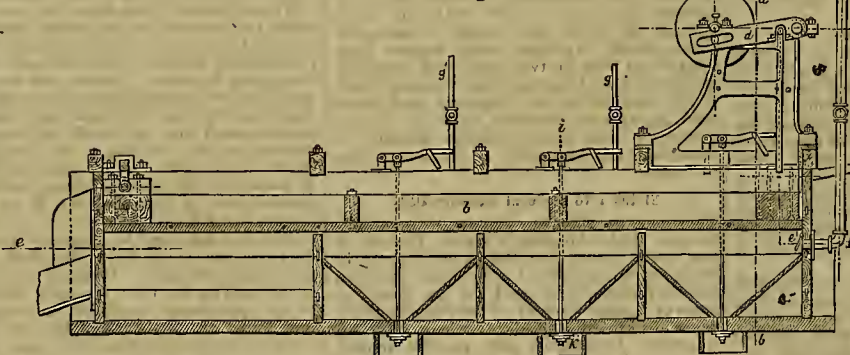


Fig. 4.

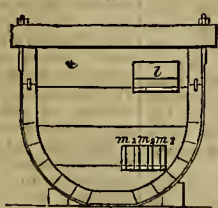


Fig. 5.

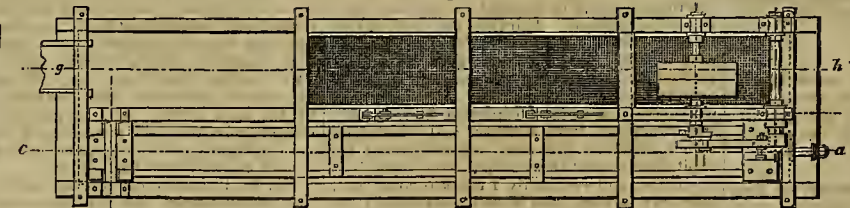


Fig. 6.

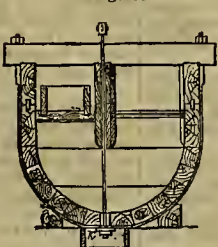
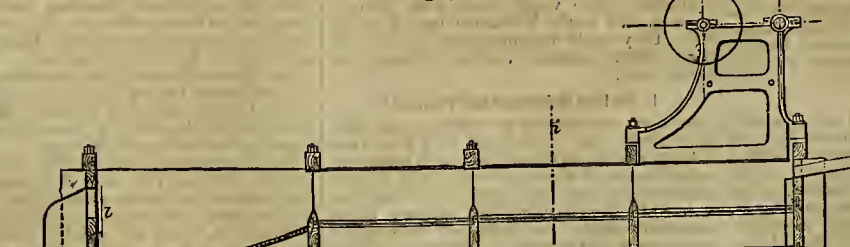


Fig. 7.



The supply of water is not alone from above, but also from below the sieves, carrying off the light particles of waste continuously. The

one plunger hung on a pivot at one end, moved on the other, thus doing away with some parts of construction, and much wear and tear.

ing organized in Colorado City, for the purpose of establishing a geological cabinet on a large scale. This is money well invested.

CORRESPONDENCE.

Mining in Plumas and Sierra Counties. No. 7.

(By our Special Correspondent.)

EDITORS PRESS:—In my last letter, for want of time, I was compelled to break off before finishing my article on the "Pioneer" at Grass Flat. Hoping you will pardon its unavoidably abrupt stoppage at the time, I will continue the same in this.

The Pioneer Company

Are still pushing their tunnel ahead toward the center of the dividing ridge, but for the last 100 feet they have been in bedrock. By a recent cave the fact was developed that fine wash gravel was but six feet above them; a fact that has been proven in all their former excavations. The company intend to run their tunnel until they reach the ground of

The Highland Mary Company.

By the peculiar location of Grass Flat ravine, which affords a fine outlet for hydraulic tailings many hundreds of feet above Slate creek, this company possess the rare advantage of a location that will enable them to run a sluice tunnel that will tap this well known rich channel at its greatest depth, and have a fall of over 150 feet below the present one. As this tunnel will only be about 1,000 feet in length to enable the company to commence piping, the day is not far distant when this mine will become as well known for its gold products as the celebrated Sierra Butte mine.

Immediately adjoining the Pioneer is the

Pacific Company,

Formerly known as the Manzanito company, who have spent about \$75,000 in sinking a shaft, and though a powerful steam engine was used, owing to the immense volume of water they encountered, the bedrock was never reached. The depth of this shaft is some 200 feet, all through fine wash gravel.

Adjoining the Pacific is the

Union Company,

Who have to work their mine under many disadvantages. The main tunnel is over 2,000 feet in length, through which the dirt is drawn by mule power, from eight to ten carloads at a time, after first being raised up a heavy incline of 190 feet in length, by water power, the bedrock pitching heavily toward the Pioneer mine in Grass flat. I see by the U. S. Commissioner's report to Congress, for 1873, as furnished him by the U. S. Deputy Mineral Surveyor, C. Hendel, Esq., of St. Louis, Sierra county, a gentleman of high standing in his profession, that in ten years the company have taken out \$463,344, paying a pro-rata of \$12.25 per cubic yard of gravel. Southwest of the Union, and adjoining, is the

Monte Cristo Company.

This like its neighbor, the Union, is also a tunnel or drift mine. The gravel is raised up a long, steep incline by a powerful steam engine. I also find, as per report mentioned above, that the company have realized in ten years the sum of \$543,649, which has yielded from every cubic yard of gravel excavated, \$6.47. The bedrock in this mine also pitches toward Grass flat. It is the opinion of all practical miners, that this mine, as well as the Union, will eventually be worked by the hydraulic process, through the projected Pioneer sluice tunnel, as mentioned above.

Many of your readers who are familiar with this section of the country, will recognize these mines as being situated at, what is termed, the "Slope." Why this embryotic town received the above name I have not learned, but suppose it was derived from its location on the western slope of the dividing ridge between Grass flat and Port Wine. Just below the "Slope," and adjoining, is the

Indian Queen Mine.

As to its present status, in mineralogical wealth, I am unable to say; but years ago it was considered one of the best paying drift mines in the northern section of the county. Further down this great channel is the

Eric Company,

Owned by Messrs. Lewis & Lerossier, of Port Wine. I am informed by Mr. Lewis that it is paying them well, and the gravel increases in richness as they advance toward the center of the hill. Near them are the Sallor, Golden Gate, Kinman & Co., and some French companies, some of which are being worked by hydraulic power. The central business place of this mining district is

Port Wine.

Rather an intoxicating name, I must confess, for so sober a looking town. Among the old familiar faces still remaining, who have shared alike its fortunes and misfortunes, I notice those of Amandus & Abraham Kleckner, of the well known firm of Kleckner & Bro., merchants, Harry Mason, post-master and merchant, Madame Cajan, of Cajan's hotel, Mrs. James Lewis, proprietress of the Golden Eagle hotel, Michael Wolff, of the Port Wine Brewery, and many others, all of whom have suffered more or less by the fire of 1871, which laid the town in ashes. In summer the town wears a cheerful aspect. But the Port Wine of years ago, as compared to the Port Wine of to-day, is, to the

reviewer, but a sorrowing remembrance of the past.

The deep snows of winter are furnishing an abundance of water to gladden the heart of the toiling miner. At

Laporte,

In Plumas county, a distance of three miles from here, Gowell & Conly, Gard & Orr, and the Spanish Flat company, have, by cutting through from 16 to 20 feet of snow, succeeded in getting their ditches open, and now have a copious supply of the much needed aqueous fluid.

An explanation is in place here, concerning an article that appeared in the SCIENTIFIC PRESS, of April 19th, unaccompanied by the *nom de plume* of the author, entitled "Mining in Sierra." The *Mountain Messenger* subsequently copying from the PRESS gives your correspondent, "Maximilian," the credit of writing the article, an honor I most respectfully decline, not that I doubt its truthfulness, but I do not desire to claim another man's thunder, no matter how heavy it rolls.

MAXIMILIAN.

Port Wine, May 13, 1874.

Undeveloped Resources.

EDITORS PRESS:—Mr. Bowman's interesting map of the mineral region of the State, accompanying his remarks in the PRESS of May 2d, gives rise to some other reflections, apposite to considering our undeveloped resources. The map depicts in black what may be called the "slate region," extending from Mariposa to Plumas counties, and again from Shasta to Siskiyou. Of course it would be an anomaly to suppose that good building slates abound in all that vast section of country, and yet up to this time they are not one of our industrial productions; and I believe we may look in vain in the directory of your metropolis for a single slate merchant. I am inclined to think, however, that the day is not far distant, when

Slate Quarrying

Will be a great industrial pursuit here; and I believe the sooner the better, that we may economize the wanton waste of our forests, by natural fire-proof substitute, for a great part of our buildings. It is indeed fearful to contemplate the annual waste of lumber all over the State, especially when so little planting is done to secure supplies for future generations, when necessarily the demand must be yet greater; and still more fearful would it be if some mighty conflagration destroyed the fair lineaments of your beautiful city. And there is not a city or town in the State, but what is liable to be burned out by the same unifying cause in a few hours, where frame buildings predominate. So far as we can do, it has already become the duty of the State to guard against such disaster and the more general use of slate, if procurable at moderate cost, is becoming a vital necessity. To encourage prospecting for slates, the general Government might do well to grant free homestead rights to every established quarry, and free rights of tramway through any Government lands, to connect with any trunk railroad or other road, canal or navigable waters, while this State might exempt from taxation, at least for two years, such quarries, machinery and tramway, and running gear, or give bounties for the discovery and actual working, with not less than 20 men, of slate quarries yielding some reasonable quantity of marketable slates annually. It is obvious that to bring

Slates into General Building Use,

They must be able to compete with shingle or other kinds of roofing in vogue. Perhaps, in the valley towns, the slate roofs should be white limed or cemented to keep out the heat, and they may also be used for the fronts or sides of houses instead of weatherboarding, especially in the localities where they are quarried. It would be quite possible, indeed, to erect a house almost wholly of slate and iron—iron forming the frame-work; of course the interior could be finished in lath and plaster, as at present. Allowing the necessity of its comparatively cheap production to compete with lumber, I think this may be accomplished after some years of successful working, even in our State, where labor and transit are expensive; but in the meanwhile, State bounty and exemption from taxation and homestead rights might be sufficient encouragement for capitalists to start the enterprise and bring it to a success; and eventually I think it could well take care of itself, and be as lucrative as it has proved in north Wales to many a lordly Baron. There is hardly anything more inviting to such capitalists whose wants bring with them a score or so of hardy Welshmen inured to the toil. They would find themselves at home in our mountain fastnesses and prove benefactors to the State.

Is the Idea Quixotical or Practical?

Farming was thought quixotical at one time in our State, and yet now for a long time it has taken the legitimate lead of all other pursuits, because it was a necessity; and a good substitute for lumber is only measurably less a necessity than farming, and superior in its beneficent object, to make our homesteads more secure and protect the interests of rising generations. I have already indicated that I think slate quarrying will eventually prove lucrative in this State, and, therefore, I must hold that slates are obtainable in abundant quantity—within the 250 miles or more of limit depicted on Mr. Bowman's map. It may be that the cropping generally are a kind of

Worthless Brittle Stone, Called Slate;

But no more like the far-famed Welsh Duchaes and Countesses than chalk is like cheese, or one of Shakespeare's heroes was like his ancestor. Still when the genealogy was traced back the progenitor could not be disputed; and, perhaps, by the same process of logical delving, we may diamter as fine black slabs from their peaceful beds in our State, as were ever converted into buffets or side-boards in the Principality to grace some royal or baronial banquet hall. There have been undoubtedly many failures in Welsh prospectings, but Penryhn had its beginning, and no one then augured the princely fortunes that have since been derived from that renowned quarry.

Ross Browne reports in 1868, "that the Amador slate is said to be quite equal to any found in Wales," and it would be interesting to know in this connection what success a company, organized in that county in 1865, have since met with. Browne also says, "although abundant on this coast but little of it thus far has been found good for roofing purposes." But the matter seems to be one deserving especial research, and as the geological features of the county must be much better understood at this date than they were almost ten years ago, the discovery may be much easier, while the incentive is far greater. I trust therefore, Messrs. Editors, you will do your utmost to encourage the enterprise, and if the communication should lead to the inquiry, I shall feel I have done something to aid the cause, be it ever so little.

It is, of course, well known that the usual tramroads from slate quarries may be very steep grades, and the loaded wagone attached to endless ropes or pulleys let themselves down and hoist, returning emptied, by their own momentum, without any team or horse-power, or even a man or boy to go with them, if I recollect right. Yours very respectfully,

A. F. G.

Sacramento, May 14, 1874.

The Missouri Quicksilver Mine.

A correspondent of the *Sonoma Democrat* writes as follows: The Missouri mine is in general in a good condition, and constantly improving. We have struck the ledge in our lower tunnel, and have splatterings of metal through the ledge, and expect before many days to make good a showing in our lower tunnel as in the one above, which enrely needs no spectacles to discern. Heretofore, our progress in tunneling has been greatly impeded by the want of timber, which it has been impossible to haul on account of the roads and the inclemency of the weather.

We have, under most trying circumstances, built a road of over a mile through the thickest of brush and boulder, up the little Sulphur creek to our wood land, and have a force of men cutting timber, and now have an ample supply, and our tunnels are undergoing repairs, of which heretofore they of necessity have been left in a dilapidated condition.

We are running three drifts and one winze, out of two of which we are taking metal. We have on the ground three new retorts, with apertures, and have a force of men clearing foundation for same. Macone will soon be at work, and we expect shortly to have silver running from these as freely as it now runs from our two small ones, the results of which have proven this mine the best in the district, and reflect great credit on the manager, Mr. W. A. Stuart, for his untiring efforts, energy and perseverance, to place the mine in its present healthy condition. The bright prospects of Cinnabar district and its notoriety throughout the State, are largely due to the efforts he has made in this instance. Property of every description is on the rise; the once barren and to all appearances worthless mountains are now dotted with tents and cabins, and signs of industry can be seen from every peak, showing conclusively that the reputation of the district is wide-spread. Localities that have heretofore hardly known the tread of man, are now gridironed with well-defined trails; over roads that had been scarcely traveled once a month, are now constantly rolling heavily laden wagons with lumber, provisions, etc. No less than ten wagons passed our door yesterday, bound for the Lost Ledge, etc., preparatory to the erecting of retorts; the managers of this mine are displaying great energy, and their prospect is such as to warrant their effort.

Mr. W. P. Litten, one of the most stirring men in the district, and Superintendent of the Peerless mine, on which he has several men at work prospecting the mine, paid us a flying visit, his countenance beaming with smiles, informing us that the mines in the vicinity of Pine Flat, such as the Georgia, Flagstaff and many others, were all looking well.

Mr. Charles Hossack, the Superintendent of the well known Geyser mine, called on us to have a friendly chat, and informed us of encouraging developments in that mine, which is already notorious for its richness.

The Rattlesnake is still exciting considerable interest with her rich deposit of free silver. Mr. DeNoon, the Superintendent, has 50 Chinamen engaged in building a road from the mine to Pine Flat, which will greatly facilitate the bringing in of their reduction works and provisions. After its completion, the force will continue the road to the Missouri mine, which will give an easy access to Pine Flat and be of great benefit to all the mines in this locality.

We have a force of men at work in the Kentucky mine, running a tunnel to strike the ledge 100 feet below the upper drift, in which we

have a large deposit of unexplored ore; also, men running a drift on the course of the ledge leading to the main body of ore; and from present prospect of the mine, we deem her second to none in the Cinnabar district.

I have great confidence in the richness of this district, and believe it will prove a source of wealth for those interested for years to come, and where we now see the comparatively insignificant retorts, we will yet see huge furnaces boiling the cinnabar and yielding the contents in the liquid form, far beyond the most sanguine expectations of the present owners, and that this district will yet prove adequate to fill the demand for quicksilver, which is failing from its once enormous source.

Why Many Mining Companies Fail.

The principal reasons why so many of the companies owning mines in Colorado and Utah have thus far proved such unprofitable investments, may be found in the facts: First, that in nearly every case, the prices paid for the properties have been, to say the least, double their value at the time of selling, thus incumbering the mines with an amount of capital, upon which it would be almost impossible to pay dividends. Second, parties purchasing were made to believe that only a nominal amount of working capital was necessary, and even this small amount, instead of being in cash, ready for use, was generally in stock, which of course was just about worthless if required to be sold. Third, large returns were promised and expected in a very short time, six months at the outside; conditions which very few mines in Colorado, with their present amount of development, can fulfill.

The owners, when they found that the dividends they expected were not forthcoming, and that they were required to put in cash in order to continue the operations at the mine, became disgusted and alarmed, refused to raise any more money, and declared the whole thing a swindle.

Any one at all conversant with mining knows that in the majority of cases, to carry it on successfully, requires a large amount of cash, and the great advantage which a company is supposed to possess over an individual, is its ability to furnish this cash, for the extensive working and development of its mining property, before getting returns. The poorest miner in our midst can work his lode advantageously as long as it will pay expenses and a profit, and when it ceases to do this, he can at least do as well as most Colorado companies have thus far done, that is, shut down the mine.

But we believe a new and brighter era is about to dawn upon the mining interests of our Territory. Parties desirous of investing in our mines in the future, should understand that in order to make the enterprise a paying one, great care should be exercised in the purchase of property, and after purchasing, a systematic and extensive method of prospecting must be inaugurated, backed of course by a liberal working capital. Under these conditions, mining, as a business can hardly fail to pay.

There are doubtless many good and promising lodes in the Territory which, if bought for a reasonable figure, and the requisite amount of working capital expended in development, would turn out equal to the best in the land. The lodes of Colorado, when compared with those of Nevada, show but a small amount of development. The mines of the Comstock have been opened and explored to great depths by means of shafts and drifts, showing in many instances a gradual increase in the quantity and quality of the ore. The same results will no doubt be obtained here by deep explorations.

In Nevada, mining operations are carried on principally by companies composed of wealthy San Francisco capitalists, who have made their money in mining, and know that in order to place a mining country on a paying basis, money in liberal amounts must be expended in opening up its veins. Where would the Belcher, Crown Point, Chollar-Potosi and the other famous mines of this region, be to-day if their owners had been afraid of investing money to develop them in times past? Last year the Belcher alone produced nearly seven millions of dollars and paid out over six millions in dividends.

Thus far, Colorado companies, both English and American, have been loth, apparently, to risk money in opening up their property after buying it, for fear, we suppose, that they might not strike pay. Consequently their operations have been limited. If, however, they would determine to give our mines a fair trial, we think that in a few years they would be well pleased with their investment, and prove Colorado to be one of the best mining countries in the world.—*Col. Mining Review.*

VOTING BY TELEGRAPH.—The members of the German Reichstag may hereafter do their voting by telegraph. The wires are to be arranged so that each member can indicate his vote from his seat. In front of the seat are two buttons—one indicating yes, the other no. A pressure on the button telegraphs the vote to a circular table in front of the President's desk, upon which the names of all the members are written down, so that immediately after pressing the button each member can see a piece of paper appear under his name, with his yes or no on it.

THOMAS HAYCOCK cleaned over \$1,700 from a nine days' run, with one pipe, in his claim, on Gopher hill, Plumas county.

MECHANICAL PROGRESS.

Paper Box Making Machines.

Among the most novel pieces of mechanical construction recently brought to public notice must be reckoned the machines invented by Mr. H. R. Heyl, of Philadelphia, for making paper boxes, and for the first time publicly exhibited at a recent monthly meeting of the Franklin Institute. The machines in question are the result of years of patient labor and perseverance, and the inventor is deserving of all praise for having so completely and efficiently triumphed over many difficulties. He has in the past seven years built three machines for making paper boxes, the last and most perfect of which has just been completed, and is the one referred to as having been placed on exhibition. As to the usefulness of machinery to produce paper boxes with greater rapidity and economy than by hand labor, little need be said, since a simple enumeration of the various branches of industry in which they are indispensable, affords superabundant evidence of their great utility—viz: perfumery, jewelry, hardware, trimmings, matches, and a host of other branches.

The first machine constructed by Mr. Heyl, for this purpose was adapted to the automatic shaping, and fastening by paste, of the usual rectangular box, varying the style according to the materials used. The capacity of this machine is 2,000 boxes in ten hours—a capacity which is equivalent to the duty of ten of the most expert workmen employed during the same time.

The second machine has for its object the production of boxes for various purposes without the use of paste, the fastening of the edges of the paper being accomplished by delicate pieces of iron wire, measured and shaped by the machine into miniature staples, which are pressed through the material and clinched at the proper instant. The primary design of this second machine was the production, at rapid rate and cheaply, of match-boxes and other cheap receptacles for tacks, screws, and various small articles; and the substitution of wire fastenings for the paste, besides greatly increasing the duty of the machine, is quite a desideratum on other accounts.

It is said by those familiar with the details of such trades, that the delay in drying the boxes when pasted, which often occurs in damp weather, frequently interferes with the shipment of large invoices of goods; in some cases of protracted damp weather, the paper boxes really mildew before they dry, and might ruin or seriously damage the goods packed in them. It was to obviate these obvious, but to others insuperable difficulties, that the inventor has produced the wire-fastening machine we have alluded to. The work accomplished by it is not only neater and stronger than that done by hand, but the rate of production of one machine is that of 75 workmen. The method of fastening the edges of the paper with wire staples is as follows: The wire is wound on a spool, from which the proper lengths are drawn by the machine for each box; the staples are formed and brought each to its place, at right angles with the box material, and are made at the proper moment to puncture it, upon which they are, an instant later, firmly clinched on the opposite surface. The power of impact exerted at right angles with an imposing surface, is here beautifully illustrated; and be it remembered that the entire production of the box is to be ascribed to the machine, every portion of the work being automatic. The machine seizes the elipe of wrapper singly, and shapes them, and throws out a match-box complete—even to being touched with glue and sprinkled with sand—at the rate of 30,000 pieces per day of 10 hours.

The third machine is simply a modified form of the one just described, in which its metallic fastenings and general movements are applied to the production of rectangular boxes of superior quality and of various sizes, applicable to safe packaging and display of articles of luxury, etc. The completion of these machines is a realization of the labor of seven years, and they are now busily plying their functions with perfect success.

The invention of the paper-box machine, by which the supply of articles indispensable to many of the small ware producers is vastly increased and cheapened, cannot fail speedily to result in the complete substitution of machine labor for the hand labor formerly universally employed for the purpose; while, from its perfect adaptation to the uses for which it is designed, and the mechanical ingenuity displayed in its conception and design, it is worthy of all praise.

PERPETUAL MOTION.—Some one asks the *Scientific American*: What, in your extended experience, is the nearest approach to perpetual motion ever accomplished by an inventor? Is there anything on record in the Patent Office, that is, has any person yet manufactured or arranged a machine, or invented any mechanical object, that would operate from a propelling power inherent in itself, without springs, steam or other motor known to mechanics, for a basis? If so, did it prove to be of any force or power, or did it promise anything useful? Please inform a reader of your paper and a well wisher to the American inventive faculty. The editor replies: The nearest approach to perpetual motion is the example of the man who

placed himself within a tub and, by a steady upward pull on the handles, expected to rise in the air. But he found that the tub was pushed down by his feet just as much as it was pulled up by his hands, or, in other words, that action and reaction are equal, and therefore failed to ascend. He has had many successors, who have aimed to overcome the difficulty by interposing levers or cogged wheels, arranged either to pull against each other, or placed between the hands of the operator and the handles of the tub. The principle is the same in all such cases, consequently the thing won't work. The simple tub is nearest approach to success because it is attended with less friction. The interposition of wheels or levers wastes a portion of the force. The jet of a fountain for example, will most nearly reach the level of its supply if allowed to rise in the air unobstructed. If the jet is compelled to turn a wheel or operate a lever, its height is of course diminished.

*The Marvels of Mechanics.

During the last siege of Paris, the inhabitants from time to time effected communication with their friends beyond the German investing lines by means of carrier pigeons. In fact, a regular pigeon post was organized, having one of its receiving stations in London. Here the written messages for Paris were received, and, by photography, reduced to microscopic size, each letter being reduced so small as to be invisible to the eye except as a speck. Some 2,000 of these specks were then printed on bits of tissue paper about an inch and a half square, which was rolled and carefully attached to one of the tail feathers of the pigeon. On the arrival of the bird in Paris, the postal officials placed the paper under the microscope, which enlarged the several specks into readable communications, which were duly copied in writing and delivered to the persons to whom they were addressed. The total postage received for the transmission of one of those tiny bits of paper frequently amounted to \$2,000.

Small as this photo writing seems, it has been surpassed by mechanism. In a recent number of the *Lens*, Dr. J. J. Woodward, U.S.A., gives an enlarged photograph of microscopic writing done by machinery on glass, by means of a diamond, executed by Mr. William Webb, of London. The writing consists of the Lord's Prayer, which is written upon glass, within a space equal to one two hundred and ninety fourth part of an inch in length by one four hundred and fortieth part of an inch in width, or a space perhaps equal to the dot in this letter i. The photograph given by Dr. Woodward shows this dot of writing enlarged so as to occupy a space of about two inches long by one and a half inches broad. All the words are brought legibly out on the photograph, the total number of letters being 227; and such is the exceeding fineness of the original writing that 29,431,455 letters written in the same way would only cover one square inch of glass surface. The combined Bible and New Testament contain in all 3,566,480 letters; hence it would be possible for Mr. Webb to write the entire contents of more than eight bibles within the space of one square inch. Two specimen plates containing the microscopic writing above alluded to have been supplied by Mr. Webb for the United States Museum at Washington. Their cost was \$50 each.

The Webb machine, however, does not equal in the fineness of its writing or perfection, the prior instrument of Mr. N. Peters, a wealthy banker of London, who, as long ago as 1855, was able to write nearly three times finer than Webb. So perfect was the Peters machine that it was competent to engrave the entire contents of the Bible and New Testament 22 times over within the space of a single square inch.—*Scientific American*.

THE STEAM SIREN OR FOG HORN.—Fog signals, many of which are required at different points on the Atlantic and Pacific coasts, are of several kinds. Some are steam whistles, the sound of which is made deeper or louder by being sent through a trumpet; but the most effective is probably the siren. This ingenious machine consists of a long trumpet and a steam boiler. The sound is produced by the rapid revolution past each other of two flat disks pierced with a great number of holes; a jet of steam under high pressure is projected against the disks, which revolve past each other more than a thousand times a minute; as the rows of small holes in the two disks come opposite each other, the steam vehemently rushes through, and makes the singular and piercing noise which a siren gives out. One of these machines costs about \$3,500 complete, with its trumpet, boiler, etc. Daboll's trumpet is worked by an Ericsson engine and requires no water for steam. Congress rightly has great confidence in the scientific skill and integrity of the Lighthouse Board. At the last session, besides the usual appropriation for the maintenance of the lighthouse system, it gave the money needed to build 40 new lighthouses and 10 steam fog signals. If we ever have a merchant marine of our own again, our seamen will find the stormy and rock-bound coasts of their country well lighted for them.—*Harper's Magazine*.

IMPROVED BLADE FOR AGRICULTURAL IMPLEMENTS.—The object of a new invention is to render hoes and other agricultural implements more durable, and it consists in making the outer corners of the blade thick and rigid, and making the blade thin, or bring it to an edge between the corners.

SCIENTIFIC PROGRESS.

The Astronomical Event of the Century.

Suppose a line drawn from the center of the earth to its surface at the equator; suppose another line starting from the extremity of this latter and continued till it terminates in the center of the sun, what is the mathematical expression which accurately describes the angle thus formed? Is it 8.92 sec., or is it .03 sec. more or less? That may appear a very abstruse and purely speculative question to some readers, yet all the science of navigation, and indeed, all the results of applied astronomy, have sprung from the approximate solution of this very problem. The slight amount of uncertainty, which still attaches to the answer, affects the accuracy of the lunar and planetary tables of every nautical almanac, and to a certain degree unsettles all questions of distance in regard to heavenly bodies, and of longitude in regard to places on the earth. The solar parallax is the scientific name of the angle whose character we have roughly indicated, and the slight uncertainty as to its true value renders it impossible to say within 300,000 miles just how far we are from the sun. When the total distance is equal to about 91,480,000 miles, to approach the certainty would seem to be near enough for all practical purposes. But forty times the earth's diameter is too extensive a departure from mathematical truth, even in regard to distances so enormous. Astronomers have, accordingly, set their minds on reducing this amount of uncertainty to a minimum of, say .01 sec., i. e., the absolute fixing of our distance from the sun, with a margin of 50,000 miles still open to doubt. Careful observations of the approaching transit of Venus are the means relied upon to accomplish this scientific feat.

Between the hours of 9 o'clock of our time on the evening of December 8 and 2 o'clock on the morning of December 9, of the present year, trained observers from nearly every civilized nation in the world will, from carefully selected points, be carefully scanning the passage of the planet Venus across the luminous disc of the sun. There has been no such phenomenon visible from the earth since 1769, and there will not be another, affording equal facilities for accurate observations, till the year 2004. Another transit will indeed take place eight years hence, but the sun's altitude above the horizon on that occasion will be too slight to present favorable conditions for observation. As the period of this year's transit occurs during the Northern winter, the base of observation must be established for the most part south of the equator. Points of observation must be marked off in pairs, because the entire problem depends on ascertaining with perfect exactitude the time at which various stages of the transit are observed at widely separated stations on the earth's surface. In fact, this method of fixing the angle of the solar parallax is simply a working out, on a colossal scale, of the familiar geometrical process of constructing two sides of a triangle in order to determine the third. The largest attainable base of the presumed triangle would of course be the earth's diameter—180 degrees. But suppose two observers situated this distance apart, and to the one the sun at the time of the transit would just be rising, while to the other it would be on the point of setting. For purposes of observation, however, the sun must not be lower, in either case, than 10° above the horizon. The easterly observer must be so placed that the egress of Venus from the sun's disc shall conclude not too near sunset, and the corresponding observer at the west must be able to watch the ingress of the planet a little after sunrise. Of course this cannot be accomplished without a contraction of base considerably within the limit of 180°.

The length of this supposed base of the triangle, whose apex is the sun, requires in the first place to be determined with mathematical accuracy. In other words, it is necessary to carefully establish, by lunar observation, what is called the absolute longitude of each station, and so to secure a perfect correspondence of astronomical time—say within a second—as a basis of observation between corresponding stations. This of itself requires some months of preparation, assisted by instruments of the utmost delicacy, and for the preliminary purpose several corps of observers are on the eve of departure from England to certain desolate regions of the Antarctic ocean selected as the one extremity of the terrestrial base for the required triangle. Of course the conditions of the problem are rather more complicated than can be briefly and popularly indicated. The relative velocities of the earth and Venus must be taken into account; their relative distance from the sun enters into the calculation, so do questions of atmospheric refraction, and other delicate points which can hardly be briefly indicated without the use of scientific nomenclature. But this much can be readily remembered: Venus, moving faster than the earth, crosses the sun's face from east to west. The most easterly of two observers, therefore, is the first to see the black orb of Venus completely within the outer rim of the sun's disc; in scientific phrase, he is situated at the point of "greatest acceleration." The companion observer at the westerly end of the line sees the same phenomenon some twenty minutes later, and is said to be at the point of "greatest retardation." Let the exact moment, say of two such critical points of the transit as the ingress and egress of the planet on the sun's disc be noted at each

station, and the absolute time interval between the observations of two stations be compared with the distance and qualified by the other conditions to which we have referred, and the much-sought-for angle will be nearer determination than it is to-day.

England, France, Germany, Russia and the United States are busily equipping astronomical expeditions to assist in solving what has been justly called "one of the sublimest problems of the universe." Telescopes, equatorially mounted, and driven by clock-work, so as to remain steadily fixed on the sun after being once pointed to it; photo-heliographs of the most delicate construction to present microscopically accurate transcripts of every phase of the transit; altazimuth and transit instruments, which are marvels both of massiveness and adjustment—such are among the articles required for the proper outfit of each expedition.—*N. Y. Times*.

GAIN IN WEIGHT BY COMBUSTION.—At a recent lecture before the Franklin Institute, Mr. Theodore D. Raud showed a simple and satisfactory experiment to demonstrate the increase in weight of burning bodies, caused by their absorption of oxygen. About an ounce of fine turnings of zinc, produced in the spinning of that metal, were loosely wrapped with iron wire and suspended from the arm of a balance. The pan on the other arm having been weighed to counterbalance the zinc, the latter was ignited with a match. At first the combustion was rapid, and much oxide escaped in fumes, causing the zinc end of the balance to rise. Soon, however, the combustion became a mere glow, the absorption of oxygen taking place without fumes. In a minute the beam began to descend and very soon decidedly outweighed the counterbalance. The only precaution necessary is to have the zinc moderately but not too compact. If too loose, it burns too rapidly; if too compact, it will not burn.

CONDENSATION IN STEAM CYLINDERS.—By the use of lead facings to pistons and cylinder lids, a considerable economy in the use of steam may be effected. An iron lid and piston will, other things being equal, condense more than three times as much steam as a lead-faced piston and lid. The thickness of metal heated and cooled at each stroke is not considerable, and not far into the metal a zone of constant temperature, lower than that of the steam, will be found. The distance from this zone to the inside of the cylinder will depend on the conducting power of the metal, and will be about 9 for lead to 12 for iron. It may be shown that, in any case, the thickness of the lead facing may be kept within very moderate limits. Other materials may be used for the same purpose, as, for instance, tin, the specific heat of which is 0.562, its specific weight being less than that of iron. Its conducting power is, however, in excess of that of iron, being as 15 is to 12. Slate or hard pottery ware might also be employed, but on the whole the balance of advantage appears to lie with lead.—*The Engineer*.

THE NECOMETER.—The Paris correspondent of the London *Standard* writes: There are people so mentally constituted that the idea that they may be possibly be buried alive preys upon their minds and makes them uncomfortable. Those among your readers who may be subject to this infirmity will be glad to hear that Dr. Bouchut, one of our leading practitioners here, has just got a prize from the Academy of Medicine for the discovery of a method to distinguish real from apparent death. In his excellent weekly bulletin in the *France*, Dr. Decaisins tells us what this discovery is. When the temperature falls to 20° above zero in the centigrade scale, (68° Fahrenheit,) death is certain. Dr. Bouchut has devised a thermometer, which he calls a necrometer, so graduated that when placed under the armpit of a person supposed to be dead it marks zero; then life has indeed departed beyond all possibility of a mistake. I mention this in the hope that it may catch the eye of some of our professional readers, that they may have an opportunity of expressing an opinion on the merits of the discovery of their French confrère.

TREATING ZINC ALLOYS.—A new invention relates to an improved method of recovering zinc which has been used for deilvering or separating other metals, chiefly lead. To carry this out the inventor arranges in a furnace one or more dry crucibles or melting pots, into which the alloy containing the zinc is placed. A tube passes from each of the crucibles, and connects it with a closed receiver, the mouth of the crucible and pipe connections with the crucible and receiver, as well as the crucible mouth, being luted or hermetically closed; the furnace is brought into action, and upon a white heat being obtained, the zinc volatilises and passes through the pipe into the receiver, where it is deposited in a metallic state.

FIRE ALARM.—An English inventor claims improved automatic means for indicating the presence of fire in buildings. These consist in hanging a strand of gun-cotton or other quick-burning substance about the building in such manner that on a fire breaking out it will be quickly ignited and explode one or more cartridges of gun-cotton or other explosive with a sufficiently loud report to give warning of the danger, or a bell or alarm may be likewise operated with the same object.

The blood of the insane is said to contain an excess of white corpuscles.

Weekly Variations in Stocks.

[Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.]
For 8 days ending Wednesday, May 20, 1874.

NAME OF COMPANY.	FEET IN MINE.	SHARES IN MINE.	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.						
Alamo	3600	6000	11W	94F	1/2	
Alpha Con.	3600	6000	11W	94F	1/2	
Albion	3600	6000	11W	94F	1/2	
American Flat	3600	6000	11W	94F	1/2	
Bacon M. & M.	65	2400	25 1/2	27		
Baltimore Con.	1040	10400	82 1/2	78 1/2		
Belcher	2240	22400	24 1/2	23 1/2		
Best & Belcher	2240	22400	24 1/2	23 1/2		
Bowers	20	5000				
Buckeye	2500	25000	18 1/2	16 1/2		
Butte	2500	25000	18 1/2	16 1/2		
Caledonia	5000	20000	18 1/2	16 1/2		
California	2500	25000	18 1/2	16 1/2		
Chollar	1000	10000	18 1/2	16 1/2		
Chollar & Potosi	1000	10000	18 1/2	16 1/2		
Confidence	340	20000	70W	68 1/2		
Con. Gold Hill Quartz	1160	100000	15 1/2	14 1/2		
Con. Virginia	1200	24000	15 1/2	14 1/2		
Cook & Curry	690	10000	86 1/2	82 1/2		
Crown Point	2000	20000	15 1/2	14 1/2		
Dancy	2000	20000	15 1/2	14 1/2		
Dardanelles	1200	24000	15 1/2	14 1/2		
Dayton	1000	10000	15 1/2	14 1/2		
Edgemoor	1000	10000	15 1/2	14 1/2		
Empire M. & M.	40	5000	42 1/2	48		
Eschscholtz	40	5000	42 1/2	48		
Fairmount	3000	12000	15 1/2	14 1/2		
Flowers	3000	12000	15 1/2	14 1/2		
Franklin	3000	12000	15 1/2	14 1/2		
Globe	1200	48000	22 1/2	20 1/2		
Gould & Curry	400	16000	41 1/2	36 1/2		
Hale & Norcross	184	100000	41 1/2	36 1/2		
Imperial	3600	36000	15 1/2	14 1/2		
Indians	2000	20000	15 1/2	14 1/2		
Ironstone	2000	20000	15 1/2	14 1/2		
Jacob Little	900	36000	22 1/2	21 1/2		
Julia	3000	30000	15 1/2	14 1/2		
Justice	3000	30000	15 1/2	14 1/2		
Kentuck	1200	24000	15 1/2	14 1/2		
Knickerbocker	1200	24000	15 1/2	14 1/2		
Kossuth	1200	24000	15 1/2	14 1/2		
Lady Bryan	1200	24000	15 1/2	14 1/2		
McMeans	3600	36000	15 1/2	14 1/2		
Mint	1000	10000	15 1/2	14 1/2		
Nevada	3000	30000	15 1/2	14 1/2		
New York Con.	3600	36000	15 1/2	14 1/2		
Occidental	3000	30000	15 1/2	14 1/2		
Ophir	1400	18000	15 1/2	14 1/2		
Overman	1200	24000	15 1/2	14 1/2		
Piedmont	1200	24000	15 1/2	14 1/2		
Potosi	2000	20000	15 1/2	14 1/2		
Rock Island	2000	20000	15 1/2	14 1/2		
Sage	1600	16000	15 1/2	14 1/2		
Seg. Belcher	1600	16000	15 1/2	14 1/2		
Seg. Caledonia	1600	16000	15 1/2	14 1/2		
Seg. Rock Island	1600	16000	15 1/2	14 1/2		
Senator	2400	24000	15 1/2	14 1/2		
Sierra Nevada	3000	30000	15 1/2	14 1/2		
Silver Hill	5400	54000	15 1/2	14 1/2		
South Comstock	2400	24000	15 1/2	14 1/2		
South Overman	2400	24000	15 1/2	14 1/2		
Superior M. & M.	6000	60000	15 1/2	14 1/2		
Sutro	2000	20000	15 1/2	14 1/2		
Trench	2000	20000	15 1/2	14 1/2		
Union Con.	800	32000	11 1/2	10 1/2		
Utah	2000	20000	15 1/2	14 1/2		
Woodville	1400	28000	15 1/2	14 1/2		
Yellow Jacket	1200	24000	15 1/2	14 1/2		
NEVADA.						
Adams Hill	5000	50000	15 1/2	14 1/2		
Alps	800	30000	15 1/2	14 1/2		
Antelope	3000	30000	15 1/2	14 1/2		
American Flag M. & M.	3000	30000	15 1/2	14 1/2		
Arkansas	300	30000	15 1/2	14 1/2		
Belmont	3000	30000	15 1/2	14 1/2		
Bowers	1000	10000	15 1/2	14 1/2		
Chapman M. & M.	3000	30000	15 1/2	14 1/2		
Charter Oak	1000	30000	15 1/2	14 1/2		
Chief of the Hill	3000	30000	15 1/2	14 1/2		
Chief East Extension	3000	30000	15 1/2	14 1/2		
Columbus M. & M.	10000	50000	15 1/2	14 1/2		
Cunder	2500	25000	15 1/2	14 1/2		
Dorado	2000	20000	15 1/2	14 1/2		
Eureka Con.	2000	20000	15 1/2	14 1/2		
Excelsior	1200	12000	15 1/2	14 1/2		
Harper	3000	30000	15 1/2	14 1/2		
Hayes	3000	30000	15 1/2	14 1/2		
Home	1000	10000	15 1/2	14 1/2		
Home Ticket	3000	30000	15 1/2	14 1/2		
Huhn & Hunt	3000	30000	15 1/2	14 1/2		
Indian	1000	10000	15 1/2	14 1/2		
Iranian	3000	30000	15 1/2	14 1/2		
Jackson	5000	50000	15 1/2	14 1/2		
Josephine	5000	50000	15 1/2	14 1/2		
Juniper Con.	5000	50000	15 1/2	14 1/2		
K. K. Con.	5000	50000	15 1/2	14 1/2		
Kentucky	1000	10000	15 1/2	14 1/2		
Lincoln	1000	10000	15 1/2	14 1/2		
Lillian Hall	1000	10000	15 1/2	14 1/2		
Louise	2400	24000	15 1/2	14 1/2		
McMahon	1000	10000	15 1/2	14 1/2		
Meadow Valley	2400	24000	15 1/2	14 1/2		
Mockingbird	1200	30000	15 1/2	14 1/2		
Monitor-Belmont	2500	25000	15 1/2	14 1/2		
Newark	800	32000	15 1/2	14 1/2		
Pacific Tunnel	2400	24000	15 1/2	14 1/2		
Pace & Panca	3000	30000	15 1/2	14 1/2		
Peavine	3000	30000	15 1/2	14 1/2		
Phoenix	1000	10000	15 1/2	14 1/2		
Pioche	1000	10000	15 1/2	14 1/2		
Pioche West	1000	10000	15 1/2	14 1/2		
Pioche-Phoenix	1000	10000	15 1/2	14 1/2		
Portland	1000	10000	15 1/2	14 1/2		
Raymond & Ely	5000	50000	15 1/2	14 1/2		
Rebecca	3000	30000	15 1/2	14 1/2		
Silver Peak	3000	30000	15 1/2	14 1/2		
Silver West Con.	3000	30000	15 1/2	14 1/2		
Sierra Nevada	1000	10000	15 1/2	14 1/2		
Silver	1000	10000	15 1/2	14 1/2		
Star	1000	10000	15 1/2	14 1/2		
Starlight	6000	25000	15 1/2	14 1/2		
Stirling	3000	30000	15 1/2	14 1/2		
St. Patrick	3000	30000	15 1/2	14 1/2		
Spring Mt. Tunnel	3000	30000	15 1/2	14 1/2		
Ward Beecher	200	30000	15 1/2	14 1/2		
Washington & Creole	200	30000	15 1/2	14 1/2		
Watson	200	30000	15 1/2	14 1/2		
Yellowstone	200	30000	15 1/2	14 1/2		
CALIFORNIA.						
Alpine	1200	12000	15 1/2	14 1/2		
Bellevue	8000	20000	15 1/2	14 1/2		
Calaveras	2000	20000	15 1/2	14 1/2		
Cedarberg	2000	20000	15 1/2	14 1/2		
Charon Hill	2000	20000	15 1/2	14 1/2		
Chollar	2000	20000	15 1/2	14 1/2		
Cottonwood Creek	2000	20000	15 1/2	14 1/2		
Dunderberg M. & M.	2000	20000	15 1/2	14 1/2		
El Dorado	1600	16000	15 1/2	14 1/2		
Gillis	1600	16000	15 1/2	14 1/2		
Independent	1600	16000	15 1/2	14 1/2		
Keystone	1600	16000	15 1/2	14 1/2		
At. Jefferson	1600	16000	15 1/2	14 1/2		
Oakville	1600	16000	15 1/2	14 1/2		
St. Lawrence M. & M.	1600	16000	15 1/2	14 1/2		
St. Patrick	1600	16000	15 1/2	14 1/2		
Teumess	1600	16000	15 1/2	14 1/2		
Yule	400	10000	15 1/2	14 1/2		
IDAHO.						
Empire	2500	25000	12W	7 1/2		
Golden Chariot	750	3000	12W	7 1/2		
Ida Elmore	1300	10000	12W	7 1/2		
Manoag	720	10000	12W	7 1/2		
North Star	200	10000	12W	7 1/2		
South Chariot	200	10000	12W	7 1/2		
White Eagle	1000	10000	12W	7 1/2		
WYOMING.						
General Lee	1000	20000	12W	7 1/2		
Madmoth	1800	30000	12W	7 1/2		
Noonday	1000	20000	12W	7 1/2		
Orig. Hidden Treas.	800	21333	12W	7 1/2		
Silver Wave	2000	20000	12W	7 1/2		
Ward Beecher	2000	20000	12W	7 1/2		
UTAH.						
Deseret Con.	2400	30000	12W	7 1/2		
Wellington	2000	20000	12W	7 1/2		
OREGON.						
Virtue	2000	20000	12W	7 1/2		

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq't.	Sal.	Secretary.	Place of Business.
Alps S M Co	Ely District	7	25	April 23	May 29	June 25	C F Balcum	426 Montgomery st
Buckeye G & S M Co	Washoe	10	50	May 7	June 9	June 25	C A Sankey	331 Montgomery st
Dancy G & S M Co	Washoe	8	50	Mar 31	May 5	May 26	C R Spinney	320 California st
Empire M Co	Idaho	1	50	April 18	May 22	June 13	W Willis	419 California st
Ingomar S M Co	Ely District	7	25	May 4	June 10	June 2	C S Neal	419 California st
Justice M Co	Washoe	9	150	April 18	May 20	June 10	F Swift	419 California st
Lady Bryan M Co	Nev	2	50	Mar 31	May 4	May 27	F Swift	419 California st
Manoag G & S M Co	Idaho	12	150	May 8	June 12	June 8	W F Beart	411 1/2 California st
Mint G & S M Co	Washoe	10	50	May 31	June 3	June 25	D A Jennings	401 California st
Newark S M Co	Ely District	7	200	April 20	May 29	June 19	D T Bagley	401 California st
Pace & Panaca S M Co	Ely District	5	100	April 13	May 20	June 10	O A Sankey	438 California st
Phoenix S M Co	Kureka, Nev	1	25	April 21	May 28	June 19	J Maswire	419 California st
Picton M Co	Washoe	5	25	April 20	May 23	June 10	S Phillips	408 California st
Portland S M Co	Ely District	4	25	April 13	May 20	June 15	B J Gray	438 California st
Rock Island G & S M Co	Washoe	3	100	May 13	June 15	June 19	J W Clark	418 California st
Sierra Nevada S M Co	Washoe	38	250	May 14	June 19	June 19	R Wegerer	414 California st
South Overman S M Co	Washoe	3	25	May 13	May 5	June 19	Merchants Ex	414 California st
St. Vincente M & M Co	Cal	6	50	April 27	May 23	June 23	R B Noyes	411 1/2 California st
Succor M & M Co	Washoe	8	100	April 10	May 15	June 6	W H Watson	322 Montgomery st
Tecumseh G & S C M Co	Washoe	8	25	April 25	June 6	June 25	F J Hermann	414 Kearny st
Union M Co	Cal	15	50	May 26	June 10	June 10	Appl Mfg Co	419 California st
W. Eagle M Co	Idaho	5	50	April 17	May 22	June 12	L Kaplan	Merchants Ex
Washington & Creole M Co	Ely District	11	100	May 8	June 8	June 1	F D Cleary	Merchants Ex

COLUSA COUNTY.

QUICKSILVER.—Sun, May 16: The reports from the quicksilver mines continue good. The Abbott is taking out a large quantity of very rich ore—so is the Buckeye. Mr. Gsither brought in some rich specimens of cinnabar this week discovered just west of his place, or some twelve miles north of Sulphur Springs. More prospects have been found further north on the Lovelace discovery. The mountains are full of prospectors.

LOS ANGELES COUNTY.

NEW MINING DISCOVERIES.—Herald, May 16: Mr. Bell, the discoverer of the new leads in the range of hills about seven miles northeast of our city, brings reports of additional discoveries which give indications more promising than the first. One specimen assays \$63.70 in silver and \$7 in gold to the ton. If the presence of gold and silver bearing ore, even in moderate richness, is demonstrated so near this city, with the attendant small expenses of working, the mines cannot but prove valuable. We await further developments with much interest.

MARIPOSA COUNTY.

WASHINGTON MINE.—Gazette, May 16: The prospects at the Washington mine are at present more favorable than ever before. The shaft has been sunk to the depth of 650 ft. At 600 ft. the vein is from 25 to 30 ft. in thickness and the rich paying strata not less than eight ft. thick. It is loaded with sulphurets of the richest quality, and the lowest estimate is that it will pay over \$25 a ton. The shaft is now at a greater depth than any mine in the county, and demonstrates that there has been, as yet, but little real quartz mining done in Mariposa.

MENDOCINO COUNTY.

QUICKSILVER.—Dispatch, May 16: The mining fever which has been raging so fearfully in Sonoma county is spreading into Mendocino. Several parties are out prospecting in different parts of the county. Mr. Loftus and George Cleveland have struck what they suppose to be a cinnabar mine a few miles northwest of Cayote valley. The claim of Cox, Hagan & Co., about four miles east of the Mountain House, which we have mentioned before, is likely to prove very valuable. Cox left town on Monday last with a lot of tools, windlass, ropes, etc., for further prosecuting of the work.

NEVADA COUNTY.

IDAHO MINE.—Union, May 16: We paid a visit to this justly famous mine yesterday, and found everything around the new shaft and the mill progressing as usual. But in addition to this they are now making ready to put a large pump in the old shaft. With this in view they are now engaged in repairing the landing and will, as soon as the machinery is placed in position, substantially retimber it, and then this will drain the mine perfectly. The machinery is being made ready, and next week the timbering will commence. The water is now being hoisted with the steam pumps that are located underground. The Burleigh drills have not yet arrived, but will be here shortly. It is estimated that when they are at work it will take twelve cords of wood, daily, to run the hoisting works and the condensers.

OMAHA MINES.—This enterprise has been idle for some time, and many thought that its abandonment had been determined upon. We are glad to know that Messrs. Sisson and Dndsworth, two of the stockholders, with full powers in the premises, are now in Grass Valley and that they have determined to resume work on the mine.

PLUMAS COUNTY.

GOOD RESULTS.—National, May 16: We are informed that Mr. Thos. Haycock cleaned up over \$1,700 from a nine days' run, with one pipe, in his claims on Gopher Hill. The big banks of splendid looking gravel indicate that he has many a long week's work ahead of him before he can call Gopher Hill worked out.

BANGER HILL.—The Plumas Ditch Co., Mr. Jo. Messerer, Supt., are getting the water running in their numerous claims, and from present indications will make a rich harvest this season. They have leased Mr. E. B. Jacks' claim, on Badger Hill, and have a couple of giants at work. We are informed that after eight days' run it was necessary to clean up a small portion of the main flume, below the branch flumes, and the clean-up amounted to the nice little sum of \$1,665. As it is reasonable to suppose that most of the heavy gold lodged in the ground-slices and branch flumes, the company have brilliant prospects before them. The water is certain to last from three to five months this year.

LONG VALLEY MINE.—Mr. Williams informs us that work commencing in earnest, and considerable prospecting will be done in the neighborhood of Little Long Valley, this summer. Sanderson, in McDermott ravine, has commenced piping, and has his claim well fitted up with iron pipe, a good flume, etc. Williams and partners are also fitting up, and will soon be in running order. Both claims prospect richly, and will give good results. The gravel in this ravine came from a break in the channel on which the Alturas claims are located, and its rich prospects speak well for the chances of the last named mine. Mr. Gould, the Supt. of the Alturas, informs us that work on the ditches will be commenced in a short time, and that the claim will be put in thorough running order this year.

HUONARIAN HILL.—On Monday, in company with Messrs. Goodwin and Kellogg, we paid a

flying visit to this splendid mine. The two giants on the "Quigley claim" were tearing down the gravel bank, and since the water season commenced, three times as much dirt has been moved on that side of the Hill as in all of last season's run. Supt. Goodwin has about twenty men at work, quite a number of them clearing out the ditches. As soon as the water is fairly running they will have four pipes at work steadily, night and day, and with the rich ground which they will work, an immense yield of gold is a certainty.

SAN DIEGO COUNTY.

JULIAN NOTES.—The mines have been inactive for a short time past, on account of too much rain, but are making ready for vigorous operations. The Golden Christ boiler has been en route since January, and twice mud-bound; arrived at its destination on the 9th inst., and it is to be put in place immediately, when the 10-stamp mill will be set to work. The old boiler is to be used for hoisting.

The 60-ft. level of the mine shows a ledge nearly 4 ft. wide, with magnificent rock prospects.

SAN LUIS OBISPO.

QUICKSILVER.—Tribune, May 16: There are ten flasks of quicksilver at the landing awaiting shipment. It came from the Mahoney mine, located sixteen miles north of Caycos. This is the first shipment from this mine. There are thirty other flasks belonging to this mine to be shipped next week. The mine is owned by Mr. Mahoney and other parties of San José. Good reports concerning its developments are heard at the landing.

SIERRA COUNTY.

WORK COMMENCED.—Mountain Messenger, May 16: Mr. Pickett, Supt. of the Rocky Point quartz ledge, has arrived from his home, in Sonoma county, and put a gang of men at work to finish the tunnel to tap his ledge. Work will be pushed, night and day, until the tunnel is completed. Before he left last fall, he erected a cabin and blacksmith shop, and put in a dam in the East Fork, a few hundred yards above the mine. He thinks 60 or 70 feet tunnel will tap the vein.

NEARLY READY.—Mr. Manson thinks he will have his quartz mill in operation by the first of the coming week. It will be put up at the foundry, and tested; and, if found satisfactory, will be taken to Code's quartz lodge, northwest of town, and put to work.

LA PORTE.—The mining ditches are about open for active operations, and the hydraulic works will soon be in full blast.

TRINITY COUNTY.

NICE GOLD.—Journal, May 16: We saw some specimens which came from the claim of Mead & Alden which were about as smoothly polished as the ore generally gets to be. The claim is on Mosquito Gulch, a tributary of Strophe creek. The largest of the lot weighed \$81, but the general size of the pieces was from \$5 to \$25. The gold is very heavy—one not used to it would be apt to estimate it far below its true value. Messrs. Mead & Allen have picked up about \$1,000 in this kind of gold this season without cleaning their ditches.

ENOUGH IN MINING.—Our "senior" is showing his faith in what the Journal has ever maintained, that is, the richness of the Trinity mines; by making preparations to open an extensive claim on Trinity river, just below the cañon.

TUOLUMNE COUNTY.

THE RIVERSIDE MINE.—Independent, May 16: The Riverside promises to turn out one of the best in the county. They have developed a splendid vein of $\frac{1}{2}$ ft., and are now running on a pay chute 60 ft in width along the vein, with no end as yet. Five or six carpenters are rushing up the mill, and the Superintendent evidently understands his business, which means that the property will not lack skill and energy to develop its merits.

We saw a beautiful lot of coarse, washed gold at the Express office, in Columbia, a few days since, which came out of a gulch near American Camp, a few miles northeast of the former place. One piece weighed eight ounces, without a speck of quartz or dirt to be seen in it. If the boys would only prospect the hill for gravel, they might strike some rich hydraulic diggings in that section.

Nevada.**WASHOE DISTRICT.**

SIERRA NEVADA.—Gold Hill News, May 14: Sinking the new shaft has been somewhat obstructed the past two days by a strong flow of water at the bottom. Sixteen car loads of the machinery for the new works have arrived, and the remainder is on the way from San Francisco. The total weight of the new machinery amounts to something over 220 tons, the principal spur-wheel alone weighing about 25,000 pounds. The stone foundation for this ponderous weight is about half finished, and when completed will contain 1,700 perch of stone. The foundation timbers for the machinery is all of the best red spruce, shipped from Dutch Flat, California, and is nearly all on the ground. The timbers and other lumber for the new hoisting works building are also fast arriving and will be framed ready for erection as fast as it is possible for the work to be accomplished. The sluices for the hydraulic works are nearly finished, and it is expected that everything will be in readiness to commence sluicing by the latter part of next week. Daily yield, 60 tons of ore, keeping the mill steadily running.

OPHIR.—The winze from cross-cut No. 1, 1,300-ft. level, has attained a depth of 50 ft., still continuing in fine ore; average assays, \$100

per ton. Cross-cut No. 1, 1,300-ft. level, during the week struck the east clay wall, which is well defined, with a strong dip to the east, proving the ledge at this point to be 450 ft. in width. Lying next to the east clay wall a stratum of very rich ore, 18 inches thick, was struck, which gives assays of from \$400 to \$600 to the ton. The south drift from this cross-cut has passed through 14 ft. of fine ore, average assays of which range from \$90 to \$100 per ton. The south drift on the 1,300-ft. level only lacks about 23 ft. of making the connection with the California north drift from the Virginia Consolidated.

BELCHER.—The main incline is down 17 ft. below the 1,500-ft. level, and blasting and cutting out for the purpose of opening the 1,500-ft. station has been commenced. The ore breasts throughout the entire mine are looking well and yielding splendidly. The ore breasts from the 1,000-ft. level upward continue to steadily improve. Daily yield, 550 tons of ore.

DAYTON.—Another drift has been started south in the ore vein from the main west tunnel on the second station level. The south drift on the second station level is in 120 ft., and is being pushed ahead to connect with the old Felix winze, sunk in 1864 or '65. This winze was sunk on a very rich chimney of ore, some of the ore working as high as \$82 per ton. It is expected that when this body of ore is reached a fine development will be made, as the drift will prospect the ore body at a much greater depth than it has yet been worked.

UTAH.—Sinking the shaft is making steady progress, the rock in the bottom working finely, and it is now down 25 ft. below the 400-ft. level.

CAWON POINT.—Daily yield, 550 tons of ore. The ore breasts on all the different levels, from the 1,400-ft. level up to the 1,000, are looking well and yielding the usual amount of rich ore. The ore breasts on the 1,400-ft. level are looking particularly well, and that level bids fair to outstrip, in point of yield, even the level above. The east ore vein, which was supposed not to extend above the 1,200-ft. level, is prospected nearly up to the 900-ft. level, at which point it is 12 ft. in width and of an excellent quality of ore.

GLOBE CONSOLIDATED.—Extracting ore from the upraise is still continued with an improvement, if anything, in the quality. A drift has been run 170 ft. below the winze, which has struck and is following the ledge to the northward, running through fine ore. The average assays of yesterday were over \$80 per ton. Provided this ore extends up to the ore body above, which it seems no doubt but it does, it will give a body of ore 330 ft. in depth.

SUTRO TUNNEL.—The main header is in 5,905 ft. to day, 37 ft. having been made during the week, with the additional assistance of one Burleigh drill, working in extremely hard rock. The drill carriage has arrived and additional drills are being put to work, consequently even better progress will be made in the future. At Shaft No. 2, the drift and pump stations and sump are completed, and all preparations being made, drifting both east and west, on the line of the tunnel, will be commenced to-morrow morning.

CALEDONIA.—The third compartment and repairing the shaft are about completed to the third station level. The main west drift at the fourth station level is being driven ahead at the rapid rate of 6 ft. per day.

CHOLLAR-POTOGI.—Daily yield, 120 tons of ore, assaying \$32 per ton. The ore breasts are all looking well and yielding finely.

GOULD & CURRY.—The quartz found in the bottom of the incline winze from the 1,700-ft. level has shown considerable improvement during the past week.

IMPERIAL EMPIRE.—Sinking the main incline is making good progress.

CONSOLIDATED VIRGINIA.—The ore breasts on all the different levels from the 1,000 to the 1,400 never looked more promising or yielded better than at the present time. The mills are all kept steadily running, and the future prospects of the mine grow brighter every day.

BALTIMORE CONSOLIDATED.—Sinking the shaft is making the usual progress, the flow of water from the bottom continuing steady and quite strong, though not enough yet to stop the sinking. The red spruce foundation timbers for the new machinery are all on the ground.

NEW YORK CONSOLIDATED.—The new pump is reducing the water in the shaft at a rapid rate. In a few days the shaft will be sufficiently dry to allow of sinking being resumed.

JULIA.—The ore developments in the east cross-cut from the main south drift on the 1,600-ft. level show a steady improvement, so much so that sinking the shaft for a new level has been commenced and is making rapid headway.

HALE & NORCROSS.—Sinking the main incline is making excellent progress, the rock in the bottom being quite soft and working out finely.

MINY.—Sinking the shaft is making steady progress. During the fore part of the week the flow of water seemed to decrease, but this morning was again increasing, although not sufficiently strong to greatly impede the progress of the work.

LEO.—The vein of rich ore in the face of the tunnel still continues, the width varying from six inches to two feet in width.

SILVER HILL.—The ore in the up-raise, from the south drift in the old St. Louis chimney, shows considerable improvement. The Sucker mill was started up yesterday on ore from this mine.

MCMEANS.—The main west tunnel is still driven vigorously ahead, the entire face in

quartz of a fine quality, and evident indications of the drift being just on the point of cutting the main ledge.

SUCCOR.—The Grant shaft is down 465 feet, the bottom in very hard blasting ground. The flow of water continues strong.

SOUTH COMSTOCK.—The cross-cut east, at the 190-ft. level, is to-day in 16 feet. The face is in hard blasting quartz, resembling the regular Comstock ore and assaying from \$8 to \$50 to the ton.

SAVAGE.—Opening the 2,000-ft. station, in the main incline, has been commenced, and is making good headway.

BULLION.—The north drift on the 1,700-ft. level of the Imperial is still pushed energetically ahead, following the body of black dyke lying next to the west wall of the ledge.

LADY BRYAN.—The erection of the new hoisting-works is making excellent headway.

KNICKERBOCKER.—Driving the main west drift on the 400-ft. level is making good headway.

UNION CONSOLIDATED.—Main north drift in 568 ft. from the Ophir shaft, following the west clay wall, and the face in a very favorable and promising formation.

CALIFORNIA.—The north drift on the 1,300-ft. level will probably make connection with the north drift from the Ophir during next week.

WOODVILLE.—The main incline is now down 65 ft. below the 300-foot level.

FLORIDA.—Water continues to impede operations in the winze, but good assays are obtained from the rock.

SENAIOR.—The west drift on the 400-ft. level is in 45 ft., the face in very favorable looking ground.

ELY DISTRICT.

RAYMOND & ELY.—Pioche Record, May 16: The cross-cut being driven for the vein from the 1,200-ft. station, has now attained a length of 185 ft. It is now in a formation which very clearly indicates that the drift is in the immediate vicinity of the ledge. The 30-stamp mill is crushing ore with 20 stamps, and part of its pans are working tailings on which mill No. 1 is entirely engaged. The yield for the five days last week was fair, being somewhat over \$15,000 for five days' run. One thing is very certain, that if either the Raymond & Ely or the Meadow Valley companies wish to sink their shafts, machinery must be obtained to free the mine from water, which may amount to no inconsiderable quantity.

MEADOW VALLEY.—No. 3 shaft—No effort was made during last week to resume the sinking on this shaft, as it is conceded that it, as well as the Raymond & Ely, has reached the water level of this region.

WASHINGTON & CREOLE.—Last week this mine sent something over a hundred tons of ore to be worked by the Floral mill. The returns so far promise to be very favorable, and the mill people are doing their best to secure a favorable yield.

PIOCHE.—Since our last, the work of sinking the new shaft for the present has been discontinued. The cross-cut that is being opened toward the ledge is 28½ ft. in length. Some considerable quantity of ore is being taken out of the old works by parties working on shares. By careful sorting, some very rich ore is obtained, which yields quite satisfactory returns when milled.

NEWARK.—A contract has been let to a responsible party to sink the old Amador shaft an additional 500 ft., and the work will be proceeded with without delay. Some five tons of ore are being raised per day and sent to the mill. The latter is being kept constantly busy on the company's and custom rock; and is doing good work. Superintendent Clute yesterday shipped half-ton to the amount of \$3,300.

AMERICAN FLAG.—Matters in this mine are in a very healthy condition. The shaft is being sunk as quickly as convenient. The lower levels are also being opened as rapidly as possible. The faces show fairly. In the upper levels stoping is being continued, and from the mine generally about twelve or thirteen tons of milling ore is being extracted daily. The mill is kept constantly at work on the company's rock, and the returns are quite satisfactory.

DESEMONA.—Has not been heard from for some time. A short time since two practical and industrious men, Messrs. Bull & Leavitt, leased this mine for six months, and have taken out some ore that has remunerated them very handsomely for their labor. They sent nine tons of selected ore to the Newark, formerly the Amador mill, and a return was made of \$700, which shows that our mines will yet richly remunerate the faithful laborer.

PORTLAND.—The returns from the last crushing were satisfactory, and generally the prospects of the mine are flattering.

CHIEF OF THE HILL.—The appearance of the drifts in this mine indicate some slight improvement. The streaks of pay ore are more frequent and of a better quality, and it is thought a more settled and valuable portion of the ledge is about being opened.

HAVANA.—The work of connecting the two shafts is almost completed, and when effected will thoroughly ventilate the mine.

A new mining district has been opened in San Diego county, near the base of Smith's Mountain, and distant from San Diego between forty-five and fifty miles in an air line, with good mining prospects.

They are talking about building a paper mill in Los Angeles.

Raymond and Ely Mills.

By the kind invitation of Captain Day, the well known and respected Superintendent of the Raymond & Ely company, we yesterday visited the company's mills. Leaving Pioche 9 A. M. behind a spanking team, which the Captain handled with the skill of a professional whip, we alighted at the office

In Bullionville

A few minutes after 10. So we made pretty good time going down. After a short stay at the office, where we found Mr. Eastland, the clerk, and Mr. Seavey, the Superintendent of the mills, who received us cordially, in company with the latter, who, by the bye, is an old Anstin man, who we have known for more than ten years, we started on a tour of inspection. We first looked into the 20-stamp mill, or

Mill No. 1.

The mill was not in motion, it having been stopped to put in two new pans. We learned that it had been running on tailings alone since July last, and is making very handsome returns. The arrangement of the stamps, pans and other machinery is excellent, and is well calculated to save labor and so promote economy. The propelling power is supplied by a powerful steam engine, of three feet stroke and 14 inch cylinder, which drives the 20 stamps, 12 pans, six settlers, an automatic feeder, crusher, pumps, etc., with great ease. Passing from thence to the 30-stamp, or

Mill No. 2.

We entered one of the most complete and well arranged quartz mills that it has ever been our fortune to observe. Commencing on the platform where the ore is delivered, we find a Blake crusher for reducing the ore to the proper size to place under the stamps. Then entering the battery room, we saw that the ore is fed by the means of a self-feeder, which constantly delivers the right quantity of ore at the right time. By this contrivance the stamps are enabled to crush the utmost they are capable of doing, for they strike close to the die with only a thin stratum of ore intervening, so that the force of the blow is utilized to the greatest possible extent. The crushed ore, now called "pulp," escapes from the battery through No. 40 wire screens, and is collected in tanks, from whence after the water is drained off, it is shoveled on the platform and distributed among the amalgamating pans. Of the latter there are 18 disposed on three sides of a parallelogram. The pans are charged with 2,000 pounds each, which is worked eight hours, when the contents are discharged into the settlers, where in a few hours the amalgam is collected, and the tailings allowed to run off. By a very ingenious but effective arrangement the quicksilver and amalgam are separated from the tailings almost automatically and fall into the strainers without any handling. After the amalgam is strained it is placed in an iron lined car, which runs on a track, and taken to the retort room, where it is shoveled into retorts, and speedily assumes the form of bullion, while the vaporized quicksilver passes off and is condensed in pipes immersed in cold water. It is impossible to give a description which will convey an adequate idea of the perfection of the various devices for handling the ore, pulp, quicksilver and amalgam. They must actually be seen to be appreciated. We thought we knew something about mills and milling, but we see that a long stride has been made in perfecting the arrangement and management of ore reducing machinery since we had anything to do with the business. We cannot, however, forbear from noticing the

New Quicksilver Pump

Invented and patented by Mr. Boss. Its simplicity is a marvel, but yet it is most effective. By its agency the quicksilver is distributed through pipes wherever wanted, thus saving a vast amount of labor and consequent expense, besides preventing any waste. Both the company's mills and the Magnet mill are fitted with this useful contrivance, and it gives perfect satisfaction. On leaving the mill, we found several hundred tons of ore collected on the dump, and is now in process of working. We also examined the large steam pump which supplies most of the water required for the works, and could not help commending the careful preparations made to subdue any fire that might break out. Coils of hose are ready for coupling, and as the large pump is always going, a fire would have but little chance to make much headway. We forgot to mention the splendid engine of the 30-stamp mill, which is a very fine piece of mechanism, plain, but solid and lasting. It is 42-inch stroke, 18-inch cylinder, with one of those whirling governors that makes one's eyes ache to look at. After leaving No. 2 we crossed the high trestlework to the

Railway Foundry

And found one of the most complete establishments of its size that probably can be found on this coast. Besides the casting apparatus, it is fitted with a splendid lathe, boring and screw-cutting machines, and planer. The foundry is a great convenience; in fact, is almost a necessity for the mills, for the pan bottoms, miller shoes and dies can easily be replaced with rapidity and economy. We found some quite large castings, for instance, a settler bottom, over six feet in diameter. After leaving the foundry we went to the

Magnet Mill,

Now under the efficient and careful management of A. Barber. We examined the ten-

stamp mill, and found it working on ore taken from the ground west of the Raymond & Ely proper. The appliances and machinery were pretty much of the same effectual and labor-saving character we have attempted to describe in the Raymond & Ely mills. We also visited Colonel Raymond's pet,

The Old Five-Stamp Mill,

Which first demonstrated the value of the ore deposits of Pioche. The battery, pans and engine are in excellent condition, and looked to us to be capable of performing as good work as ever. The mill was silent.—*Pioche Record.*

Gwin Mine.

The recent development in this mine surpassed anything which has ever occurred in its history, and we doubt much whether any greater strike has ever been made in any mine of gold on this coast if we consider the matter in all its bearings. The strike in the celebrated Morgan or Carson Hill mine was richer, but soon gave out, and so it has been with the rich pocket deposits in other mines. In the Gwin mine the case is different, for whilst the lead is not so rich as in many mines that we have seen, there is such a vast quantity of pay rock that the mine is now certain to be, from the time forth, a grand success.

We are glad to hear this news, which is fraught with good to our entire county. The face of the vein, 18 feet wide, in the 800-foot level, sheds a golden radiance upon the beholder, which carries conviction with it that "the clouds which lowered on this mine" are dispelled now and forever. We have been shown a letter from Judge Norman, who is now on a visit to the Gwin mine, written to a friend of his in San Andreas, from which, by permission, we extract the following facts: "It will be remembered that in the 600-foot level the pay chimney was about 350 feet in length and commenced 30 feet from the shaft—and the very next level, the 700-foot level, commencing in the shaft, was broken rock, and too poor to work until the pay chimney was struck again, at a distance of 210 feet from the shaft, and then the pay rock did not last but 125 feet, and that was the cause of the late want of confidence in the mine and embarrassment of the company. Another sinking was made, and the present tunnel started, with the following result: at 70 feet from the shaft a bunch of immensely rich rock was struck, but soon gave out, and, at intervals, splendid rock was struck, but nothing durable until the tunnel reached a distance of 250 feet from the shaft—it is argued, and we think with good reason, that these bunches of rich ore in the bottom of the tunnel commencing 70 feet from the shaft and continuing at intervals as already described, show conclusively that at the next sinking of 100 feet there will be a continuous lift of pay rock, far exceeding in length, width and thickness, that of the 600-foot level. At least, such is the opinion of Mr. Gleason, the present intelligent and energetic foreman of the mine.

"There are six men constantly at work on the face of this immense lead of eighteen feet in width in the 800-foot level, and the foreman says if it lasts for only 100 feet more (and there is no reason why it should not last as it did in the 600-foot level) that 60 stamps can not crush it in less time than one year. The mine has now reached a depth sufficient to be below the surface movements of the earth which have been caused by the convulsions of nature in days past, and as an evidence of it the rock in the mine is much harder and has a different tint, being now of a bluer cast than formerly, and the hanging wall, which has heretofore been soft and shelling, is now solid. Gold bearing sulphurets are disseminated all through this immense lode, and everything, gonge and all, is run through the mill. It pays at the rate of \$50 per day for each stamp, or over thirty dollars per ton. At present there are twenty-six stamps running day and night, and ten more are to be started immediately, while the twenty-four stamp mill, which was erected to work ore from the Alexander mine, is in fine condition and will commence crushing from this lead as soon as additional stopes can be opened and ore obtained. There is another very important fact connected with this mine. The Alexander mine, which now forms a part of the Gwin mine, struck barren rock at a depth of 300 feet, as did the Gwin mine also. The Alexander mine was worked to no greater depth than 300 feet, and the Gwin company are sinking their shaft at the 800-foot level, on the vein, to see if they can find the pay chimney of the Alexander mine. The foreman says they have run through rim matter, gonge and broken rock, with good walls for nearly 200 feet, and is confident that inside of ten days he will develop a pay chimney in that direction; he says water has made its appearance in small quantities there, which is a good sign, and there is every possible indication of the lead being struck soon. If that chimney should be struck in connection with the recent developments in the south part of the mine, it will be hard to estimate in dollars the real value of the Gwin mining property. The Hayward mine of Amador in its palmy days never paid better than the Gwin mine is paying now, nor ever had a brighter prospect ahead."—*Calaveras Chronicle.*

KALSUMINE wash may be applied to any wall. If common whitewash has been used previously it may need to be scraped off before the kalsomine is put on. A kalsomined wall can not be washed like one in hard finish; washing will remove the coat.

Tybo District.

The indomitable McGee and his "2 G" venture have both of them met with the most unqualified success in the modern Babel. The promptitude with which \$300,000 were subscribed for a working capital will attest these facts. A small private joint stock company has been formed, the members of which, as soon as the necessary papers, such as abstracts of titles, maps, reports, etc., were laid before them, without further delay, paid into a common fund sums which amounted to the aggregate as above written. There are neither stock nor corporate papers issued yet, nor will there be either, for several months to come, or till the mine will have been proved to be in every respect worthy of public confidence; then, and not till then, will it become a corporate concern. This is a move in the right direction, and one, too, that will ultimately redound to the interests of its owners and vendors. Their present province will be to erect suitable buildings, such as boarding and lodging houses for the employees, offices, furnaces, water-tanks, ditches, etc. They will, and have already proceeded to open up the mines in such a manner as cannot fail to early demonstrate their value and permanency.

Nothing will be left to chance, for they intend to prove by their brilliant product that their worthiness will be founded on something more real and tangible than the mere exhibits, which are usually put forth upon paper by those having mines to dispose of in London or elsewhere. The day has, however, already passed when unprincipled schemers can successfully float an undeveloped mine in that metropolis. The Parks and the Harpendings of the Pacific coast have had their day. The Emma, Mineral Hill, Eberhardt, Aurora and Pacific, and Maryland of Pinto fiascos, have forever put a quietus upon the chance of anybody ever again making a large haul out of such worthless concerns, and it has been long since proved that they were even at the very outset of their careers in quest of purchasers. The "2 G," very happily for its owners, can bear the closest scrutiny, consistent with honor and fair dealing. Its merits are well known, and they, together with the high reputation borne by the gentleman who purchased it last January, have been all the guarantees that were required by those who very readily placed the princely sum mentioned at the disposal of its Superintendent, with which to inaugurate operations in that district preparatory to commencing business in real earnest next July.

There are 20 men already employed there, grading, building and extracting ore, the whole under the direction of Mr. Packard, 1st of the Richmond, who has entire charge in Mr. McGee's absence. It is in contemplation to have one furnace in running order by the 10th of July next. Everything that ample means and unfagging energy can accomplish is being done at present. Mr. McGee, with an eye to business, has recently bought of the owners the Freiburg furnace, tweezers, and machinery, such as engine and boiler, blowers, slag pots, trucks, bullion molds, ladders, blacksmith outfit, etc., all of which are to be immediately transported from there, a distance of sixty miles, to the works at Tybo. The furnace is chiefly valuable for the Pensacola fire stone used in its construction. By and by other furnaces—both smelting and refining—will be erected, on a scale commensurate with the character of the enterprise. Suitable separating works are also to be built, at the proper time.

This latter undertaking will, when completed, entirely do away with the onerous charges which the freight upon crude bullion would entail from the mine to distant refineries. Goods have been already shipped from here to there last week, by a magnificent ten-mule team and three wagons, recently purchased for the company by Mr. McGee, at an outlay of \$3,500. These goods consisted of boarding-house furniture, mining tools, nails, powder and fuse, and such other things as are known to be necessary appendages of a new camp. The future of Tybo promises to be a bright and prosperous one; and Enreka, from its position along the line by which supplies are to be received, cannot fail to derive much benefit from the trade which will henceforth flow to its merchants from it.—*Eureka Sentinel.*

COLUSA QUICKSILVER MINES.—From all we can learn we are satisfied that the country around Sulphur Springs is the richest in cinnabar of any district in the United States. Mr. Bartlett, an experienced miner, in a letter to us this week says: "There is great excitement here on account of recent discoveries made by Lovelace and Noble on the west of Bear valley. They have found the richest prospects I ever saw. The ore will go from twenty to thirty per cent., and they say it came from the croppings. Mr. Caswell, of the Buckeye, was called upon to examine their discovery, and he reports very favorably. He had some four or five pounds of the ore that would assay some forty or fifty per cent. I start out soon on a prospecting tour. The Buckeye is the best mine in this part of the country. They are reducing about two hundred pounds of quicksilver daily. The Abbott mine is good, and I think the present company will make a good thing of it. The Chapin mine is also good. They intend putting up a furnace at this mine. They have enough ore in sight to pay for the work." As will be seen by a notice in another column, the Abbott calls a meeting of stockholders for next Tuesday. Cinnabar is being taken out of two tunnels in this mine, and they have out now about two hundred tons, estimated to yield ten

to fifteen per cent. on the average. It is the intention of the company to put up a furnace in a short time. When the three furnaces now contemplated shall be in operation, we shall ship several thousand pounds of quicksilver daily from Colusa. And if the new discoveries prove as rich as indications warrant us in believing they will, several other furnaces will be put up during the summer.—*Colusa Sun.*

Agricultural and Mineral Lands.

A correspondent of the *Alla* writing from Calaveras county says: Calaveras at one time was the banner county in the State, politically and mineralogically. She has lost considerable of her former greatness, but at this time seems to be looming up, and if her mining interests are not injured by legislation, we believe that she will soon again rank high, not only as a mining county, but as an agricultural section. Agriculture and mining should walk hand in hand together here, as neither is strong enough to sustain our present population alone. These interests should be harmonized. There should not be any conflict between the two; but a conflict seems to be inevitable. Some of the best mining land is being "proved up" for agriculture.

The man who has "proved up" for agriculture, claims that the miner has no longer the right to prospect for either placer or quartz on his land, while the miner seems to think that an "agricultural patent" does not exclude him from mining. The requiring of the party opposing the patent to go to Sacramento has, without doubt, acted against the miner. It is expensive, and oftentimes the miner is not posted sufficiently in regard to the locality of the sections referred to, in the survey, in the published notices, to enable him to tell where the land is located. So it passes along till he is informed, he is trespassing on *my land*. He is required to stop work, and soon the little he has saved, if any at all, is used up in keeping his family from starvation by paying for all they consume, the San Francisco prices, with the freight added, which is generally one cent per pound from that city to the mineral belt.

There should be something done soon to reconcile these interests. If our members of Congress cannot intelligently manage this matter, let there be a Joint Commission appointed by the State Legislature and Congress to examine into all the bearings of this question that threatens to cause so much difficulty in this section. We believe that agriculture will eventually claim most of this region, although deep gravel diggings and quartz mining is yet in the cradle of its greatness.

Newfoundland District.

A correspondent of the *Salt Lake Tribune* writes as follows about the district: Newfoundland District is situated south of Terrace and some fifteen miles from the C. P. R., on an air line; but by way of the usual traveled wagon road, it is nearly twenty miles. It is known on the map of Utah as Desert mountain, and in length it is some eighteen or twenty miles. Its average breadth is four miles. There are some twenty springs of good palatable drinking water on the east and west sides of the mountain, that flow continually the year round. Wood is plenty for domestic purposes, but not of sufficient quantity to supply mills or furnaces for a great length of time.

In the lower hills which surround the mountain, there is an ample supply of grass to furnish 2,000 head of stock during the entire year.

The Mines.

The principal mines are situated on the southwest side of the highest peak of the mountains, in what is known as the Quartzite belt, which, in width, is from one-half to three-quarters of a mile. The mines run parallel to each other, and crop out in places ten to fifteen feet in height. Yet the croppings stand out boldly along the entire length of the chains. The width of the different ledges varies from ten to fifteen feet. Those situated at the lower edge of the Quartzite belt contain a considerable amount of copper that assays from fifteen to fifty per cent., and also contain gold and silver, of the former from five dollars to twelve dollars per ton; while of silver, choice pieces assay above \$100 per ton. The assays have been more favorable as depth is reached. The lowest depth yet sunk on any one claim is some eighteen feet, which work is done on the Oregonian mine. From this the best assays have been made. These are thought to be continuous or true fissure veins.

The proximity to the railroad, the character and abundance of ore, as well as the almost natural road from the mines to the railroad, make this a desirable district for capitalists to invest their money with a surety of speedy return.

The owners of the Providence mine are putting in works for the reduction of sulphurets by the chlorine process, at their mill on Deer creek, Nevada county. The works will have a capacity of reducing two and a half tons of sulphurets per day, and with the present force at work in the mine that amount of sulphurets can be furnished.

Rich and extensive placer mines were discovered in the bed of the Jefferson river, about fifty miles from Bozeman, running parallel with what is known as the Davis Bar, on the 8th of April. Three men, with a small wing dam and rocker, obtained \$375 in six days' work from a small patch of ground. Bed-rock was reached at three feet.

USEFUL INFORMATION.

Black Varnish for Zinc.

Professor Böttger prepares a black coating for zinc by dissolving 2 parts nitrate of copper and 3 parts crystallized chloride of copper in 64 parts of water, and adding 8 parts of nitric acid of specific gravity. This, however, is quite expensive; and in some places, the copper salts are difficult to obtain. On this account Pucher prepares black paint or varnish with the following simple ingredients: Equal parts of chlorate of potash and blue vitriol are dissolved in 36 times as much warm water, and the solution left to cool. If the sulphate of copper used contains iron, it is precipitated as a hydrated oxide and can be removed by decantation or filtration. The zinc castings are then immersed for a few seconds in the solution until quite black, rinsed off with water, and dried. Even before it is dry, the black coating adheres to the object so that it may be wiped dry with a cloth. A more economical method, since a much smaller quantity of the salt solution is required, is to apply it repeatedly with a sponge. If copper colored spots appear during the operation, the solution is applied to them a second time, and after a while they turn black. As soon as the object becomes equally black all over, it is washed with water and dried. On rubbing, the coating acquires a glittering appearance like indigo, which disappears on applying a few drops of linseed oil varnish or "wax milk," and the zinc then has a deep black color and gloss. The wax milk just mentioned is prepared by boiling 1 part of yellow soap and 3 parts Japanese wax in 21 parts of water, until the soap dissolves. When cold, it has the consistency of salve, and will keep in closed vessels as long as desired. It can be used for polishing carved wood work and for waxing ballroom floors, as it is cheaper than the solution of wax in turpentine, and does not stick or smell so disagreeable as the latter. A permanent black ink for zinc labels is prepared by dissolving equal parts of chlorate of potash and sulphate of copper in 18 parts of water, and adding some gum arabic solution. The black polish above described is recommended as permanent and capable of resisting quite a high temperature.

How to Varnish.

Varnish should always be applied in a warm room, as warm as a person can work in comfortably. At a lower temperature there is always moisture in the air, an invisible dew, which gives the varnish a milky and cloudy appearance. This will happen even on a fine summer's day, and the only preventive is to employ artificial heat to produce a temperature of at least 75° F. At this temperature the moisture is not precipitated until the alcohol of the varnish has sufficiently evaporated to leave a thin and smooth film or shellac. The gloss and durability are entirely dependent upon this. The article to be varnished should be brought into the workshop a few hours before the work begins, so that it may get warm. The surface is smoothed, washed and rubbed dry with camellia leather, or a piece of silk, and every trace of dust, moisture and dirt removed with a clean, soft brush, but no oil or grease must be used. The varnish is now lifted lightly with a flat brush not immersed too deeply in it, and a thin coating applied. It is well to begin in the center or at the highest part, and approach the edges with long, straight, rapid and even strokes, and a gentle pressure. Care must be taken at the corners and edges. The film of varnish should be about as thick as a sheet of paper. When finished it should be exposed to the sun's rays or artificial heat, and carefully protected against draft and dust. Cold air or a draft over the article gives the varnish a dull look. When this happens the only remedy is to apply a second coating, and hold it near the fire so as to dissolve the previous coat, but not so near as to blister it.—*Jour. of Ap. Chem.*

TO CLEAN PAINT.—There is a very simple method to clean paint that has become dirty, and if our housewife should adopt it, it would save them a great deal of trouble. Provide a plate with some of the best whiting to be had, and have some clean warm water and a piece of flannel, which dip into the water and squeeze nearly dry; then take as much whiting as will adhere to it, apply it to the painted surface, when a little rubbing will instantly remove any dirt or grease. After which wash the part well with clean water, rubbing it dry with a soft camellia. Paint thus cleaned looks as well as when first laid on, without any injury to the most delicate colors. It is far better than using soap, and does not require more than half the time and labor.—*Coachmakers' Journal.*

GLYCERIN FOR PRESERVING FRUIT.—We learn through a German journal that in order to preserve fresh fruit it is only necessary to heat them, if not perfectly ripe, in water almost to boiling, drain nearly dry, and cover with warm concentrated glycerin. If the fruit is perfectly ripe, heating in water is unnecessary. It is also advised to pour off the glycerin after standing for some time and add fresh concentrated glycerin. The glycerin poured off may be concentrated on a water bath and used a second time. Ordinary glycerin is often impure, but only that which is perfectly pure and colorless, with a clean, sweet taste and a specific gravity of 1.25, should be employed.

INCOMBUSTIBLE FINISH FOR WOVEN FABRICS.—The *Manufacturers' Review* translates from Hager the following directions for preparing a starch paste, impregnation with which renders a fabric incombustible: 10 parts of calcined and pulverized bones are treated with 50 parts of hot water, to which six parts concentrated sulphuric acid are gradually added. The mixture is well stirred, and left to stand two days in a warm spot, being stirred from time to time; 100 parts of distilled water are then added, and the liquid filtered. Five parts sulphate of magesia (Epsom salts) are dissolved in 15 parts of distilled water, the solution added to the first, and caustic ammonia added till the liquid smells of it. The precipitate is thrown on a linen filter, pressed, dried in a moderately warm place, and rubbed to a very fine powder. Of this powder, two parts are mixed with exactly one part of tungstate of soda, and six parts wheat starch, and a little indigo blue added to impart a bluish tint to the powder. In order to use this powder, it is stirred up with about twice its weight of cold water, and enough hot water is then added to produce a gelatinous liquid, in which the fabrics that are to be rendered incombustible are steeped.

TO INVENTORS.—An authority lays down the following maxims for the guidance of inventors:

1. Know definitely what you want to accomplish, stick to it, and let other matters go, for the time.
2. Post yourself thoroughly as to the laws governing the action of each part of your machine.
3. Always bear in mind that whatever is gained in time is lost in power, and vice versa.
4. Think over every machine, of a nature similar to yours, which you have seen; and when your idea is clear in your head, compare it with those of inventors who have preceded you in the same line.
5. Be sure that the cost of your device will not prevent its use.
6. Avoid all complicated arrangements; make every machine of as few parts as possible.
7. Imagination, judgment and memory are the faculties to employ. Imagination will bring forth new forms and actions, judgment will compare them with other devices and determine their relative value, and memory will store up the results for future use.

SAWDUST is sometimes prepared for moulding and for stopping cracks or holes to disguise flaws or other defects in woodwork. In order to prepare the material, the sawdust is put in an earthen vessel, boiling water poured on it, stirred up, and left to soak for about a week, and again stirring from time to time; then it is boiled until it has attained the consistency of a paste, after which it is put in a coarse cloth and the excess of moisture well squeezed out. This material is then kept ready for use; when wanted a sufficient quantity of thin glue-water is added so as to obtain a paste, which may be pressed into moulds, or rubbed into cracks or holes to disguise flaws or other defects in woodwork. When the sawdust of the same wood is used, the work carefully done, well dried and cleaned, the imperfections repaired in this way can scarcely be detected; while the ornaments made differ only in one respect from those made by carving—in not showing the grain of the wood.—*Builder.*

TO RENDER GLASS OPAQUE OR FROSTED, according to *Dingler's Journal*, a sheet of ordinary glass, whether patent plate or crown does not matter, is cleaned; and if only portions of it are to be frosted, those are left bare, while the others are protected by mechanical means in any simple manner. Some flour spar is rubbed to a fine powder and mixed with concentrated sulphuric acid, so as to make a thin paste, and this is then rubbed, by means of a piece of lead, upon those parts of the glass required to be rendered opaque. A fine frosted outline or design may thus be produced upon a sheet of smooth transparent glass. To finish the operation, the glass is gently heated in an iron vessel covered with a funnel passing up the chimney, to get rid of the noxious fumes that are given off; on cooling, the plate is washed with a dilute solution of soda or potash, to remove any acid yet remaining, and is then rinsed in water.

To case-harden 1-32 of an inch, so that a file will not cut it, take prussiate of potash three pounds, carbonate of ammonia one pound; pulverize and spread over the surface to be hardened, with a metal or wooden spoon, in the same manner as in the old method of potash hardening; put the article so treated into a spring furnace oven or on a blacksmith's fire, and keep at a cherry red heat for fifteen minutes; then plunge it into a cold bath composed of two barrels of rain water, ten pounds of eel ammonia, ten pounds of alum and five pounds of borax.—*Car Builder.*

TO MEND CHINA.—We have tried a dozen different recipes and cements for mending broken china, and have come to the conclusion that the best way is to buy new. A china preservative dish that has been mended is a ticklish thing to handle, especially if full of sweetmeats, and when one hes on her "company clothes."—*N. Y. Tribune.*

TO REMOVE THE IRON TASTE FROM NEW KETTLES.—Boil a handful of hay in them, and repeat the process if necessary. Hay water is a great sweetener of tin, wooden and iron ware. In Irish dairies everything used for milk is scalded with hay water.

GOOD HEALTH.

"Spring Biliousness."

There are few of our rural readers who will not readily comprehend the meaning of the above caption. Of course, the term "biliousness," like charity, is made to hide a multitude of sins; but in this article we simply mean by it that condition of general lassitude so universally observed with the coming of spring. And very often something more than lassitude is experienced; for malarial fever in its various types, together with an occasional case of typhoid, make their appearance wherever climatic or physical conditions afford them the slightest foothold. To obtain a fair insight into any symptom or set of symptoms which constitute a disease, it is necessary to understand something of their causes, and so we will look for a moment into those causes which would seem to favor or induce these "spring fevers." One of the first, no doubt, is the marked difference in diet and physical regime of life during the winter months. We undoubtedly eat too much strong animal food, and too little vegetables, take too little exercise to correspond with a strictly healthy condition; in short, we pamper ourselves, as it were, during the winter, and spring confronts us with its hard labor, only to find us like a race horse under similar conditions, good for a short dash, but with no bottom to hold out. Hence it is that "spring bitters," "salts and sulphur," etc., are brought into such common use at this season. If we are to continue in our old manner of life, then the theory of their use is good; and, among the best of these, is undoubtedly the common "blue mass," which arouses the lagging secretions of the system, setting the tearing down workmen busy at work, and if then followed by a good tonic such as cinchona (Peruvian) bark, calayaia, etc., to help the building up forces of the body to do their work, will no doubt do much towards warding off these spring attacks. But, it seems to us, the true theory is prevention, by eating more vegetables, taking greater care that the normal secretions are not interfered with by colds, and giving ourselves plenty of exercise and recreation during the tedious, chilly winter months.

Poisons and their Antidotes.

Mr. G. C. Rockwell communicates the following to the *Scientific American*: Fatal results of poisoning are most frequently occasioned by delay in applying, or by ignorance of, the antidote. The following is a list of the antidotes of the common poisons, and I suggest that chemists, druggists and others who are brought daily in contact with poisonous substances, post this list in some conspicuous place in their laboratories.

For alkaloids, such as morphine, quinine, etc.: Emetics and the stomach pump must be relied upon rather than chemical agents. Astringent liquors may be administered, such as tannic acid, which precipitates many of the alkaloids from their aqueous solution, absorption of the poison being thus retarded.

For antimony (tartar emetic, etc.): Any form of tannic acid may be administered (infusion of tea, nutgale, cinchona and oak bark, or astringent solutions or tinctures), an insoluble tannate of antimony being formed. The stomach pump must be also applied as speedily as possible.

For arsenic (Paris green, etc.): Recently precipitated moist ferrous hydrate, best administered in the form of a mixture of a solution of perchloride of iron with carbonate of soda. Emetics should be also given, and the stomach pump applied.

For copper (verdigris, etc.): For an antidote, administer iron filings, also white of an egg (albumen), which forms with copper a compound insoluble in water. Apply the stomach pump.

For hydrocyanic acid (cyanide of potassium, etc.): A mixture of green sulphate of iron, solution of perchloride of iron, and either magnesia or carbonate of soda, is the recognized antidote in cases of poisoning with prussic acid. Inhalation of ammonia is also advised.

For lead: Administer a solution of Epsom salts or alum, and induce vomiting.

For mercury (corrosive sublimate, etc.): Swallow the whites of several eggs. Albumen gives a white precipitate with salts of mercury, which is insoluble in the juices of the stomach.

For oxalic acid: In cases of poisoning with oxalic acid or salts of sorrel, chalk and water may be administered as a chemical antidote, with the view of producing the insoluble oxalate of lime. Emetics should also be applied.

For tin: In cases of poisoning by tin salts (dye's tin liquor), solution of carbonate of ammonia should be given. White of egg is also said to form an insoluble precipitate with compounds of tin. Vomiting should also be speedily induced.

For zinc: Large doses of zinc, fortunately, act as powerful emetics. If vomiting has not occurred, or has taken place apparently to an insufficient extent, a solution of carbonate of soda (common washing soda), immediately followed by white of egg and demulcents, may be administered.

The poisons contained in tobacco smoke find a ready exit from the system; when inhaled during a period of fasting their injurious effect on the heart is apprehended.—*Lancet.*

AN OLD USE FOR HAMMERS.—"I remember," says a correspondent of the *Medical and Surgical Journal*, "that when I was very young, they used to raise blisters with boiled hammers. Old Dr. Twitchell of Keene (peace to his ashes) once wanted to blister some one in a farm house, far from home. He had nothing with him to do it with. He asked the wife to find him a hammer. The article was brought out, put in a tea kettle over the fire, and after the water steamed and bubbled well, he lifted it out and gently touched it to his patient, in half a dozen spots, over the seat of pain, with very positive effect. Boiled hammers were for many years used in that neighborhood for pleurisy; and every old lady knew nothing was equal to a hammer; and there was a long dispute whether it should be a claw hammer or not. I think the years finally conquered."

THE GROWTH OF CICATRICES.—Mr. W. Adams, in a paper read before the Medical Society of London, shows that scars made in childhood grow with the general growth of the body. He exhibited casts taken at different periods of life, in some of which a growth of an inch had taken place in six or seven years. After deep wounds, or when a portion of the skin has been destroyed, the cicatrix appears to remain through life. The only ones that disappear are those resulting from superficial cuts, which do not penetrate fairly through the deeper layers of the skin.

The Gatling Gun.

Last fall one of the most wonderful trials to which any implement has been subjected, took place. According to reports made at the time, the Navy Department, in order to determine the quality of the solid head metallic cartridges, and to test the working powers and durability of the Gatling gun of .50-inch caliber, ordered that one hundred thousand cartridges of .50 caliber (containing United States service charge) be fired in the gun at Fort Madison, near Annapolis, Md. The trials commenced on October 23d, and lasted parts of two days. On the first day (the 23d) over 30,000 rounds were fired; and on the 24th, 64,000 cartridges were fired, without stopping to clean barrels; and after this unprecedented test, the gun (without the barrel being cleaned) was fired for accuracy at a target 12 x 12 feet, placed 300 yards from the gun; and out of 30 shots fired, 29 of the balls hit the central part of the target, striking point on and giving good penetration. It may be safely said that this number of discharges was never before made from any arm in the world.

Singular as it may appear, the fouling of the barrels did not increase after 4,000 or 5,000 rounds had been fired. The trials were made under the supervision of Lieutenant Commander J. D. Marvin, United States Navy, commandant of Fort Madison. Many distinguished navy and army officers were present at the trials. During a part of the trials, the gun was fired at the rate of 400 shots per minute. A drum which supplied the cartridges to the gun, and which contained 400 cartridges, was frequently exhausted in from 50 to 55 seconds.

Of the cartridges used, none of the heads burst, none of the shells failed to extract, and there was only one misfire in about five thousand cartridges discharged. The cartridges are headed by a new process, which prevents injury to the fiber of the metal from compression.

MACHINE FOR REDUCING STONE.—A new grinding machine of ingenious construction, and which acts with great power and efficiency, has been invented in England, its design being to reduce hard substances, such as rocks of granite, silica and other materials, to a finely pulverized state. The size at the mouth is twelve by five inches, and any stone of that size is quickly reduced by its action. The moving jaw is swung from below on a stout cross-pin, to the two sides, and is made so that it has the greatest motion at the top, and the least motion at the bottom. The toggles are worked from an upward connecting rod, actuated by a steel eccentric shaft, running in an anti-frictional metal bearings near the sole plate. The usual wedge motion and spring rod for bringing back the jaw are supplied, and the whole mounted on a foundation plate. An improved mixing apparatus is attached, by means of which the stuff is immediately and thoroughly blended, as it is delivered from the spout.

NEW STEAM AUXILIARY.—A new invention by Mr. J. Berger Spence, of London, consists in passing steam at ordinary atmospheric pressure into a solution of caustic soda, which is thereby raised to its own boiling point. It is proposed to use the heat thus developed to generate steam, the waste steam from an engine boiler being employed in the first instance to heat the caustic soda. Mr. Spence showed that the effect was absolutely produced by raising a solution of caustic soda to a heat considerably over 212° by means of a jet of steam, but he stated that he had not yet worked out practical details as to the employment of the idea, though he exhibited a sketch of an arrangement of boilers which he considered might render it available.

CEMENT FOR AQUARIA.—An adhesive cement for aquaria may be made, according to Klein, by mixing equal parts of flowers of sulphur, pulverized sal ammoniac and iron filings, with good linseed oil varnish, and then adding enough of pure white lead to form a firm, easily worked mass.

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The Astronomical Expeditions.

Three of the eight parties to be sent out by the Government to observe the transit of Venus will leave Washington about the 1st of July for California overland, where they will take the mail steamer for Japan, there be met by the U. S. steamer *Lackawanna*, of the Asiatic fleet, and conveyed to their stations. The first party, in charge of Professor Hall of the Naval Observatory, will be stationed in Siberia; the second, in charge of Professor Watson of Ann Arbor, Michigan, at Pekin; and the third, in charge of Professor Davidson, of the Coast Survey, at Nagasaki. Each party will consist of an astronomer, assistant and three photographers. The following is a list of the heads of American expeditions for observing the transit of Venus, and their stations: Northern stations—Wladivostok, Siberia, Professor A. Hall, United States Navy; Nagasaki, Japan, George Davidson, United States Coast Survey; Pekin, China, Professor James C. Watson, of Ann Arbor, Michigan. Southern Stations—Crozet's Island, South Indian Ocean, Lieutenant-commander George P. Ryan, United States Navy; Hohart Town, Tasmania, Professor William Harkness, United States Navy; New Zealand, Professor O. H. Peters, of Clinton, New York; Chatham Island, South Pacific, Edwin Smith, United States Coast Survey.

The discovery of gold deposits in the bed of the Jefferson river, Montana, is creating quite an excitement. About ten miles of the river is already taken up in claims of 400 feet each, up and down the river, and from shore to shore.

Wool has become very scarce around Grass Valley and Nevada, and has to be hauled from six to eight miles. A company has been formed for the purpose of building a flume into the timber region, so that a supply can be floated.

The San Joaquin river is rising rapidly, and steamers now experience no difficulty in navigating as far up as Firebaugh's ferry.

All the mills on the Carson river and elsewhere in that section, except those undergoing repairs, are running full blast.

The borax mine at Lower Lake has suspended operations on account of the reduced price of that product.

The weather at Grass Valley is quite hot nowadays, and the thermometer frequently scores 80° in the shade.

The Island of Aruba.

This little island bids fair to become quite famous for its gold product; mining operations having already been commenced there on a large scale. The island is situated just off the northwest coast of Venezuela, in lat. 12° 49' N. and long. 70° 5' W. from Greenwich. It is about 20 miles in length and from five to seven in width. Syenite is its prevailing rock. Granite, greenstone and elates (diomite and talcose) occur to some extent. A belt of limestone (coral) from five hundred feet to a mile in width surrounds the island. The surface of the island is mountainous or hilly, the greatest elevation being 600 feet. Aruba is sparsely wooded. The chief articles of export are aloe and peanuts. A species of corn called by the natives *mice*, much resembling hroom corn, is grown for food. The climate is uniform, the thermometer in the shade or at night time never falling below 78° or rising above 92° Fah. The trade winds blow from 15 to 20 miles an hour for nearly ten months a year. Two hundred and upwards gold-bearing quartz veins have been discovered on the island. These veins are well defined; some of them quite large. One is 23 feet in width. They prospect well—gold being found by panning nearly every time.

The mineral resources of Aruba have been conceded for a term of 35 years to the Aruba Island Gold Mining Company (Limited), the stock of which is owned in London and New York. The company have erected a California 20-stamp mill to run by six Empire wind-mills—their wind-wheels being 35 feet diameter each. Salt water is used for milling purposes. There are as yet but two stamps running, which crush about 20 tons of rock per day—the rock thus far has paid \$20 a ton.

Prior to the concession of the mines to the company, some veins were worked by the natives with highly gratifying success. They treated none of the rock in which gold could not be seen by the unaided eye. The rock was broken to the size of wheat grains, then placed on a flat rock and mulled by hand, with a stone weighing thirty pounds or thereabout. The pulp was then washed in a calabash shell, (sort of a gourd shell). The amount of gold thus taken out was estimated to be nearly a million of dollars. There are about 5,000 inhabitants on the island. These consist of, say 200 whites of Dutch origin, 500 negroes, formerly slaves, (slavery was abolished about ten years ago), 500 Indians, and the balance of a mixture of various shades of color. The standard wages are thirty cents a day without board. The inhabitants are a kindly disposed and docile people. We have gathered the above facts from a conversation with, and from the written reports presented to the company by Mr. P. M. Randall, a mining engineer, formerly of this city, but now of New York, and on a visit to San Francisco.

Academy of Sciences.

The regular meeting of the California Academy of Sciences was held on Monday evening last, Vice-President Hewston in the chair. Robt. T. Van Nardou and Rev. D. L. Green were elected resident members.

The contributions for the evening were principally comprised in a large and valuable botanical collection, from Professor H. N. Bolander, embracing two packages of plants from the Cape of Good Hope and four packages from Europe.

G. W. Michael, Jr., presented silicious petrifications of roots, from San Luis Obispo county.

S. R. Throckmorton presented a specimen of *Rhinobatus Productus*, caught in the bay of Black Point. This curious fish is described by Mr. Ayers in the second volume of the proceedings of the Academy.

Henry Edwards presented 26 specimens of crustacea, from the coast of Mexico.

A specimen of petrified oak, found 100 feet below the surface, at Dutch Flat, was presented by a member.

The Curator, H. G. Bloomer, made a valuable addition to the library, in the presentation of seven volumes of the "Phytologist," a standard botanical work.

The only matter of general interest occurring at the meeting was when a member submitted for inspection shells of the Eastern transplanted oyster, which were covered with the spat of young oysters. It was a question whether the spat was that of the native California oyster or the propagation of the transplanted bivalve, and oystermen, whom he had consulted, were unable to determine the point. Mr. Throckmorton, State Commissioner of Fisheries, stated that he had investigated the matter, and found that the spat was that of the California oyster. It was found on the shells of Eastern oysters only where they had been transplanted in the vicinity of native beds. As yet the Eastern oyster had developed no tendency to increase in these waters. They were short-lived here, becoming very fat, and dying within a year after being placed in the bay. The experiment of transplanting Eastern oysters must, therefore, be deemed a failure.

A man named Wright last week struck a \$450 pocket in a quartz ledge, near Altaville, Calaveras county.

The Columbia claims, Tuolumne county, are expected to yield \$200,000 this season.

Re-working Abandoned Mines.

We regard it as a sign of benefit to the mining interests that in many localities in this State claims abandoned years ago are now being worked again. In the early days of quartz mining in California extravagance was the rule and economy the exception. Expensive mills were erected in many instances before any work was done on the ledge which was to furnish the rock, and large amounts of money spent before the claims were even prospected. Naturally, under these circumstances, there were hundreds of cases of failures in quartz mining, and the mines themselves fell into had repute. Of late, however, these facts have been recognized, and many of these abandoned claims have been bought up or re-located by parties who know something about the business of mining and milling, and who can make the claims pay. Comparatively cheap labor, cheap transportation, a better knowledge of mining and other circumstances combine in favor of these new locators, and most of them are doing well.

We mentioned recently that work was to be resumed in the Stanislaus-Melones mine, in Calaveras county, and only lately work was commenced in the old Mina Rica de Las Flores mine, near West Point, in the same county, by a new company, known under the name of the Enterprise Consolidated Gold Mining Company. The old Mina Rica mine was worked to some extent in 1863 and 1864, and considerable very rich rock was extracted. The old story of extravagance, however, sealed up this mine, as it has done many others. They put up a ten-stamp steam-mill, with seven pans all complete, and costing about 67,000. This operation burst up the company, and no further work was done on the mine, although the experts employed told the owners that by sinking 30 or 40 feet the three quartz veins which they were working would be found to unite in one. The ore yielded from \$50 to \$75 per ton, and they could raise some 20 tons per day. However, the owners spent so much money that the company broke up, were sold out, and the mill was moved away about seven years ago.

The new company owning the mines started up work recently and have sunk a new shaft 82 feet, the old one being choked up, caved in and otherwise unfit for use. Assays of the ore they have taken out run from \$127 to \$600 per ton, and they think they will be able to get plenty of ore that will mill \$100. They have made arrangements to get this ore crushed at a custom mill near by, the crushing and hauling costing \$6 per ton. A boiler and engine are being put up on the mine for pumping and hoisting, but the mine must pay for other improvements before they are put up. The company propose to sink 50 feet deeper before they begin to run a level. They are going to have the ore crushed, that they have already taken out while sinking the shaft. The same company also own three other mines in the same vicinity—the Jacobs lode, Maria No. 1 and Maria No. 2. They are sure that they can make the Enterprise mine pay, as they have got the rock in sight to do it with.

Mineral Land Decision.

The Register and Receiver for the San Francisco Land District recently sent to the Land Office three quicksilver mining claims, commending them to be patented. They are known as the Andy Johnson, Fourth of July and Boston, and are situated in Monterey county, California. The claimants are C. J. P. Sargent, A. J. Sargent, Thomas Flint and Benjamin Flint of Monterey county. The three claims embrace an area of 28,840 feet, and are said to be valuable.

Wm. McGarrahan appeared in person and by counsel before the Department, to resist these applications. The following is an abstract of his argument in opposition to applicant:

First—That the patent claimed to have been executed to him by President Lincoln, March, 1863, vested the legal title, and that said claims being within the boundaries of said patent, they were his private property.

Second—That at the end of 1867, when those officers surveyed and made publication of these mining claims, a resolution adopted in the House of Representatives, forbidding any action to be taken by the Interior Department that would in any way affect McGarrahan's title to this property, was in full force.

Third—That the Commissioner of the Land Office, in accordance with the terms of said resolution, instructed Mr. Upson, United States Surveyor-General for California, and the Register and Receiver, to allow no action to be taken by them that would in any way affect McGarrahan's titles.

Fourth—That these officers, in defiance of said resolutions and instructions, took action and had a survey and publication made, and advise that patents should be given to the above parties for 28,840 feet, when the mining law of July, 1866, only allowed 200 feet to each locator, and 200 feet additional to each discoverer, and the maximum extent of 43,000 feet to each company.

Fifth—That the Hon. W. P. Smith, Assistant Attorney General, decided in New York case, that said resolution and said instructions, suspending all action should be respected, and that no more than the number of feet above stated could, in any event, be patented to either a person or company.

Sixth—That the time required by law for applications was not complied with.

The Hon. M. W. Curtis, Acting Commissioner, rejected all of the above claims, and directed the Register to that effect a few days ago.

A MEXICAN miner picked up a "chispa" of gold recently, weighing thirteen ounces, in the creek near Hornito.

Notices of Recent Patents.

Among the patents recently granted to Pacific Coast inventors, through Dewey & Co.'s Patent Agency, the following are worthy of mention:

REIN HOLDER.—Jefferson Kindleberger, S. F., Cal. This invention consists of a metal plate, having a projecting rib extending lengthwise along one side and short standard at one end. A shaft is secured in the upper end of this standard parallel with the rib, and a concave plate is secured loosely on this shaft. The reime are slipped between the concave plate and rib and are held by the crimp thus produced and by the binding of the edge of the concave plate.

HYDRAULIC MAIN AND RETORT CONNECTIONS FOR GAS WORKS.—James R. Smedberg, S. F., Cal. Relates to an improved construction by which the flow of gas is rendered clearer and less liable to become clogged by an accumulation of tar. It also consists in the construction and union of the stand and dip pipes connecting the retort with the hydraulic main, so that the openings of both pipes are accessible for cleaning by removing one plug, and the construction is such that any luting that may fall into the pipes will be conveyed directly to the retort mouth, where it can be easily removed.

PERMANENT FAUCET FOR BEER BARRELS.—John Brizee, Alvarado, Cal. Mr. Brizee thinks that too much good beer is wasted in securing the ordinary faucet in beer barrels. He has therefore provided a neat attachment which is permanently secured to the cask or barrel so that the beer can be drawn at any time without waste. It is a neat device and will greatly reduce the trouble of brewers in keeping their faucets in good condition and will be a great convenience to consumers.

GARDEN SPRINKLER.—Nathaniel Clark, S. F., Cal. This invention is not only useful but it is ornamental. It consists of a semi-globular nozzle-head so constructed that the pressure of the water in the nozzle sends it spinning in a wonderful fashion, and as the head is perforated with numerous holes the water is thrown in a spray in every direction. It is intended for watering lawns, grass plots, gardens, etc.

ORE STAMP FEEDER.—Thos. A. Cochran, S. F., Cal. This invention consists of a revolving table which is placed at a slight incline. The ore is fed by a hopper upon the table, and the table is rotated by suitable connections with the tappet on the stamp stem. Suitable guides direct the ore into the battery.

PROCESS AND APPARATUS FOR SUPPLYING CITIES WITH MILK.—Frederick T. Newberry, S. F., Cal. Mr. Newberry proposes to lay a pipe from some point or depot in the country where milk is plenty and cheap, and extend it to a depot in the city. He will employ a suitable pumping engine to force the milk through the pipe into the city. When the pipe is not in use conveying milk, it is kept filled with water, the water and milk being alternately forced through the pipe as required.

The Failure of Parke & Bowie.

Last week the property of the well known tailing-mill men, Parke & Bowie, was sold by the assignees in bankruptcy, in Virginia, Nevada. At the sale, the Railroad tailings-mill in Six Mile cañon, with boarding and lodging house, shops, reservoirs and tailings flumes, with land in both Six and Seven Mile cañons, was sold for \$15,250. The mill and appurtenances cost originally \$130,000.

The Empress tailings-mill in Six Mile cañon, a short distance below the Railroad mill, was sold for \$5,400. It originally cost \$70,000.

The private residence of Ira S. Parke, with a coal tar reservoir, tailings reservoirs, sluices, orchard, nursery, and considerable land was sold for \$3,000. The residence cost about \$60,000.

The whole amount of indebtedness proved up against the estate in bankruptcy court was \$175,000; then there were about \$25,000 in liens or mortgage. There are probably \$10,000 in debt not proved up. Altogether the indebtedness amounts to about \$210,000.

The amount realized by the late sale was \$67,065. By a former sale of teaming horses and the like, about \$8,000 were realized, making a total of \$75,065.

The total first cost of the property sold was over \$300,000.

The property owned by these gentlemen was very valuable. The mill worked over old tailings from the quartz mills, and at first made a very profitable business of it; but when quicksilver rose to the present prices they were unable to work at a profit. The *Territorial Enterprise* thus describes the cause of bankruptcy: "The failure of this firm was directly caused by this sudden, unlooked-for, and almost unexampled rise in quicksilver. At the time when they built their mills, constructed their flumes and reservoirs, and made their many other extensive and costly improvements, quicksilver was selling at 60 cents per pound, and the millions of tons of tailings they possessed, and were constantly accumulating, could be worked to a profit. The rise of quicksilver from 60 cents to \$1.30 per pound, more than double the price that entered into any of their calculations for working tailings, was a death-blow to all their enterprises."

PROSPECTING on the hills immediately around Pioche and its neighborhood is being resumed to a considerable extent.

Work on Mining Claims.

The miners of the coast are all of them probably well aware by this time of the proper steps to be taken to hold the claims which they are not actively working. We have explained the law on the subject repeatedly of late, so that our mining readers might have their attention called to the fact that they must do the required amount of work in time to hold their claims. The time, as extended, is fixed at the 10th day of June, 1874.

Efforts have been made to have this time extended, as we have noted before, giving the bill introduced in Congress in our last issue. The Senate committee on mines and mining have reported favorably on this bill, but as yet Congress has taken no action on it. It behooves our mining friends, therefore, to be thoroughly prepared to begin their work on the 10th of June, if not before, in order to hold their claims.

There is some question as to whether this law, requiring a certain amount of work to be done every year, applies to placer as well as lode claims. We have in a convenient form all the decisions of the Commissioner of the Land Office, under the new law, and there is no mention of the matter to be found. Lodes only are specified. Parties with whom we have conversed are divided in opinion on the subject, and it must, of course, be left to the decision of the Land Commissioner in the end. However, to be on the safe side, owners of placer lands had better consider themselves in the same light as if owning lode claims. An important question like this should have been decided long ago, one way or the other, as, if the law applies to placer claims and owners do not do the work on them, they are liable to lose their claims; and, if the law does not apply to placer claims, and the owners do work them, it is rather unjust for them to expend money unnecessarily. It should have been clearly specified in the law itself.

Stove-Lid Lifter and Stand.

The accompanying cut represents a convenient little instrument, recently invented by Samuel Hill, agent of the Florence Sewing Machine Company in this city, and patented through the Agency connected with this office. The implement is intended for handling stove-lids, and at the same time forms a stand by means of which the lid, when attached to it, can be held in an upright position, so that it can be placed upon a carpeted or other floor, without soiling or marking it.

The implement is very simple, as the cut shows, and is convenient for lifting stove-lids from one place to another, in place of the ordinary stove-lid lifter. The handle furnishes a convenient means of grasping the implement, and when made of wood will not be as liable to become heated as metal handles. A shield can be applied between the handle and attached stove-lid, if desired, to prevent the hand from being burned by the heat of the lid.

Besides being an ordinary lid-lifter, when the lid is lifted upon the hook, the stand can be set down upon a floor, shelf, or other place, so as to rest upon the foot of the base and the end of the handle, in the position shown in the cut, thus supporting the lid without allowing it to touch the floor. The implement can also be used for lifting pots from the stove, as the hook can be caught under the bail, and the pot lifted without touching it with the handle.

Turbine Water Wheels.

The following letter explains itself:

EDITORS MINING AND SCIENTIFIC PRESS.—We noticed in a late number of the SCIENTIFIC PRESS a so-called "challenge," copied from the Dayton O., Journal, and published as an advertisement by a firm in this city, which is an answer to a challenge made by Jas. Leffel & Co., of Springfield, O., to Messrs. Stout, Mills & Temple, to test their wheel (the American Turbine) with the LEFFEL Wheel by grinding grain or driving any kind of machinery. They, after some weeks' careful study, replied in the language of their "challenge," "We will under no condition spend time testing water wheels in competition with any one by grinding grain or driving any kind of machinery." They were immediately answered by Jas. Leffel & Co., and challenged to enter into a competent test, and said challenge has been standing now over six months and has not been accepted. If, however, the firm in San Francisco wishes to accept the challenge made by Jas. Leffel & Co. to make a practical test of their wheels against ours, we will hold ourselves personally responsible to all of its demands.

We will in a short time give a full history of water wheel tests recently made, and in the meantime all wishing to be informed of the handy practices of "competent engineers" will be fully enlightened by addressing the undersigned at Salem, Oregon, or at 306 California street, San Francisco, California.

LEFFEL & MYERS.

Reports from the Schellburn district are favorable, and indicate a prosperous season. The McMahon mill, the first in the district, commenced operations on the 8th instant, and is running to its utmost capacity on good paying ore.

CHINAMEN continue to arrive at the Lava Bed mine, near Croville, in great numbers. It is estimated that before long there will be from 15,000 to 20,000 Chinese miners at that camp.

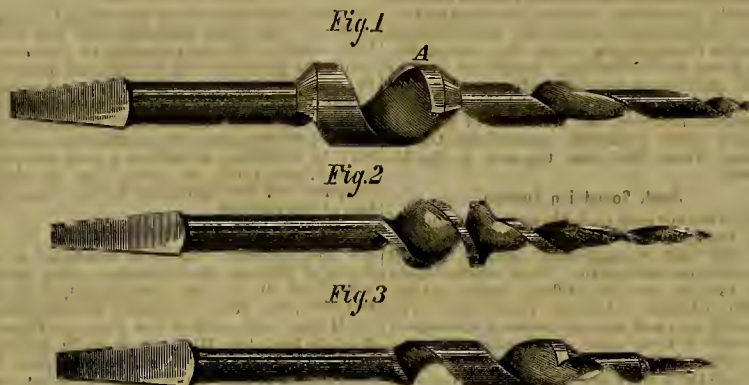
The shipments of lime from Santa Cruz to this city are very heavy, though hardly keeping up with the demand.

SANTA CRUZ is the last county in which quicksilver has been discovered.

Monson's Gimlet Screw Bit.

Wood-workers will appreciate the convenience of the implement shown in the accompanying cut, which is a form of screw bit, invented by Christian Monson, of Moscow, Iowa county, Wisconsin.

As will be seen by the cut the bit is made of three different diameters, corresponding to the variations in caliber of the wood screw so universally in use. The section next the point is made even smaller than the screw, to allow the thread an ample hold upon the wood, and yet to guard against the chance of splitting, as the middle portion is made enough larger to allow the blank part of the screw to drive easily and hold well. The larger portion, A, countersinks the wood for the head of the screw, or even sinks it to any desirable depth. It cuts smoothly, as it has a draw out. The style of Fig. 3, with the triangular awl joint, is calculated only for the very smallest sizes. Of the larger sizes, one bit can, of course, be used for boring three different sizes of holes through an inch board. The invention will commend itself, as it tends to bore and countersink in a perfect manner at one operation, making an improve-

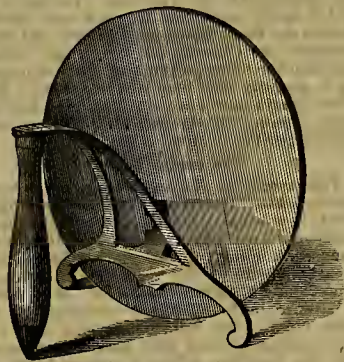


MONSON'S GIMLET SCREW BIT.

ment in economy of time, labor and expense, and also in durability, as the last projection answers as a brace.

The patentee writes us that, having many other things on hand, he wishes to dispose of his patent on this bit, royalty preferred. He is also the inventor of an improved grain drill, shown in the *Scientific American* of February 14, 1874, and a three burr grist mill and a berry huller. He wants to dispose of rights for one, two or all three of his inventions.

HIGHT OF CERROS ISLAND—CORRECTION.—While the P. M. S. Co.'s steamer *Colima* was



Stove-Lid Lifter and Stand.

lying disabled off Cerros Island a party consisting of Messrs. P. M. Rendell, Mining Engineer; F. K. Balch, Ship Officer and E. Vogt, Artist, ascended March 23d, 1874, the highest point of the island, and determined it to be three thousand nine hundred and fifty feet in altitude instead of twenty-five hundred feet as two erroneous, which agreed perfectly at various points in the ascent from the level of the sea laid down on the coast chart. They made use of the summit. They named this Mount Hudson, after Captain Hudson of the *Colima*. On the highest peak, they erected a monument of stone, placing within, well protected from the weather, a card setting forth the date of ascent, name and height of the mount, with the signatures of the explorers.

The *Statesman* says two companies are at present prospecting in the coast mountains of Oregon, for gold, silver, cinnabar, etc. They have been in the mountains for some time, but as yet have not succeeded in discovering any indications of the precious metals, though large quantities of iron and coal have been found.

W. H. ARMSTRONG, formerly superintendent of the Sapphire quartz mill, has been appointed superintendent of the Woodworth mill, on the Carson river.

CONSIDERABLE mining property is changing hands in Utah.

The San Juan Country.

An Accurate and Comprehensive Description by One who has Seen it.

The new mining region known as the San Juan country, lies in southwestern Colorado, on what was recently the southern part of the consolidated Ute reservation. By a recent treaty something more than three millions of acres was ceded back to the United States. It straddles the Sierra Madre, or main range of the Rocky mountains, and forms the hub of numerous diverging mountain spurs, including the Uncompahgre and San Juan ranges, Sierra, San Miguel and Sierra La Plata. It comprises four distinct slopes, or water sheds—the northern or Uncompahgre, the eastern or Rio Grande, the Southern or San Juan, and the western or Utah slope. In this respect it is remarkable in the topography of Colorado, as well as of the American continent. It is topographically and literally a continental emmit; one of the principal apices of the Rocky mountain system.

The Streams Which Drain the Region

Are all, as a consequence very rapid and frequently interrupted by cataracts of considerable fall. The principal of these are on the

northwest and north; the Rio San Miguel, Uncompahgre, Dallas Fork, Uncompahgre, and Lake Fork, of the Gunnison, all tributaries of the Gunnison and Grand rivers; on the east the Rio Grande del Norte and tributaries, flowing into the Gulf of Mexico; on the south the Rio San Juan and its numerous boundaries, including the Navajo, Piedro, Los Pinos, Florida, Animas, La Plata and Mancos; and on the west the Rio Dolores, also a tributary of the Grand. All the streams mentioned have their origin within a radius of fifteen or twenty miles from a common center, and all except the Rio Grande del Norte have their final outlet through the Great Colorado of the west into the Pacific. Hence the group of new mining districts, comprehensively known as the San Juan mines, be on the Pacific slope of the continent, with the single exception of the Summit district, which occupies the summit of the divide between the San Juan and the Rio Grande slopes.

In this portion of Colorado

The Main Ranges of the Rockies—Cordillera del Sierra Madre.

Is very much broken up and interrupted in its prevailing direction. None of the many spurs yet extent give any thing more than vague guesses at the real topography. The central chain sweeps abruptly to the westward from the southern extremity of South Park, crosses Saguache county, where it takes the local name of Saguache mountains, and reaching the head of the Rio Grande it abruptly divides into many spurs, the principal one bending southward, forming the main Atlantic and Pacific watershed, and again deflecting to the southeast becomes the San Juan range proper. The other spurs are the Uncompahgre mountains, the Sierra San Miguel and the Sierra La Plata.

It is as if the great rocky backbone of the continent had here bent upon itself, by some awful throes of nature, until its monster contortions broke asunder and overlapped each other. This explains the unparalleled abruptness of the region and the occurrence of so many elopee and counter slopes within a comparatively limited area. The surface of the whole region is pre-eminently mountainous and the extreme ruggedness of the mountains the most noticeable feature. On every hand sharply outlined snow-peaks pierce the clouds. Temese is an unknown element in the landscape. Everything is angular, abrupt and immense.

"—Sierras and eternal tents of snow
That flash o'er battlements of mountains."

All the valleys are consequently narrow, and the parks—so called—are scarcely worthy the name, being no more than the occasional widening of the valleys, as if by accident.

The prevailing

Geological Formation

Is granite, or some of its numerous variations—evenly being the most frequent of these. This argues well for the permanency of the mineral lodes of the region.

The upheaval has been both extensive and uniform, and the veins are almost invariably vertical. The prevailing trend, as shown by the lodes thus far recorded, is northeast and southwest; but a considerable number extend in a direction nearly at right angles to this.

Certain geologists who have cursorily and theoretically studied the region, venture the opinion that here is the junction of two well-defined mineral belts, viz: the Colorado belt proper, extending in a northeasterly and southwesterly direction across the Territory, from Wyoming or North Park to Arizona, and so on to old Mexico and the Pacific coast; and the Utah belt stretching somewhat interruptedly from western Montana and Idaho, in a southeasterly direction through Utah, across the southwest corner of Colorado into central New Mexico, terminating in the Cimarron and Moreno mines. According to this theory the mineral-bearing ranges outside these two main belts are auxiliary feeders or accidental spurs. Further and more accurate data are wanted to fully establish this theory, but facts already known give it a strong coloring of plausibility.

The Original Discovery of Gold

In the San Juan country by white men occurred in 1860. But the region was then so remote from civilization that the first crazy expedition, under the leadership of a noted mountaineer by the name of Baker, failed to realize any satisfactory results. They made no search for lode deposits, being wholly bent upon finding rich placer diggings, which existed, according to both Indian and Mexican tradition, along the tributaries of the San Juan. Exhausting their meager supply of provisions, the party scattered in all directions, some perishing at the hands of hostile Indians, others dying of starvation, and others escaping down the Rio Grande, as it were by the skin of their teeth, to tell the sorry tale of failure and suffering. Various causes—including the setting apart of the western portion of Colorado as an Indian Reservation—have operated to prevent the exploration of the region. Faith in the ultimate discovery of fabulously rich mines here has never flagged. Years after the Baker fiasco, the proprietor of the mail route between Santa Fé and Los Angeles, in California, accidentally encountered new proof of the

Existence of Precious Metals

In this vicinity. His name is Stewart and he is now a resident of Taos, in New Mexico. He recounts his adventures as follows:

Accompanied by a young Mexican boy, he was making the hazardous journey across the desert without other escort. A few days out from Santa Fé he was met by a small band of Navajoes, who told him they were then in active war with the Apaches, and that he would be certain to be intercepted and murdered by the latter bloodthirsty tribe unless he turned aside from the usual trail. They directed him to bear to the right for two days, which would leave the unfriendly tribe to the southward and avoid all danger of meeting them. He followed the advice, and on the second day while halting on the banks of a beautiful and rapid mountain stream, to dispatch his noonday meal and bait his animals, the Mexican boy, with the curiosity common to boys of whatever nationality, played in the stream and gathered pebbles from its sandbars. Having previously seen something of placer diggings, he discovered signs which induced him to wash some of the sand in a mess-pan. The result astonished both parties. During the noonday he washed out eighteen dollars in golden nuggets, which he carried to Los Angeles and disposed of to the British Consulate stationed there. Stewart had no very definite idea of the locality, but believed the stream at that time was known as Eagle river. From his descriptions and statements it would appear to have been either the Rio La Plata or the Mancos. He has made several recent attempts to find the locality again, but without success. The Mexican boy, who is now man-grown, does not agree with Stewart in his opinion of the whereabouts of the lost El Dorado, and is confident that during the coming season he can conduct a party to the identical spot, where he made his first stake by panning out eighteen dollars in half an hour.

Discoveries of Quartz.

In 1870, lode-prospectors invaded the head of the Animas, by way of Tierra Amarilla and the old site of the Baker party's Animas city. They found mineral veins cropping out on every hand, and brought away samples from a few of the more promising ones located. One of these proved to be immensely rich in free gold, and the subsequent development of this lode has given the San Juan country its substantial reputation. Assays of the ore have returned all the way from \$100 to \$30,000 per ton, and the working results by means of very imperfect apparatus, have averaged as much as \$1,200 to \$1,500 per cord. Although at first reported to be a gold region, further investigation shows that silver is by far the predominant mineral. The number of silver lodes recorded amounts to thousands, while those containing gold in any paying quantity do not number a score.

Baker's Park, a widening of the upper Animas valley, named after the leader of 1860, is the

Center of the Present Excitement.

It is rimmed round with steep mountains, which are thickly and visibly seamed with mineral veins. As compared with those of other mineral-producing sections of Colorado, the distinguishing characteristic of the San Juan lodee are:

1. Far more extensive out-cropping: Most of the veins yet discovered may be traced on the surface of the mountains for long distances—sometimes for miles.

2. Greater width: In some instances this is so great that any statements approximating the

(Continued on page 332).

The Depression in Cornish Mining.

For several months past mining in Cornwall has been in a state of depression which is almost without parallel in the history of the Duchy. A slight reaction has lately commenced to set in; but, though it may be looked upon as an augury of good for the future, the loss already sustained will require, even under the most favorable circumstances, a very considerable period for its evil consequences to be overcome. At the time when the change for the worse commenced, Cornish mining was enjoying a state of great prosperity. The prices of its chief products, copper and tin, were commanding unusually high prices. Speculation had set in on a great scale simultaneously with the commencement of the rise. The markets became unduly inflated, and fictitious values were established by sales which had existence only on paper. Foreign production was thus fostered by the high quotations which were reached. Supplies of ores and metals poured in from all quarters. So sudden was the increase of stocks thus produced, and so great the dread that it was only the presage of still greater importations, that a fall immediately took place, and sales were suddenly checked. Speculators who had been dealing on credit, and who never contemplated completing the purchases they made, but counted only on receiving differences, found themselves saddled with contracts they could not carry out in the face of a falling market. A panic was the result. The metal markets, which had been buoyed up by worthless paper, collapsed, and prices declined with a rapidity great in proportion to the suddenness of the increase which had previously taken place. About this time the prices of coal, material and wages began to rise, until the famine point, from which all branches of industry are now suffering, was reached. Our mines in Cornwall had thus to meet a foreign competition never previously known, under conditions of difficulty which had never before been exemplified. That they have been able to resist in so far as they have done the immense strain thus put upon them is a proof of their real intrinsic merit, and gives the best grounds for anticipating that when affairs shall have returned to their usual channel they will again become sources of national wealth. One point is clear, that if prices were to continue at figures which make profitable mining in England impossible, with all the advantages we possess in fuel, mechanical appliances and skilled labor, it will only, be in very few instances that foreign producers will be able to continue exporting to us, with all the disadvantages they labor under of heavy freights and the want of those very essentials in which we are rich. That this is already beginning to be felt is clear from the news received from the tin districts of Australia, where the stream tin mines, whose working is the least expensive that exists, are found not to be paying speculations at present prices, and are being for the time abandoned for more lucrative employments. What has taken place with regard to tin has done so also, to a certain degree, in copper, as is evinced by the late strike on the part of the copper miners reported from the same quarter. It is true that the difficulty is said to have been arranged, but its existence—caused, as stated, by a proposal to reduce wages—is a proof that the limit in price has been reached, if not passed; and at present rates it is out of the question for the miners in the colony to endeavor to compete with us in our own markets, and pay the freight for the long transportation their produce has to undergo before it arrives in this country.

Looking dispassionately at the present state of mining, both in Cornwall and other counties which produce copper and tin, it is evident that the existing state of depression in the former is the result, not so much of foreign competition as of a series of unfavorable circumstances in this country. All branches of trade and industry are alike suffering from the same causes. Mining, as being peculiarly sensitive to such influences, is doing so to a greater degree than most others. When the recovery begins to set in, as there is every appearance of its doing soon, though the settlement of the labor question may delay it for some short time, mining will at once begin to recover; but as we have called into existence a very formidable foreign production, we must set about introducing all those improvements and labor-saving appliances which may enable us to produce our ore at the cheapest possible rates. Many years ago, when Captain Trevethick introduced his great improvements into the pumping engines used in Cornwall, the mining of the Duchy was in a similar condition to that which it now is, with this exception, that instead of its being a passing nature it had become chronic. His varied inventions gave it new life. The same must be done now, and we need not fear for the future. To do so will no doubt cost considerable outlays of money; but when capitalists see fair prospects of handsome returns there will be no lack of funds for any legitimate purpose. In the meantime the fall in the prices of copper and tin has exercised a most baneful effect, as is shown by the great decrease in the value of shares in Cornish mines, which has taken place since the commencement of the year. There has been within the last fortnight a slight improvement in some instances, but for the purpose of illustrating the actual difficulties which have surrounded Cornish mining, this may for the moment be left out of the question. In looking, then, at a few of the best known mines, we find that Carn Brea has since the 1st of Jan-

uary fallen in market value 38½ per share, or 38,000 in all. The fall in Dolcoath has been 20½ per share, or a total of 80,000; East Pool, 30,000; South Caradon, 30,000; Tincroft, 110,000.—18½ 10s. per share; Trumpet Consols, 20,000. This mine in 1872 paid in dividends 8,000; last year it, however, returned no profits, and during the quarter just ended has been forced to make a call of 2,000. With regard to other mines, we find the difference in their present value to be—Cook's Kitchen, 17,000; South Crofty, 20,000; West Frances, 14,000; South Conduarrow, 15,000; Wheal Bass, 7,000; West Chiverton, 7,000. The above are amongst the most prominent instances, and give a fair specimen of the general depreciation which has taken place in Cornish mining property.—*Mining World*.

Miners Smoked Out.

The Kossuth and Alhambra mining companies, situated a short distance below Silver City, are now at war; are, in fact, in the midst of an irrepressible conflict. Last Monday the Alhambra broke through into the Kossuth, or the Kossuth into the Alhambra, we don't know which; but at all events the works of the two mines made an unexpected connection several hundred feet below the surface. Out of this grew a sudden unpleasantness; the two hitherto friendly companies "soured" on one another. As to what passages at arms may have occurred between the employees of the two companies, far down in the seething bowels of mother earth, previous to yesterday afternoon, we are not informed. About three o'clock yesterday afternoon, however, the followers of Kossuth opened active hostilities against the Alhambra. About that time the men in the Alhambra

Smelt Something Burning.

They were not long in doubt as to the nature of the fumigation. The odor wafted to them was not that of sandalwood, neither that of frankincense nor myrrh. What reached them was the hot, pungent, stifling smoke and gas which told them of burning pitch pine. The Kossuth men had secretly prepared and lighted in a drift of their mine, connecting with the Alhambra shaft, a large bonfire of pine wood. There being a draft into and up the Alhambra shaft, the men working therein soon found themselves in danger of suffocation, and made all possible haste to reach the surface.

A Narrow Escape.

Herman Scheel, the superintendent of the Alhambra mine, narrowly escaped losing his life. When he was hoisted to the top of the shaft he was asphyxiated to the verge of insensibility, and fell back, but luckily caught on the edge of some planks and held on long enough to enable those standing near to snatch him away. Had he fallen to the bottom of the shaft it would have been certain death, for had he not been been dashed to pieces by the fall, the smoke and gas ascending the shaft would have prevented any one going down to his assistance and he must inevitably have perished.

Turning the Tables on the Kossuthites

Was now tried by the men of the Alhambra, but with what success is not known. They covered the mouth of the Alhambra shaft with blankets, in order if possible, to force the smoke back into the Kossuth mine. The smoke still appearing to gather and thicken and pack in the Alhambra shaft, several barrels of water were got in readiness, the covering of the shaft was raised and all the water suddenly poured down upon the smoke. To what extent the smoke was thus driven back into the Kossuth is not known, but the chances are that they in the mine received a temporary hoist from their own petard.

The Alhambra Men to Have Been Blown up.

A deserter from the rank of the Kossuthites came over to the side of the Alhambra men yesterday morning and made known to them a scheme which had been proposed for blowing them all up. He stated that Mr. Walley, foreman of the Kossuth, had ordered him to drill a hole under where the Alhambra men were at work; put a heavy charge of giant powder into it, and when the enemy came to work to fire the charge. It seems almost impossible that any such fiendish idea as the wholesale slaughter of the innocent workmen of the Alhambra, could have been seriously entertained by the foreman of the Kossuth, yet the man who came from that mine assured the Alhambra folk that it was so, and further said that he quit work rather than obey the order. At last accounts last night the hostile forces were still in the field. How the war will end remains to be seen. The chances are that a battle will be fought either under ground or on the surface before all is over; then, whatever may be the result, there will be another set-to and final wind-up in the courts. The Alhambra mine is situated a short distance north and west of the Kossuth, and both mines are in close proximity to the Dayton mine and works.—*Enterprise*.

A VALUABLE MINE.—The Patriot mine, in Yankee Blade cañon, is turning out to be a first class mine. Its owner, James McCann, has worked it for several years, during which time it has more than paid its way; and recently he struck upon a ledge of two feet in width which contains ore of an average value of \$800. There are several tons now being reduced at the Manhattan mill, from which he expects to realize between \$7,000 and \$8,000, and when he gets his ledge fairly opened it will take but a short time for him to take out a fortune.—*Reese River Reveille*.

Cornucopia District.

Cornucopia district, which made such a stir a short time ago, has been little heard of lately. A correspondent of the *Sacramento Record* recently had something to say of the district as follows:

Cornucopia is situated in the northern portion of Elko county, on the headwaters of the middle fork of the Owyhee river, distant from the Idaho line some 25, and from the line of the Central Pacific railroad about 80 miles. Elko, Carlin, Paliade, Battle Mountain station and Winnemucca are all available as supply points. Within the circumference of the circle described, from this place as a center, with a radius of 25 miles, are embraced Tuscarora, Trail Creek, Ten-Mile Creek, Deep Creek, Bull Run, Cope, Murray, Caledonia, Bruneau or Wyoming, Mardis, Fairweather, Sooner and Island Mountain districts, all of which give promise of eventually becoming lively camps, the most prominent of which are Bull Run, Cope and Bruneau. The valleys and plains adjacent to the mining camps are eminently adapted to agricultural and grazing purposes. Cornucopia is the most recent discovery of the above named places, having been located in June, 1873. Its

Natural Advantages

Are, first, the character of the ore and country rock, the ore being unusually rich, free from base metals and not refractory in reduction, while the porphyry and decomposed quartzite in which the ledges are found is soft, through which works can be run at a comparatively trifling expense; second, the abundance of wood, water and grass—those adjuncts so necessary to a mining as well as a good camping ground; and, third, the cheap cost of labor, supplies and transportation to and from the line of the railroad.

The Prominent Mines

Are the Leopard, which is developed to a depth of 100 feet; the Chloride, opened up to a depth of 40 feet; the Constitution, shaft 50 feet deep; the Miner's Delight, down 120 feet; the Hussey, with shaft 80 feet deep; the Fisher, down 60 feet; the Monarch, shaft 30 feet and tunnel in 50 feet; the Black Diamond, shaft 30 feet, tunnel 30 feet, which will tap the ledge at a depth of 110 feet; the Lion, Hunter, Champion, Cressus, Summit, Yellow Boy, Little Annie, Rembling Sailor, Modoc, the Meagher and Elko tunnels, and others too numerous to mention. The Oracle Mining company (incorporated), the shareholders principally Sacramento parties, own the following mines: The Governor Stanford, down 10 feet, with promising indications; the North America, an A No. 1 prospect, down 16 feet; the Orphan Boy and Oracle tunnel, on which assessment work only has been done; the Awful Hole tunnel, which has a fine prospect of striking the ledge within 20 feet. The Carrie mining company has a shaft 55 feet in depth, with 30 tons of ore on the dump and 300 more in sight; shows a well-defined, true fissure vein, four feet wide, of No. 1 free milling ore, averaging the entire width of the ledge \$150 in silver per ton. The ore in all of the above mentioned ledges is very similar; that in the Black Diamond, Chloride and other locations on Chloride hill being the richest, but mines in other portions of the camp make up in quantity what they lack in quality. Fabulous assays have been obtained from this district, running all the way from \$100 to over \$20,000 per ton in silver alone.

The Severe Winter.

The severity of the last winter, which is unparalleled in "the memory of the oldest inhabitant," has been a severe blow to the stockmen, many of them having lost one-half of their bands, and mining operations have been almost at a stand-still for the past month, owing to the scarcity of mining supplies. While snow is still to be found in any quantities in the high ranges, the valleys are warm and dry. The contrast between Bull Run or Cornucopia and the beautiful valleys is marked in the extreme. After being snow-bound in the hills for four months, on the enforced diet of bread and bacon straight, your correspondent had the pleasure of spinning through the valley of the Owyhee a day or two since, and of feasting upon dishes that an epicure might envy. The bill of fare comprised sand-hill crane, wild goose—so fresh from sunnier climes than this, that rice was found in its crop—canvas-back, prairie-chicken, snipe, curlew, salmon, and last, but not least, a pot-pie of the famous reed bird of the Carolinas.

The next 30 days will doubtless bring many changes to Cornucopia and her denizens. The spring rush will commence, mines will change hands, roads will be opened, mail and supplies will once more arrive on time, and the threadbare joke of the captioned Cornucopians concerning "plenty in the horn," will have lost its significance.

CHERRY CREEK.—We are in receipt of a letter from one of the heaviest owners in the Geneva and Tea-cup mines at Cherry creek, in which most encouraging accounts are given of the appearance of things there. One car load of selected ore from the Geneva went \$1,368.50 per ton, and netted \$1,096.50 after all expenses had been paid. The vein from which this ore was taken, is said to be at the present time from six to thirty-six inches in width. The lower grade ore will mill \$400 and \$500, and shows a large body. We have no doubt that, under energetic management, Cherry creek will "come out strong" this summer. All hope so, at least.—*White Pine News*.

The Washoe Coal Mine.

Croppings of coal have been found in several localities in this section of the State, since the discovery of the Comstock lode, and some prospecting has been done in two or three places, but no great amount of work has ever been done on any vein in this vicinity. The place where most prospecting has been done is on a deposit in El Dorado cañon, about 11 miles above Dayton, Lyon county. Here, about 10 years ago, a shaft was sunk to the depth of 90 feet, and two veins of coal, from five to seven feet thick, were cut. This coal, though not what can be called first-class, burns very well and freely, but, being mixed with a considerable amount of shale, slate and other extraneous matter, it leaves a great quantity of ashes. The company who formerly owned this mine took out a good deal of pretty fair coal. They at one time established a coal-yard in this city, and had their coal on sale here. The Pioneer mill, Silver City, was once run for about a fortnight on the coal. The company, however, were unfortunate; a fire destroyed their coal-yard and dump in this city; the only hoisting machinery they had at their mine was a horse-whim; water came in on them, and, finally, they got into a wrangle among themselves, and the works were shut down. The mine is at present owned by the Nevada Coal Company, composed of citizens of this place, who will proceed at once to open it in good shape. They have purchased first-class pumping and hoisting machinery, which they will at once proceed to erect, when they will pump out the mine and open it in good shape, under the supervision of an experienced coal-miner. There is at the present a good wagon road from Dayton all the way to the mine, and, in case it shall turn out as well as is anticipated, a narrow-gauge railroad will be built. It is somewhat strange, but at the distance of two or three miles up from the mouth of El Dorado cañon, a region of sandstone, slate and other sedimentary rocks sets in, and this extends for some miles in all directions. This being the case, it is not unreasonable to hope for the development of a good and extensive coal mine near where the company have commenced operations; at all events, they will expend sufficient money to thoroughly prospect their ground, and will make the first really thorough and workmanlike explorations that have ever been made on any coal mine in this part of Nevada.—*Enterprise*.

Mines of Western Nevada.

The immense mineral wealth of Western Nevada is not yet fully appreciated or understood. The prevalent idea hitherto has been that the Comstock was the only mine of value in this part of the State, but recent explorations and discoveries prove beyond a doubt that all along the eastern base of the Sierra Nevada range are countless lodes or deposits of rich silver ores—extending for many miles both north and south of Reno, all of which will in time contribute to increase the wealth and business of this part of the State. Many of the oldest and best miners in the country, who have been off to new and distant excitements, are returning to prospect in what is generally called the Comstock range, believing it better than more distant fields of mining enterprise. Recently locations have been made near Silver City by old Virginia prospectors of the early days of Washoe, who have been absent for many years, and after having followed up all the excitement, been the pioneers of every new camp in Eastern Nevada, Idaho, Utah and Arizona, now return with the faith that here is the surest and safest part of the world in which to strike it rich. What is true of Virginia, is true of Aurora, Silver Mountain, Peavine and others, all having been abandoned years ago, for more distant and uncertain mining operations, and all now reviving and giving fair promise of great richness, and permanent and lasting prosperity. From all these camps mentioned, as well as those of Benton, Columbus, Lone Pine and Cerro Gordo, comes the cheering news of continuous and increasing prosperity and success in mining enterprises, the great and leading industry of the Pacific States.—*State Journal*.

STICKEN MINES.—The following appears in the *Colonist* as the latest from Cassiar: Sticken river opened on the 24th of April, when all the ice had given out. Twenty-five or thirty canoes started at once from Fort Wrangel for Buck's Bar. Gerke & Co. loaded their goods from the Otter into Moore's barge, and many canoes were on the point of starting. Messrs. Porter and McIntosh left the diggings on the 15th of April. There were then some 200 men in the diggings, and twenty-five or thirty companies were at work. The ground was still frozen, so were the creeks. The snow was two feet deep. One of Captain Moore's sons and a hired man were at work on Dease creek. They thawed the ground and washed it in a rocker, yet made from four to ten ounces a day! Rath Brothers had just got into the diggings. Nelson & Co. were making from \$30 to \$35 a day, thawing ground and washing it. Other companies were doing as well. Some of the boys were getting out sluice-lumber. One company had got sluices set. A new creek, called Delerrie, emptying into Thibert's creek, had been discovered. A prospect of four hits to the pan was reported and occasioned some excitement. Only three men were at work on the trail, which was blocked with fallen timber.

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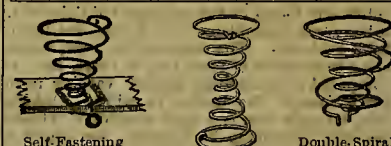
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(Continued from page 329.)

actual measurements would be received with incredulity. A column of vein-matter, thickly interspersed with mineral, averaging from four to seven feet broad, and not only cropping out for thousands of feet but actually standing in places from 10 to 30 feet above its enclosing walls, is not here a very remarkable sight. Several ledges have been recorded, measuring more than 50 feet in width, and in one instance, at least, a total breadth of 150 feet is attained.

3. The existence of mineral from the very surface: Thus far, prospecting has, on this account, been almost as easy for the mere novice as for the most experienced.

4. Accessibility of lodes for purposes of examination and rapid development, without the necessity of the usual delay and expense of sinking shafts: This last item is very much in favor of those who seek investments in the district before any considerable developments have been made. A few days' work with pick and gad, or half a dozen charges of blasting power, make feasible an examination more satisfactory in character than is possible in other districts after the expenditure of thousands. Parties who will make use of a modicum of mining sagacity will have no excuse, and deserve no pity, if they are bitten by "going it blind" on the San Juan silver lodes.

"Claim-Poor" Prospectors.

For this reason most of the prospectors who have penetrated to this section during the past three seasons, have done very little in the way of developing their property, preferring to secure a great number of claims which promise well, rather than thoroughly prove a few. They now find themselves "claim-poor," since they cannot possibly, on so many lodes, perform the minimum of labor required by law to avoid forfeiture. A penniless prospector, holding from 20 to 40 lode-claims, each requiring the expenditure of \$100 worth of labor each year, or otherwise becoming liable to be legally declared "abandoned," finds himself in possession of an elephant for which he has no fodder. He must sell a part of his property for whatever it will bring, or lose the whole. This is the condition of nine-tenths of the claim-holders in the San Juan, and probably nine-tenths of the best claims thus far located will change hands during the coming season. Shrewd operators, accompanied by experts, from the Pacific States and from the East, will be on hand as soon as the season is fairly opened, and will not be long in securing all the good "takes" that are offered.

The gold lodes of this region are not sufficiently numerous to merit particular mention.

The Little Giant

Is the only one yet worked, and is a remarkable lode. The quartz-ore from this mine is unlike any found in any other part of Colorado. It has some resemblance to a few of the Humboldt gold ores. The center of the vein, which has a total width of from two to three feet, is composed of crystallized quartz, varying from two to four or five inches in width. Outside this, on each side, is a layer or column of black material resembling hornblende, for which it was at first mistaken. It is soft, greenish-black in color, and varies in thickness from two to six inches. Outside this, on each side, are columns of gray quartz, uncrystallized, and containing more or less sulphurets of iron and copper. This is from four to ten inches thick, making the whole width of the pay-streak from twelve to thirty inches.

The white quartz in the center contains free gold and occasional crystals of sulphurets; the black streak—by some authorities pronounced *ripidolite*—contains free gold and is the richest portion of the vein. Assays from this have been made showing, as already stated, more than \$30,000 per ton. It is said that no assay has been made from this streak showing less than from \$900 to \$4,400 per ton.

The outer gray quartz contains little free gold but is rich in sulphurets of gold, requiring some process of calcination or roasting before it can be economically treated by amalgamation.

This vein crops out extensively on the face of a very steep mountain and is worked wholly by adits. Two tunnels on the lode have been started, the upper one being advanced fifty, and the lower one nearly two hundred feet. The pay streak has widened steadily since first opened.

The Remaining Gold Lodes

Have been but slightly tested. Two of them—the Central and Dexter, are located in the same mountain with the Little Giant, and both evidently intersect the latter at no great distance within the mountain. It is thought by some old miners that the three belong to one and the same mother vein. The Central points toward the Little Giant at an angle of about forty-five degrees, has a four feet crevice yielding from \$20 to \$50 per ton in gold and nearly as much in silver. The vein matter consists chiefly of a yellowish, uncrystallized quartz, free from refractory material. The Dexter has a seven feet crevice of similar material, and cuts the Little Giant nearly at right angles, apparently at about the same point as the Central.

It remains for mining enterprise to unearth the mineral coffers of this remarkable mountain.

The Sampson is another promising gold lode, showing a wide crevice of moderately rich yellow quartz. The gold is chiefly free, and the quartz easily reduced. Its permanent

value will be established by further development the coming season.

The Character of the Silver Lodes

Varies widely in different localities. The earlier localities were of argentiferous galena lodes. Perhaps a majority of all the discoveries yet made are of this class. Of the galena lodes, nine-tenths are of low grade, on the surface, showing all the way from a trace to fifty ounces to the ton. Not more than a score of these have been opened to any extent, but all thus tested show a rapid increase of richness with every increase of depth. From 20 ounces per ton, as a surface test they have shown from 120 to 250 ounces at a depth of from ten to thirty feet. A number of them show the miner's "gray copper" within a few feet of the surface, after which they rapidly increase in richness. The percentage of lead, as tested at the Denver mint, varies from 28 to 70 per cent.

A Second Group of Silver Lodes

Shows a much smaller per cent. of galena, and the vein matter consists of white quartz, heavy spar, galena, sulphurets of iron and copper and "gray copper" or antimonial sulphurets of silver. These lodes are richer from the start, surface samples assaying from 200 to 400 ounces. At a little depth this increases to 600 ounces or more, reaching in extreme instances as much as 3,000 ounces per ton. Sometimes the richness of these lodes is confined to a narrow streak not more than four or five inches wide at the surface, but steadily widening with every foot of increased depth. The balance of the vein matter, which is usually three or four feet wide—in many cases much wider—is not dead rock by any means, but is a low grade ore which, with better facilities, can be made profitable by concentration.

A Third Variety of Lodes,

None of which were brought into notice until the season of 1873, is by far the richest and most remarkable yet discovered. They contain no galena, and varying in width of crevice from two to five feet; are filled with a matrix of fluor-spar thickly epattered through from wall to wall with "gray copper" and black sulphurets of silver. Very little or no quartz appears in these veins: ruby and native silver, silver glance and horn silver are not uncommon, and the ore is remarkably rich from the very surface. Several of these lodes are claimed as having a two foot streak of nearly clear "gray copper." This statement must be taken with a grain of allowance.

The Ores.

Thus far very few lodes yield any considerable quantity of strictly milling ore. No doubt, as greater depths are reached, the proportion of this class of ore will materially increase. The better grade of galena ores can be readily smelted, and for this purpose the fluxing and other requisite materials are to be had in the vicinity. Hematite ores and fire clay have both been found within easy reach of all the principal mines yet discovered. Fluor-spar and pyrites of iron abound in certain localities, and in several instances extensive lodes of pure galena have been opened.

Another element which must eventually figure extensively in the separation and reduction of both gold and silver ores, is chloride of sodium. An inexhaustible supply of this material in any mining region would forever settle the vexed question of "refractory ores." Every chemist knows that cheap salt is equal to cheap hydrochloric acid, which is one of the solvents of gold itself.

This element exists in unlimited quantity not far from the new mining center. In fact, there is an actual mountain of salt to the westward of the Rio Dolores, called by the Spaniards who discovered it, *Sierra la Sal*.

Fire Clay and Coal.

Fire clay of good quality, and extensive beds of excellent coal have been found in the valleys of the southern San Juan slope. One party—an old miner at that—asserts that he has secured a vein of genuine anthracite, but this is to be doubted. It is probably the same as the Trinidad lignites, which might at first glance be mistaken for real anthracite.

Timber and Water

Are abundant for all practical mining purposes, and in many localities, unlimited water-power is of easy command.

As yet there is neither a stamp mill nor a smelter in the country. Several companies have projected smelting works to be erected the coming season, and the owners of the Little Giant have a fifteen-stamp mill principally on the ground and ready to set up.

A saw mill is nearly ready for operation at the foot of Baker's Park and others are to be erected.

Extensive placers are reported to have been discovered late last fall, along the Rio La Plata. How extensive and how rich they may prove the coming season will tell.

THE QUICKSILVER EXCITEMENT is extending into Santa Cruz and Santa Barbara counties on the south and Mendocino county on the north. The new mines in Santa Barbara county are about 18 miles northwest of Santa Barbara. The locality of the discoveries in Santa Cruz county is kept secret for the present.

THE Crown Point hoisting works will shut down on the 1st of June, and remain so for ten days, in order to put in the two new and powerful incline engines.

JAS. GLASCOB was fatally injured by a cave in the Empire mine, Grass Valley, May 16th.

PERSONAL.—Louis Janin, Jr., the well known mining expert, whose name is familiar at home and abroad for his theoretical and practical knowledge of his business, has returned from Japan, after a year's absence in that country, where he went under special engagement to examine the Japanese mines. He will remain in this city to practice his profession. His brother, Alexis Janin, still remains in Japan, where he has charge of extensive mining works belonging to the government.

TO BE INCORPORATED.—Emil Hendsch informs us that the Pacific Slate Quarry in Celestevae county, California, will be shut down until next August, when a company will be formed to carry on the work on a large scale.

THE new car house and machine shop at Donehue, to replace the buildings destroyed by fire a short time since, will be completed in a few weeks, and the machinery be put in operation.

THE placer claim of Lingle, in Peavine district, is turning out splendidly. He keeps four men employed, and is panning out over \$100 per day.

THE Well copper mine near Spencerville, Nevada county, has been started up again.

THE American quicksilver mine at Pine Flat has been purchased by capitalists.

CHINESE miners are migrating in numbers to Tuolumne county.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., May 19, 1874.

FOR WEEK ENDING May 5, 1874.

STATION SHIP FOR THEATERS.—Samuel H. Chapman, Sacramento, Cal.

MACHINE FOR MILLING METAL.—William Hawkins, San Francisco, Cal.

PACKAGE FOR AXLE GREASE.—John G. Hucks, San Francisco, Cal.

ICE MACHINE.—Samuel B. Martin, San Francisco, Cal.

CAR BRAKE.—James Herd, Jacksonville, Oregon.

CAN OPENER.—Albert H. Hall and Coiran I. Hall, Suisun City, Cal.

The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. NOTE.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rate. All patent business for Pacific Coast inventors transacted with perfect security and in the shortest time possible.

The Mining & Scientific Press.

Started in 1859, is one of the oldest weekly journals now published in San Francisco. It has been conducted by its present proprietors for ten years, during which period it has been repeatedly enlarged and constantly improved. The active and steadfast efforts of its publishers have gained for its conduct an amount of practical experience greater than any other publishers have accumulated on this coast, of a weekly journal.

The sum paid by you for the best editorial talent obtainable for our special class journal; for engravings, for interesting news and correspondence, and for printing a large-sized, handsome sheet, is unequalled by that of any other American weekly west of the Mississippi. As a PRACTICAL MINING JOURNAL it has no rival on this Continent.

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Every Miner, Assayer, Millman, and Metallurgist in the United States should take it.

Every Pacific Coast Mechanic, Engineer, Inventor, Manufacturer, Professional Man, and Progressive and Industrial Student should patronize its columns of fresh and valuable information.

Every Mining Engineer, Superintendent, Metallurgist, Mine Owner, and Mine Worker in the world should profit by its illustrations and descriptions of New Machinery, Processes, Discoveries and Record of Mining Events.

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CHANGE OF PLACE.—It may be a convenience to miners, mill-men and others desiring labor of any description, including skilled mechanics, to learn that the employment office of A. Zeehandelaar, for the last six years Secretary and proprietor of the California Labor Exchange, has removed to 716 Montgomery street, corner Washington. We refer those in want of help, to advertisement in our columns.

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American & Foreign Patent Agents,

OFFICE, 338 MONTGOMERY STREET, S. F.

PATENTS obtained promptly; Caveats filed expeditiously; Patent reissues taken out; Assignments made and recorded in legal form; Copies of Patents and Assignments procured; Examinations of Patents made here and at Washington; Examinations made of Assignments recorded in Washington; Examinations ordered and reported by Telegraph; Rejected cases taken up and Patents obtained; Interferences prosecuted; Opinions rendered regarding the validity of Patents and Assignments; every legitimate branch of Patent Agency Business promptly and thoroughly conducted.

Our intimate knowledge of the various inventions of this coast, and long practice in patent business, enable us to abundantly satisfy our patrons; and our success and business are constantly increasing.

The shrewdest and most experienced Inventors are found among our most steadfast friends and patrons, who fully appreciate our advantages in bringing valuable inventions to the notice of the public through the columns of our widely circulated, first-class journals—thereby facilitating their introduction, sale and popularity.

Foreign Patents.

In addition to American Patents, we secure with the assistance of co-operative agents, claims in all foreign countries which grant Patents, including Great Britain, France, Belgium, Prussia, Austria, Victoria, Peru, Russia, Spain, British India, Saxony, British Columbia, Canada, Norway, Sweden, Mexico, Victoria, Brazil, Bavaria, Holland, Denmark, Italy, Portugal, Cuba, Roman States, Wurtemberg, New Zealand, New South Wales, Queensland, Tasmania, Brazil, New Grenada, Chile, Argentine Republic, AND EVERY COUNTRY IN THE WORLD where Patents are obtainable.

No models are required in European countries, but the drawings and specifications should be prepared with thoroughness, by able persons who are familiar with the requirements and changes of foreign patent laws—agents who are reliable and permanently established.

Our schedule prices for obtaining foreign patents, in all cases, will always be as low, and in some instances lower, than those of any other responsible agency.

We can and do get foreign patents for inventors in the Pacific States from two to six months (according to the location of the country) sooner than any other agents.

Home Counsel.

Our long experience in obtaining patents for Inventors on this Coast has familiarized us with the character of most of the inventions already patented; hence we are frequently able to save our patrons the cost of a fruitless application by pointing them to the same thing already covered by a patent. We are always free to advise applicants of any knowledge we have of previous applications which will interfere with their obtaining a patent.

We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents, or purchasers of patented articles, can often receive advice of importance to them from a short call at our office.

Remittance of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money, but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency.

The principal portion of the patent business of this coast has been done, and is still being done, through our agency. We are familiar with, and have full records, of all former cases, and can more directly judge of the value and patentability of inventions discovered here than any other agents.

Situated so remote from the seat of government, delays are even more dangerous to the inventor of the Pacific Coast than to applicants in the Eastern States. Valuable patents may be lost by the extra time consumed in transmitting specifications from Eastern agencies back to this coast for the signature of the inventor.

Confidential.

We take great pains to preserve secrecy in all confidential matters, and applicants for patents can rest assured that their communications and business transactions will be held strictly confidential by us. Circulars free.

Engravings.

We have superior artists in our own office, and all facilities for producing fine and satisfactory illustrations of inventions and machinery, for newspaper, book, circular and other printed illustrations, and are always ready to assist patrons in bringing their valuable discoveries into practical and profitable use.

DEWEY & CO.,

United States and Foreign Patent Agents, publishers Mining and Scientific Press and the Pacific Rural Press, 338 Montgomery St., S. E. corner of California St., San Francisco.

GENERAL MERCHANDISE.

WEDNESDAY M., May 20, 1874.

A sale of 75,000 English Standard Wheat Bags was made this afternoon at 12 o'clock; also of 100,000 yards of Hessian, 4-in goods, to arrive at 10c. Coffee is steady. One or two downward movements in Olla are reported. Paints are rather duller. In Spices, Cloves have advanced 2½c, and Nutmegs have declined an equal amount. No change in the aspect of the Sugar trade.

Eng. stand. Wh't	12	13½	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Eng. stand. Wh't	12	13½	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Cal. Machine	12	13½	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Eng. stand. Wh't	12	13½	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Cal. Machine	12	13½	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Eng. stand. Wh't	12	13½	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Cal. Machine	12	13½	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Eng. stand. Wh't	12	13½	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Cal. Machine	12	13½	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Eng. stand. Wh't	12	13½	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
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Quartz, Flour and Saw Mills,

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Iron and Locomotive Works.

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CAPITAL.....\$1,000,000.

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Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
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Rolling Mill Company,

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RAILROAD AND OTHER IRON

—AND—

Every Variety of Shafting,

Embracing ALL SIZES of

Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames.

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NUMBERS.	0	1	2	3	4	5	6	7	8
Diameter of Steam Cylinder, in inches.	4	5	6	7	8	9	10	12	14
Diameter of Pump Cylinder, in inches.	4	5	6	7	8	9	10	12	14
Stroke of Piston, in inches.	4	5	6	7	8	9	10	12	14
Capacity per stroke, in gallons.	1-6	1-6	2-0	2-6	3-6	4-6	5-6	7-0	8-0
Maximum Capacity, per minute.	10	13	25	40	55	70	85	114	140
Ballers in horse power they will supply.	25	40	80	120	150	225	300	360	675
Size of Steam Pipe, in inches.	1	1	1	1	1	1	1	1	2
Size of Exhaust Pipe, in inches.	1	1	1	1	1	1	1	1	2
Size of Suction Pipe, in inches.	1	1	1	1	1	1	1	1	2
Size of Discharge Pipe, in inches.	1	1	1	1	1	1	1	1	2
Weight of Pump, in pounds.	150	225	300	420	540	875	1150	1500	2450
Height over all, in feet and inches.	3-6	4-6	5-10	6-10	7-10	8-10	9-5	10-5	12-0
Height over all, in feet and inches.	1-6	1-5	2-3	3-1	3-1	3-7	4-3	4-3	6-7
Width over all, in feet and inches.	1-6	1-0	1-1	1-3	1-4	1-6	1-10	1-10	2-1

PRICE...... \$

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I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

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Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is engaged from making.

The Machine itself is also an infringement on another patent owned by the same parties.

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WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under Craig's, Rice's, Macey's and Hoskin's patents.

I Guarantee Full Indemnity to all my Customers.

Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an improved LITTLE GIANT.

For further particulars apply to

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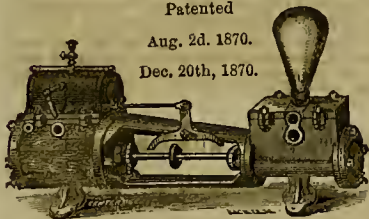
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Room 8, 240 Montgomery st., S. F.
WILLIAMSON & CORY, Marysville. } Agents
Dutch Flat, Aug. 10, 1873. 6v27-2m

THE SELDEN DIRECT-ACTING STEAM PUMP, A. CARR, Manufacturer & Proprietor.

Patented

Aug. 2d, 1870.

Dec. 20th, 1870.



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As a Mining Pump it is unsurpassed.

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ja31-2tm No. 302 Montgomery st., room No. 14, S. F.

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Chemical Apparatus,

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Our mills are under the direct supervision of one of the most experienced Samplers and Millmen in the country, and we purpose carrying on the business upon a scale commensurate with the wants of the mining public.

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Prompt execution of all orders. Faithful attention to business entrusted to us.

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On Gold contained in Silver Ores to the amount of \$30 and upwards, 63 per cent. will be paid. When less than \$30, and above \$10, the amount will be added to the Silver value. Sacks promptly returned free of charge. Ores sampled by Battery or Sampling Mill as shipped may elect, and returns made promptly by cheque on San Francisco.

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Value.	Per Cent.	Assay Value.	Per Cent.	Assay Value.	Per Cent.	Assay Value.	Per Cent.	Assay Value.	Per Cent.
\$60	25	\$90	38	\$125	47	\$165	57	\$250	66
\$65	27	\$95	39	\$130	48	\$170	58	\$260	67
\$70	28	\$100	40	\$135	49	\$175	59	\$270	68
\$75	29	\$105	41	\$140	50	\$180	60	\$280	69
\$80	30	\$110	42	\$145	51	\$185	61	\$290	70
\$85	31	\$115	43	\$150	52	\$190	62	\$300	71
\$90	32	\$120	44	\$155	53	\$195	63	\$310	72
\$95	33	\$125	45	\$160	54	\$200	64	\$320	73
\$100	34	\$130	46	\$165	55	\$205	65	\$330	74
\$105	35	\$135	47	\$170	56	\$210	66	\$340	75
\$110	36	\$140	48	\$175	57	\$215	67	\$350	76
\$115	37	\$145	49	\$180	58	\$220	68	\$360	77
\$120	38	\$150	50	\$185	59	\$225	69	\$370	78
\$125	39	\$155	51	\$190	60	\$230	70	\$380	79
\$130	40	\$160	52	\$195	61	\$235	71	\$390	80
\$135	41	\$165	53	\$200	62	\$240	72	\$400	81
\$140	42	\$170	54	\$205	63	\$245	73	\$410	82
\$145	43	\$175	55	\$210	64	\$250	74	\$420	83
\$150	44	\$180	56	\$215	65	\$255	75	\$430	84

And on intermediate values in proportion.

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These Machines Stand Unrivaled.

For rapidly pulverizing and amalgamating ores, they have no equal. No effort has been, or will be spared to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits. They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.

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The pan being filled, the motion of the miller forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular flow between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.

Setters made on the same principle excel all others. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed.

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SPORTING,**MINING,****And BLASTING
POWDER,**OF SUPERIOR QUALITY, FRESH FROM THE
MILLS. It being constantly received and transported
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way superior to any other Powder in Market.
We have been awarded successively**Three Gold Medals**By the MECHANICS' INSTITUTE and the STATE AG-
RICULTURAL SOCIETY for the superiority of our
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our readers to a few points of superiority of the HER-
CULES POWDER over all other strong explosives.First—Its strength is greater than that of any other in
use. The materials of which it consists are com-
pounded upon strictly scientific principles, and not a
simple neutral absorbent employed that will hold a
quantity of nitro-glycerine. It is the opinion of the
best chemists to whom the matter has been submitted,
that no mixture has been employed that so thoroughly
promotes the whole tremendous force of the explosion
employed, and at the same time neutralizes the offensive
gases caused by the explosion. With this Powder one
half the time is saved that is lost by using any other
strong powder, before you can resume work after a
blast.Second—UNIFORMITY.—The materials of the mix-
ture are chemically prepared, and therefore greater uni-
formity can always be depended upon and the best re-
sults attained. This is a great advantage over any that
varies in its strength, as those must which are mixed
with any natural earth.Third—SAFETY.—So perfect is this mixture that no
accident can happen with it from premature or accident-
al explosion, if persons will half follow the rules laid
down for its use. No powder has ever been invented
where so few accidents have happened with it in pro-
portion to the quantities which have been used.Fourth—CARTRIDGES.—It is well known that nitro-
lycerine has a tendency to decompose by volatilization.
These are the "fumes" that are smelled on going into a
close warm drift or room where nitro-glycerine powders
are stored. To prevent the escape of these "fumes" an
air-tight hermetically sealed cartridge is employed, and
is effective in it that some cartridges filled with Her-
cules were exposed to a blazing California sun for six
months last summer, with no perceptible loss of
strength. This is a great advantage over the open por-
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will take the trouble to investigate the matter, will sat-
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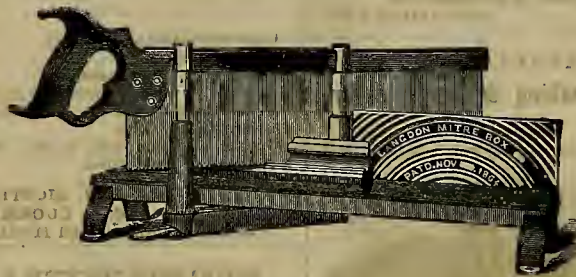
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find among your neighbors many persons who have
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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and Progressive Industry.

BY DEWEY & CO.,
Patent Solicitors.

SAN FRANCISCO, SATURDAY, MAY 30, 1874.

VOLUME XXVIII
Number 22.

The Clay Street Railroad.

In answer to numerous enquiries about the Clay Street Hill Railroad, we would refer our readers to our issue of the 27th September, 1873, for a general description of this railroad, and add the following which has been forwarded to us by the patentee, Mr. A. S. Hallidie. The road was opened for business the 1st of August 1873. An interruption of three weeks followed to enable the tube to be extended one additional block (480 feet.) It has been running without interruption since that time, and travel on it has steadily increased. The length of the steel wire rope is 7,000 feet; its diameter, 15-16 inch, and is driven by a horizontal steam engine 12x24 inch running under 70 lbs. boiler pressure. The two patent grip pulleys through which the power is transmitted to the rope, are eight feet diameter each. The rope travels about four miles per hour. Distance between termini, 3,300 feet. Vertical ascent is 307 feet. There are five cars each with a dummy in constant use, running to the summit of the hill and starting every six minutes. The weight of each car and dummy is 4,500 lbs. The steel rope has now been running 10 months—the first two months 10 hours per day; the last eight months 14½ hours per day. It does not show much wear, and will probably last two years.

We have been able to obtain the following data covering a period of 90 days from 1st of July last:

Total number of passengers carried, 90 days.....	204,214
Distance traveled by the cars—miles.....	12,944
Total vertical ascent by the cars—miles.....	632
Average number of passengers per car per trip.....	19.72
Coal consumed.....	51
Coal consumed to each passenger carried, lbs.....	50-100
Total weight carried up grade—tons.....	33,516
Total weight carried down grade—tons.....	28,404
Greatest number of passengers on up line at one time.....	150
Number of passengers on down line, same time.....	10
Number of tons moved one mile.....	32,814.4
Coal consumed in moving one ton one mile, lbs.....	3.48
Average number of passengers carried per day.....	2,268
Miles traveled by the rope.....	5,148
Value of coal consumed per trip—cents.....	7
Total expense per car per trip—cents.....	74

From the foregoing this reader will be able to draw his own conclusions. The average number of passengers carried per day is now 3,000, and the expenses are somewhat less. We have watched from time to time the workings of this peculiar street railroad, and after ten months of steady working and through the test of a very severe winter, we feel in every way assured of its success, mechanically and financially.

At present the road terminates at the top of the hill. It is proposed by this company to extend it from the present terminus at Jones street, to the valley at Van Ness avenue. The economy of its workings compared to the ordinary horse railroad is so remarkable, that we believe if adopted on comparatively level roads, it would entirely exclude horse propulsion. If the line is extended to Van Ness avenue, the trip from Kearny street will be made in about 12 minutes, and the business of the line nearly doubled with but little additional outlay.

TRANSIT OF VENUS.—The "Swatara," which is to carry the scientific party to the south Pacific to witness the transit of Venus, December 18th, is in readiness to depart. The ship will leave the navy yard with two hundred persons on board. The company is to be divided into five parties, to be landed at Croset's Island, Hergnelan, or Desolation Island, Hobart Town, in Tasmania, (formerly Van Dieman's Land), New Zealand and Chatham Islands. Here the "Swatara" is to remain until after the observation. The vessel has stores for an eighteen months' voyage. The instruments are being tested in Washington, and are mostly new and very elaborate.

THE Iowa, an old location, lying south of the Utah mine, on the Comstock, has been idle long time, until a few days ago, when the owners, believing it to possess real merit, commenced sinking a new shaft, the superintendence of which has been placed under the able management of Samuel Owens, present superintendent of the Utah.

Hinkle's Hydraulic Hoist.

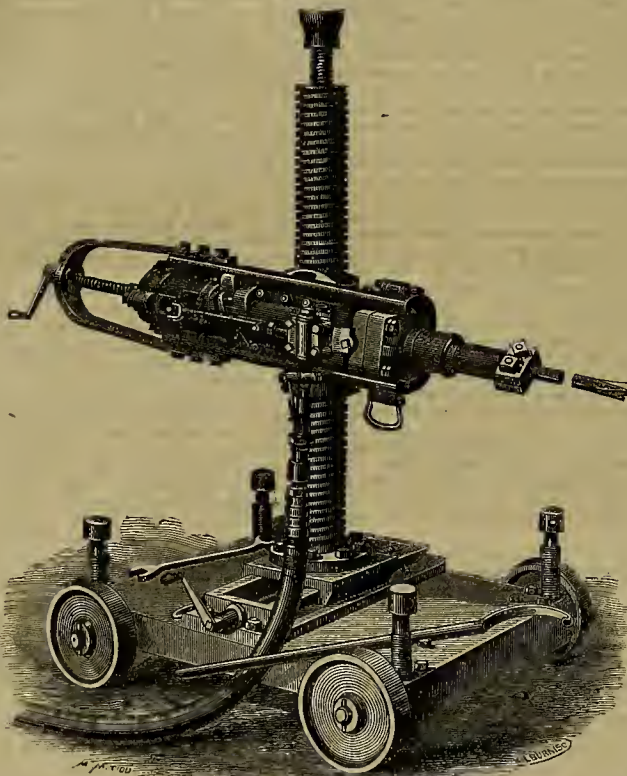
We witnessed this week the operation of a new hydraulic hoist for operating elevators in buildings, an invention recently patented through the agency connected with this office, by Philip Hinkle, of this city. The only one as yet put up in San Francisco has been placed in the old Academy of Music Building, on Pine street, which has recently been renovated and fitted up with offices. The elevator in this building brings the offices in the upper stories in close communication with the street. It is neatly fitted up and runs very smoothly, being under perfect control.

This operating mechanism is in the basement, immediately under the elevator itself, which runs between the usual guide timbers. A large pulley of peculiar construction is attached to the driving shaft, and the wire rope hoisting the elevator revolves around this pulley. A

two-thirds the length of the cylinder with a light load, while with a heavy one it travels the whole length.

Without this method of regulating the water supply, the same quantity of water would have to be used in all cases; and the operator states that in only one case in 20 is it necessary to throw the lever so as to raise a heavy load. For stores, the inventor claims to be able to save fully one-half the water by using it over again under the pressure of compressed air, compressed by the descent of the elevator.

Another arrangement perfected by Mr. Hinkle, and applied to the elevator in Pine street, is an air-brake, to cause the cage to stop without any jar. Two small cylinders are placed on the floor of the building, and when the cage comes down it automatically compresses the air in these cylinders, and is stopped gradually, without any concussion, always stopping at the same level. The safety apparatus is also of peculiar construction, being arranged so that if



THE BURLEIGH ROCK DRILL.

cylinder 10 feet, 9 inches long, and 16-inch bore, is placed in front of this shaft, and the chains revolving the shaft are fastened to this end of the piston. When the water is admitted to the cylinder it forces the piston out slowly, which unwinds the chains on the shaft, thus winding up the wire rope in the large pulley, which raises the elevator. The pulley has grooves cut in its face on which the wire rope fits as the pulley revolves. The wire rope passes over a five-foot pulley in the loft. The lower pulley is of peculiar construction. It is so arranged that on the single wheel are two pulleys, one of which is five feet in diameter, and the other seven feet, six inches. When it is desired to raise a heavy load, a lever in the elevator is moved, and when the water is turned on, the wire rope winds on the small pulley, so more turns are needed to raise the load. This being the case the piston is forced nearly to the end of the cylinder. When a light load is to be raised the lever is thrown back, which turns the wire rope on to the large pulley so that the piston only has to run two-thirds of the length of the cylinder to raise the elevator to the top of the building. By means of this peculiar pulley the inventor is enabled to save all gearing for raising different sized loads, thus lessening friction. Of course one-third less water is used in raising a light load than is used in raising a heavy one, as the piston only travels

the rope breaks, an iron bar on each side takes a grip, like that of a monkey-wrench, except that it has four jaws, instead of two. There are two doors in each of the four stories, and these doors run on rollers overhead, so that when the cage gets in the proper position the door is unlocked and opened. As soon as the cage leaves the station, the doors are closed automatically and locked at the same time. This arrangement is very safe, as no one can open the door from the inside without a key. The wire-rope used was made by A. S. Hallidie, a California manufacturer, and is a flexible, spring-steel rope, three-quarters of an inch in diameter, the breaking strain being 15 tons. The elevator runs up to the fourth story in the space of half a minute—a height of 52 feet. A bell is placed in the cage, which is rung by electricity, by pressing on a knob at any of the stations.

At the American quicksilver mine, Napa county, they are erecting a steam stamp mill for crushing cinnabar ore. They propose to crush the ore and mix it thoroughly with lime at the same time, so as to have it prepared for the furnaces. We understand that they are not to make adobes, as is usual, but will reduce it to a fine mass, mixed with lime. Quicksilver miners will watch with interest the result of these experiments.

The Burleigh Mining Drill.

This Burleigh drill, now being introduced largely in the mines on this coast, is applicable for tunnelling, mining, quarrying, open-cutting, shefting, submarine drilling, and, in fact, all forms of rock work. The machinery consists of the Burleigh drill and various forms of carriages or holders upon which the drills are mounted, for convenient application to the different requirements of rock-drilling and removal in its numerous phases. In tunnelling, this machinery is peculiarly advantageous. By its use great works become easy, that would hardly be undertaken with the old appliances of hand-labor; besides the great saving made in the labor of construction, the great saving of time accomplished by its use secures a great saving of interest on the cost of such works.

An experience of five years has enabled the manufacturers to produce very perfect appliances for the adaption of their machinery to this class of work.

The drill shown on this page is called the "mining drill," mounted on a mining carriage, which is used to great advantage in edits or drifts from 4-5 to 8-10 feet. It is the style of drill now in use in many mines in California and Nevada.

It consists of an upright column with a screw clamp nut for holding and raising and lowering the drill, the whole being mounted on a platform, which slides by means of a crank across the carriage, so as to adjust the drill to any position on the heading. It is secured in position by the jack-screw in the top of the column and arranged so as to be easily moved to permit blasting.

This "mining drill" bores from 1¼ to 2-inch holes and feeds 26 inches without change of drill points. Extreme length, 4 feet 7 inches; extreme size on cross section, 13-9½ inches. This drill weighs 475 pounds and requires 2½ horse-power to run it.

Tintic Mines of Utah.

We clip the following from an editorial in the Salt Lake Tribune of the 21st instant:

"The Shoebridge, Tintic and Wyoming mills are running successfully and turning out more bullion than at any previous time. The Germania smelter is approaching completion and will be producing copper matte within one month, if no unlooked-for delay occurs. Six hundred feet of the Gold Hill mine has recently changed hands, and the mine is now owned by the Tintic M. & M. Co. of San Francisco and the Otsego Silver Mining Co. of New York. This former has sight hundred and the latter four hundred feet. This mine averages from ten to twenty four feet in width of ledge, and the ore is being worked by wet process and without being assorted, at the Tintic mill. The fortunate owners claim for this mine the largest exhibit of high grade and free milling ore of any silver bearing lode in the Territory. The Diamond copper mine is being worked under the Superintendency of Col. Saxe, and is yielding a limited quantity of excellent ore. The mines are being quietly worked and each stage carries away the evidence of prosperity in the shape of silver bars."

The Tintic M. & M. Co., the Germania and Diamond companies are San Francisco incorporations. The former has been shipping bullion for some time and the acquisition of such a mine as the Gold Hill is claimed to be, will doubtless add to the production. The company is not on the list of the Stock Board, and has levied no assessments. The Germania company propose reducing the ores from their mine as soon as their smelter shall be ready for operations.

The cinnabar deposits near Temescal, San Bernardino county, are said to be richer than was at first expected. It is somewhat refreshing to chronicle this fact, as when a "quicksilver ledge," as it is called, is first struck, the lucky owners generally conclude it is the richest thing ever found; so when we see an item stating that a deposit is richer than was at first expected, we marvel at it, and are satisfied that it must be very rich indeed.

CORRESPONDENCE.

The Panamint Silver Mines.

EDITORS PRESS:—So little being known, and so little said of the new silver mining district discovered in February, 1873, in the Telescope range of lofty mountains, by the writer and two others, warrant me in offering the following to the public:

The mines are located about the center of the range and immediately south of Telescope peak, computed nearly 12,000 feet high. The extent of the mines is composed in blue limestone formation about 15 miles long by six miles wide, and in some places is capped with a brown slaty rock, but the base is lime and marble. The belt crosses three deep cañons running east, emptying into Panamint valley; they all contain streams of living water running from 10 to 30 inches, besides numerous springs. The mountain sides are covered with a dense growth of piñon (nut pine), cedar and mountain mahogany, with a species of fir near the summits, often measuring five and six feet through. We have our connection with Los Angeles and the S. P. railroad at Indian Wells, 75 miles southwest, one of the stations of the Telegraph Stage Company, running from the end of the railroad tri-weekly to Independence. A wagon can at the present time come within four miles of the mines, and the new road under construction by Messrs. Tart, Burchett & Co., who have a large force at work in the cañon, will be completed in 30 or 40 days, there lacking only a little over a mile to complete it, when loaded teams with supplies and machinery can pull right into camp and deliver their loads.

The majority of the ore are called copper-silver glance, varying in richness from \$200 assay to an amount I would be afraid to state; recently, however, in several of the lodes, especially the Esperanza and Wyoming lodes, extraordinarily rich ore has been met in sinking and drifting, of black sulphurets of silver, easily cut with a knife and which admit of a fine polish, as well as yellow and green chlorides. A large number of locations have been made, many of which will prove worthless on being worked on, but sufficient has been done to establish the fact that one-half dozen of main permanent leads have been found in the camp, varying from three to 12 feet wide, besides a large number of very rich small veins or feeders, which, as a general thing, with one or two exceptions, contain the richest ore. The main lodes have well defined walls, and nature has done a great deal in prospecting numerous lodes here, by steep ravines cutting the lodes at right angles and developing in these ravines rich chimneys of ore at the depth in places of 500 and 600 feet from the summit of the hills where the lodes crop out.

Some work has been done since the opening of spring, viz: on the Esperanza, a 25-foot shaft; lode increased in size from 1 foot on surface to 3 feet in bottom, well defined ledge and fine ore, average assays, \$450; 15 tons of ore on dump at the Wonder of the World, a 50-foot shaft, with vein 7 feet wide and heavy body of metal, and a fine lot of ore on dump; the Wyoming, a tunnel in 125 feet and approaching a heavy body of rich ore, vein from 3 to 7 feet wide. The company are now forwarding several tons of \$500 ore to the Cerro Gordo reduction works for an experiment, but this ruinous and expensive mode will be discontinued, as it can be more profitably worked in the district, even by the old fashioned Patio process. The Stewart's Wonder claim, on the Wonder mine, has been shafted to the depth of 25 feet, developing a magnificent body of ore—both black metal and chlorides. This claim was purchased without a pick being struck in the ground, by Mr. E. P. Raines and associates, last December, for \$20,000. He has been East during the winter, forming a company to work the mine; and I am informed he is now in your city, preparing to come out here immediately, fully prepared with capital and a mill to proceed to business in a proper shape; without a doubt he has a very valuable property. The Panamint Mining Company, who own the Wonder mine, are leveling off the site for a small mill which will be erected soon. Mr. Tollman, Superintendent for a San José company, has sunk on the Venus mine 50 feet, opening a fine body of ore. He is in your city now for supplies, and for the purpose of procuring reduction works. The majority of the claim owners and miners in the district are poor, and what is badly wanted in the district is a 10-stamp, custom mill. There are thousands and thousands of tons of rich ore in sight, which will pay \$100 per ton without election, and the miners could well afford to pay \$40 or \$50 for working and leave them a handsome profit besides. This district is well worthy the inspection of parties with capital, with an eye to this investment or to look at the mines. The miners, however, are getting tired of waiting, and are about to help themselves by erecting the old fashioned mule arrastras, and extracting the silver by amalgamation with quicksilver, salt and solar heat, as they can easily select \$400 or \$500 ore—good enough.

Mr. J. N. Newlander, of your city, is prospecting his "Sunriser" mine. I have seen some very rich specimens from this mine of born and native silver. An Oroville company, by their Superintendent, Mr. Chapelle, are prospecting

a number of lodes; amongst which the Mountain View, ranks first, a very rich argenteriferous galena lode. Some galena has been found in the district but not sufficient work has been done to establish the fact whether extensive deposits exist or not; work is being pushed on some of them claims and the matter will soon be determined. Water is abundant in this district and an inexhaustible supply of fuel can be delivered at the mills for years at \$6 per cord. In my opinion the most comfortable way of reaching this district would be by way of Los Angeles, there obtaining a light spring covered wagon with supplies (as none can be secured here), and the trip can be made from Los Angeles in seven or eight days. We have a mail route established and soon will have a stage line to connect with the Telegraph Stage company's line to Indian Wells twice a week—time from San Francisco three days. The snow has all disappeared from the hills and spring is well advanced. With pleasant weather a mining population is steadily coming in here and before midsummer this will be a lively mining camp.

"KAYWATT."

The El Dorado Ditch Company.

The Mountain Democrat speaks as follows of this company: Much and growing interest is felt, not only by our own people but among outsiders, as to the probable certainty and time of ditch improvement and enlargement by the El Dorado Deep Gravel Water and Mining Company. The other day we were called upon by an old acquaintance from Dutch Flat, a pioneer resident of that place, a practical and experienced hydraulic miner, who on his own account and as a representative of others in Dutch Flat and surrounding portions of Placer and Nevada counties, was anxious to obtain some accurate information. It is well known that we have an immense extent of unworked deep gravel claims, which have been thoroughly tested and proved to be rich, which enterprising and experienced miners from the comparatively exhausted hydraulic mines of neighboring counties, stand ready and have ample means to take hold of and open in a systematic manner, the moment they can be assured that they will be supplied with water without having to wait a lifetime for it. We don't know why there should be any deception or concealment in this connection. We don't see why the public, who have such vital interests at stake, should not have full and reliable information on the subject. But such is the case, and we give our readers and friends the benefit of our most rational conjectures, which is the best at our command, the best we have to offer, and is to this effect: Superintendent Bishop came up from San Francisco last week, accompanied by an intelligent and wealthy Chinese contractor. These two have been up along the line of the ditch and to its source of supply, making examinations which indicate an intention to enlarge the ditch and prosecute the work in the manner most conducive to the general welfare, and the indications are that a contract has been or is about to be let. But we want our friends, to whom definite and reliable information would be highly important and valuable, to distinctly understand that we only give the above facts and conjectures for what each reader, on his own responsibility, may consider them worth. When furnished from proper sources with anything more definite and positive, we will promptly give the public the benefit of the same.

Bullion and Charcoal at Eureka.

The Sentinel of last week says: There has been a second furnace set in motion by the Richmond company since the date of our last report.

The charcoal receipts for the week ending last evening were: Eureka Consolidated, 17,000 bushels; Richmond, 13,000 bushels; Hoosac, 10,000 bushels, and Ruby 5,000 bushels; in all, 45,000 bushels. These figures show an improvement on the amount received last week of 2,000 bushels.

The bullion product for the same period was: Eureka Consolidated, from two furnaces, 196,000 pounds; Richmond one furnace seven, and one three days, 127,000 pounds; Hoosac, 120,000 pounds of crude bullion, run from K K ore, a fact which should speak largely in favor of that mine and its stock. These figures give a total of 443,000 pounds, which indicates an increase over last week's run of 114,525 pounds.

The shipments were: by the Consolidated, 130,000 pounds; Hoosac, 20,048 pounds, and Richmond 95,087 pounds of refined bullion; which makes in all 250,135 pounds, showing an increase over and above last week's shipments of 103,785 pounds.

There were dispatched to the bank of California during the week, per Wells, Fargo & Co., from the Newark Mill and Mining Company, 2,154½ ounces of silver bullion, valued at \$1,911.96.

ARIZONA PLACER MINES.—We were this morning shown, at the store of Levi Bashford, \$1,000 in placer gold from the Lynx creek mines. Mr. D. P. Foster, who attends to such matters in that establishment, assures us that a greater quantity of gold has been taken out of the mines in this locality the present year than during any one since 1869.—Arizona Miner.

MINERS are rushing to the Twenty-nine Palms district, San Bernardino county.

The Eureka Consolidated Mine.

From an article in the Eureka Sentinel, by J. D. Power, descriptive of the mines of the Eureka Consolidated Company, we condense some interesting facts. The writer visited the mines and went all through them; so he speaks from personal observation:

The underground works are a perfect maze. One meets at each successive step a perfect labyrinth of drifts, cross-cuts, stopes, raises and chambers. They run hither and thither, in every conceivable direction, so that they cut and intersect each other at regular intervals. In this manner the ground has been finely opened—a procedure which facilitates its being mined, seen and worked to the best advantage. The ground appears to be admirably worked and timbered, betraying care, attention, judgment and skill on the part of its foreman and his timbermen. In the future, when portions of the immense ore reserves that are now in sight become mined and hoisted to the surface, there will be ample scope given to these gentlemen to exhibit their skill and experience in timbering. This ground, too, above all others, needs to be well and securely timbered and fixed against any possible future contingencies. It is not possible to have the vacuum thus created all filled in with waste without the expenditure of more time, labor and money to do it with than it would cost to have it properly and thoroughly timbered. This course would insure safety and firmness, and also allow of there being further work done, with entire confidence, in portions of the property which are as yet unexplored. The revelations which it is our province to give currency to this week, will, we opine, convey no little amount of pleasurable astonishment to the minds of those who are now, or may in future happen to become, directly interested in the fortunes of this company. A dividend was paid to the shareholders of this mine on the 8th inst., and dividends are now promised continually.

The Financial Status

Of the company has undergone a change under the present management, for it now finds itself with a surplus of \$100,000 on hand over and above dividends, debts, dues and demands. This amount will likely enough be increased at the end of this month by an addition of \$50,000 more. The current expenses for the season, for labor, coal, ore, hauling, water, etc., will foot up \$60,000 per month. This amount will appear small in comparison with the bullion which three or four furnaces will produce for the same period.

Some improvements are projected in connection with the furnaces, which will consist of a smoke flue and smoke stack, similar to those of the Richmond, which will add to the comfort and health of the employees.

The Lawton Shaft

Is situated about midway between the base and apex of the eastern slope of Ruby hill. Going down the shaft we stopped at the car station at the third level, which is a large and roomy and well ventilated, as is every portion of the mine. It is very securely timbered and also well lighted by a couple of coal-oil lamps, placed in convenient niches in the walls, in the immediate vicinity of the shaft, from which a flood of light was thrown upon the orifice by which the main southern drift traverses the ore region longitudinally from the shaft to the southernmost point, a distance of 375 lineal feet, allowing for curves, breaks, raises and descents. It runs perfectly smooth and level to the south out or manway, which is distant from the shaft probably 150 feet. (All distances given, or to be given, are approximated.) At this point we descended 40 feet of the said manway and found ourselves literally surrounded by ore. Nothing else was to be seen above or below, to the right, to the left, in front or in rear of us, but solid galena, gray carbonates, rich black sulphurets, and the red oxide that are so generally diffused throughout Ruby hill. Intermixed with these ores is found a kind of light-brown or reddish rock, some of which is soft and friable, and some hard and flinty, which is usually very auriferous, being found to often carry as high as \$35 to \$75 per ton in gold. From said above point the ore body, which is here twelve feet thick, is penetrated by a drift about 150 feet in lineal extent, which shows the same quality of ore throughout its entire length to its southern face, where it opens out laterally into a kind of chamber, which shows well in ore, without exhibiting any signs that would indicate the nearness of the foot or hanging walls. From here we retraced our steps to a point about midway between the north and south ends of the aforesaid drift, or rather gallery, which we have been describing, and which, we forgot to state at the proper place, is 40 feet above the third level.

From this place we ascended to the upper or second gallery, which is distant from the lower one 70 feet, through a raise whose angle of inclination is probably 65° or 70°. This gallery extends north and south like the lower one. The lineal dimensions of this gallery approximate to those of the one we had left. There are only one or two chambers, if such they can be called, that have been stoped out laterally and perpendicularly some 18 or 20 feet each way, all through a superior quality of ore. We must not forget to mention that the raise or incline connection between the first and second galleries reveals some very fine ore its whole distance, proving most conclusively that the intervening space is a solid mass of ore of a thickness of not less than 18

feet from wall to wall. To proceed, we will shortly mention, to avoid repetitions, that the second gallery developments are in all respects similar to the one below, with this exception, however, that ore body is solid, heavier and apparently richer, too, than it appeared to be on the other gallery. There are also numerous cross-cuts run east and west through ore, thus proving the continued thickness of the ore vein, which, in this neighborhood, has an average thickness of at least 18 feet between walls. The pitch of the ore is northeast.

The Third Gallery

We reached by a raise also, whose pitch is about 35°. It is run like the preceding one through first-class ore, some 60 feet to the third gallery, which is not quite so fully opened up as the others are. Never outside of the Richmond mine have we ever beheld anything to equal the ore body developed in that portion of the ground that is being worked through the Lawton shaft. Our terms of praise can not be too high, and we are satisfied that we do not exaggerate when we place the amount of the ore exposed in this portion of the workings at 40,000 tons. From the third gallery a further raise of 70 feet has been made through ore equally as good as any found at a greater depth. The inclination of the raise or incline is about 60°. We visited some few other points to the north and south, and likewise examined an ore shaft which communicates with a point close to the shaft at the third level, through which the ore is conveyed to them, thus doing away with much labor and expense. There is a timber shute, too, close by, through which the heavy timbers used in the mine are hoisted by windlass power on rollers placed and designed by the foreman to facilitate their being hauled up from below. From this point we descended by a man way to the old workings on the

Fourth Level,

A distance of 80 feet, where there is still considerable ore exposed in a few places. Close to the shaft on this level we found a vertical vein, which has been sunk about 30 feet, or perhaps more. One side of it is in lime, while the other shows well in ore, thus proving the continued descent of the ore, though in far less quantity than above. From the shaft at the

Fifth Level

There is a prospecting drift run north 175 feet, west 150, and south 45 feet, in which no ore of any account has been, as yet brought to light. Having now examined all that was in any way worthy of notice, we ascended to the top, got fresh candles and again descended to the tunnel level which communicates with the Lawton shaft. From here we wended our underground way through the hill a distance of several hundred feet to the old Buckeye workings, and from thence through a raise of some length to the

First Level

Of the Windsail shaft. One hundred feet south of the shaft we came upon a really magnificent body of ore, fully fifteen feet thick in the stoped face of it that we saw, but how far up or down we cannot say. There are one or two other chambers from which ore is being extracted in large quantities, and which give promise of future heavy yields. The ore found at this side of the hill is, we have been told, much richer than that found on the opposite or Lawton side. The other levels that are worked through the Windsail shaft that we visited, are all of them looking admirably as far as ore is considered. Our own opinion is that the future will more than prove the excellence of this quarter of the company's large property, not more than a fourth of which has been developed.

The Series of Mines

Comprised in the property are, the Savage, Nugget, Champion, Buckeye, At Last, Mammoth, Sentinel, Eclipse, Tennyson, Kidd and Lupita. This last, which is situated on the eastern slope of the hill north of the Lawton shaft, is now being developed by the diamond drill, which has quite recently been set in motion, close to the southern and western boundaries of the Richmond. The bore will be continued a distance of 700 feet. The mines are employing 140 men and the furnace 60 more, in all 200. In conclusion, we must add that the wealth of ore which is now uncovered in the mines we have been glancing through is almost incomprehensible and must be seen to be fully appreciated. We will give the dimensions of the ore body which we explored in the ground opened by the Lawton shaft so that the skeptical portion of our readers, if any there should be, can draw their own deductions. It is uncovered 200 feet long on the course of the lode; average thickness, 18 feet, and greatest depth, or width, 160. Anybody that will take the trouble to cube these figures and divide the sum resulting from them by 14 the number of cubic feet in a ton, will learn that our aforesaid estimate of 40,000 tons was less than the quotient that will result from the above divisor.

STARTER UP.—The Krom concentrator, in Star District, started up this week on ore from the Sheba and De Soto mines, of that district. We understand that it is the intention of the owners of the Seminole ledge, located in this district, to test several tons of their ore by running it through the concentrator, and if it turns out as well as is expected they will immediately increase the working force and commence an extensive development of their mine. At present there is exposed in the Seminole tunnel over five feet of ledge, well charged with black sulphuret and galena ores, and we can see no reason why it should not pay.—Silver State.

SCIENTIFIC PROGRESS.

Electroplating.

At a session of the Physical Association, of Frankfurt, Dr. Otto Volger delivered an address on the history and progress of the art of depositing metals by galvanic action, of which the following is an abstract:

At an early date it was known that a current of galvanic electricity was able to decompose liquids, and that metals deposited from solutions of their salts by this means assumed fantastic shapes, which appeared so similar, at the first glance, to vegetable growth, that they were called galvanic trees, or metallic vegetation, although really consisting of crystals, and formed according to the laws of crystallization. Professor Bottger took especial delight in pronouncing this sort of vegetation with different metals.

The use of such metallic deposits for electroplating was discovered accidentally. In 1830, Mr. J. P. Wagner, of Frankfurt, and Professor Jacobi, of St. Petersburg, were endeavoring to employ electro-magnetism as a motive power, instead of steam. Jacobi employed a Daniell's battery, which is distinguished for its constant and regular action. It consists of an outer cup of copper, and an inner cell of unglazed porcelain which contains the zinc rod. The intermediate space is filled with a saturated solution of sulphate of copper. When the battery is working, this solution of blue vitriol is slowly decomposed, depositing metallic copper, which finally becomes injurious, and must be removed. Once when Jacobi was busied with removing such a deposit from his copper cup, he noticed that there were several layers of copper, each having the form of the sides of the copper vessel, and hence, concluding that the sheet of copper of which the vessel was made had split up into layers, he accused the man who made it of employing a poor quality of sheet copper. A closer investigation, however, showed him that these layers, or leaves, did not belong to the walls of the vessel, but to a new deposit of metal, which imitated, in a remarkably perfect manner, the shape of the surface of the walls. It occurred to Jacobi that this troublesome disadvantage could be turned to profit by using it for reproducing objects. In 1838, he communicated to the St. Petersburg Academy a description of his discovery of the use of galvanic electricity for reproducing objects in the arts.

Czar Nicholas requested a German chemist named Klein, who was then employed in the imperial printing office, to test the practicability of the discovery and to ascertain to what extent it was capable of development. The answer being a favorable one, he gave the discoverer the means of making his new art the common property of the whole world.

Electrotyping, or plating with copper, consists in merely making the object to be copied the negative element of a simple Daniell's battery. If the object is a conductor, metal for instance, and is to be only partially covered, the parts that are to remain uncovered are rendered non-conductors by coating with some non-conductor, as wax, stearin or varnish. If it is a non-conductor, its surface is rendered conducting by brushing it over with a thin film of the finest graphite or silver powder. Murray discovered that graphite works the best. The reaction consists in the separation of the sulphate of copper into sulphuric acid and oxide of copper, while the water is simultaneously separated into oxygen and hydrogen. The sulphuric acid liberated at the anode or positive pole, unites with the oxide of zinc, formed there by the oxygen given off from the decomposed water, to form sulphate of zinc, which goes into solution.

The hydrogen evolved at the opposite pole abstracts the oxygen from the oxide of copper, and forms water, while the copper is left in a metallic state. Hence it is really the hydrogen which causes the reduction of the oxide of copper to metallic copper, at the negative pole or cathode.

Up to the year 1840 this new art was only employed for making small copies, like coins and medals, and these often came out of the mold imperfect, or were broken in detaching the mold. At that time, however, Professor Bottger prepared handsome relief plates of copper, and also employed galvanism for depositing a metallic coating on other metals, as for instance, gilding silver, copper and brass. In the same year, a copper-plate engraver, named Kress, came to St. Petersburg, learned from Klein the galvanoplastic art, as Jacobi had named it, and became acquainted with the latter. Jacobi called his attention to the fact that he could in this way make perfect copies of his etched or engraved plates, thus multiplying the original plate so as to obtain a great number of the most excellent impressions; for it is well known that a plate soon loses its sharpness, and every impression is poorer than the preceding one. At this suggestion Kress took up the art, and by 1844 had brought it to great perfection in his business. In 1841 Professor Bottger had made a copy from one of Professor Felsing's copper plates, in Darmstadt (the *Ecco Homo*, after Guido Reni, 12½ inches by 9½ inches), which was so perfect that Felsing declared that proofs printed with it were identical with those from the original plate, and of equal value. These plates are still in existence, the one in Berlin Museum, the other at Frankfurt on the Maine.

Boiler Explosions.

The behavior of water is totally different from that of gunpowder; when a charge of powder is fired in a gun the entire energy stored previously in powder is exerted on the gun and the projectile. When a boiler explodes, a very considerable portion of the energy previously concentrated in the water is expended, not on the boiler, or building, but in converting more water into steam at atmospheric pressure, and it thus happens that although the destruction wrought by the explosion of a large boiler may be fearful, matters are never as bad as they would be but for the remarkable property possessed by water, of instantaneously utilizing its stored-up energy in the comparatively harmless way of flashing a portion of itself into low-pressure steam. All the latent energy in the boiler was not thus expended, we know. A portion was expended in doing work—very disastrous work, no doubt, but none the less real. And this brings us at once to the puzzle, or puzzles, to which we have referred. We hear of stones being flung long distances, while a flue was lifted high in the air and fell on the roof of the weaving shed. Let us take this flue as typical, and ask ourselves how it was raised? The obvious answer is "Oh, the steam carried it there." Precisely; how did the steam carry it there? When a projectile is discharged from a gun an enormous pressure is exerted on its base for a considerable portion of time; but what are we to think of the nature and mode of action of the force which lifts a flue out of its place after the containing shell has been rent to atoms, and sends it flying through the air? Literally, not more than a few pounds of steam could find access to the flue to do the work; its surface was too small. Taking the flue at 30 ft. long, and just allowing a strip of its surface 3 ft. wide as an effective basis for the action for the steam, we have only 90 ft. surface. A body of steam at 80 lbs. pressure and 1 ft. thick over this surface would weigh about 2 lbs. only. It is impossible to imagine a sufficient velocity imparted to this 2 lbs. of steam to enable it in any way to impinge on the flue and thus propel it through the air.

Nor shall we be helped if we say that the pressure beneath the flue was unbalanced the moment the shell burst, and this unbalanced pressure lifted it. The pressure must have operated for a considerable time after the flue started on its flight, otherwise no energy could have been stored in it to enable it to continue its ascent. To what then are we to look as the direct cause of the ruin which attends a boiler explosion? Where is the link between the energy stored in the water and the walls blown down at a distance, the scattered bricks of the seating and the flying boiler plates? We do not think it too much to say that these questions have never been answered, and that the effects developed are perhaps after all manifestations of the exertion of force by the aid of very minute quantities of matter, operating in a way which is not quite understood. The cause of a boiler explosion is one thing, the cause of the effects of an explosion is quite another. We hold now, as we have always held, that there is nothing occult about the reason why a steam generator bursts. Neither, perhaps, is there anything mysterious about the flying of plates and the loss of life, and the ruin of buildings; but it is quite certain that no solution yet put forward has proved capable of that accurate numerical demonstration which can alone insure its acceptance. That ruin ensues when a boiler bursts we know, but we do not know whether a flying brick flies because it has been subjected to intense pressure acting through a limited space for a short time, or whether it is carried on a blast of steam as a leaf is carried by the wind, or whether it is driven by energy transferred from a mass of water moving, and whose movement the luckless brick has checked. Nor is it quite certain—although, in deference to accepted opinion, we have spoken as though it were certain—that the first effort of energy set loose in the rent boiler is to convert more water into steam, and not to manifest itself in some other way which is apparently occult, but only so because very little is really known about the manifestations of energy, or the bond which exists between force and matter.—*Engineer*.

THE CHEMICAL CLASSIFICATION OF IRON.—M. Frémy, an eminent French chemist who has recently been studying further into the metallurgy of iron and steel, thinks that it would be of much more advantage to founders and metallurgists if commercial iron, which is still classed according to its physical properties, should be known with reference to its chemical characteristics, that is to say, in accordance with the very small quantities of carbon, sulphur, phosphorus, etc., which it may contain, and which chemical analysis would reveal. This chemical classification has for some time past been in use in Krupp's celebrated foundry where, in fact, nothing is left to chance. Chemists constantly analyze the crude materials and the fabricated products. The scientific and industrial element is intimately connected with the military. Artillery officers examine the manipulations and follow their every detail. Considerable sums are devoted to new experiments, made on the different alloys which may be suitable for cannon, and of each metal tried there is compiled a record which indicates its chemical composition, its advantages and defects. According to M. Frémy's investigations, it appears that the best metal for guns is neither iron nor steel, but some combination of both.—*Sci. American*.

MECHANICAL PROGRESS.

The Whims of Machinery.

There are, says the *Scientific American*, some curiosities about machines which seem unaccountable. Every user of a sewing machine knows that from some unknown reason the machine which yesterday performed its work so well, so almost enthusiastically, to-day refuses to do more than half its task, and does that half in a sorry, indifferent manner. So with many other machines. Even the steam engine is subject to these fits. Is there some occult bond of sympathy between the operator and his machine, by which the latter is influenced by the mental condition of the former? For it is certain that these differences cannot be due to atmospheric or other external influences. This matter is quite humorously and truthfully treated in the subjoined extract:

It is perfectly well known to experienced engineers that if a dozen different locomotive engines were made at the same time, of the same power, and for the same purpose, of like materials, in the same factory, each of those locomotive engines would come out with its own peculiar whims and ways, only ascertainable by experience. One engine will take a great deal of coal and water at once; another will not hear of such a thing, but will insist on being coaxed by spadesful and bucketful. One is disposed to start off when required at the top of his speed; another must have a little time to warm at his work and get well into it. These peculiarities are so accurately mastered by skillful drivers, that only particular men can persuade engines to do their best. It would seem as if some of these "excellent monsters" declared on being brought out of the stable, "If it's Smith who is to drive, I won't go. If it's my friend Stokes, I am agreeable to anything!" All locomotive engines are low spirited in damp and foggy weather. They have a great satisfaction in their work when the air is crisp and frosty. At such a time they are very cheerful and brisk, but they strongly object to haze and mists. These are points of character on which they are united. It is in their peculiarities and varieties of character that they are most remarkable.

The railway company who should consign all their locomotives to one uniform standard of treatment, without any allowance for varying shades of character and opinion, would soon fall as much behindhand in the world as those great governments are, and ever will be, who pursue the same course with the finer piece of work called man.

Paper-Hanging Machine.

R. H. Miner has invented and patented a machine for paper-hanging, which is described as follows: A box is made of tin, sufficiently long to receive a roll of paper, and of a depth and breadth sufficient to contain the paste-roller and the desired quantity of paste, the case being nearly square. The paste-roller revolves on pivots in the ends of the case. The paper, which is dropped into the case, rests on an inclined hinged flap, and bears on the paste-roller. Before the paper is placed in the case a metal rod is inserted in the center, to give the paper additional weight to keep it steady and in place. An adjustable head bears against the end of the roll of paper, to prevent longitudinal motion. The paste-roller revolves in the paste, the friction against the paper being sufficient to cause it to revolve when the paper is drawn out. A pressure roller, which may be covered with felt, receives the face side of the paper. The paper is placed in the case, and its end is hooked into the bent. In hanging, the machine is raised to near the ceiling by means of a handle, and pressed against the wall. The paper releases itself from the hooks, and, as the machine is brought down, the roller presses the paper to the wall. The machine is used for papering overhead, and for putting on strips or bordering in a similar manner. By this invention, the tedious operations of unrolling, cutting up the paper, and spreading the paste are obviated, and the result is a very great saving of time.

STOVE-PIPE THIMBLE.—Mr. Thomas D. Slauson, of Havana, N. Y., has invented an improved stove-pipe thimble, which merits attention. The object of the invention is to furnish an improved casing for conducting stove-pipes through wooden partitions, which is easily fastened in position, protects the lathing fully against any danger by fire, and leaves no communicating holes between the rooms, being fully covered by the plastering. It consists in a double casing, which is attached suitably to the wooden partition, being provided with bent up face piece and side perforations, through which the circulation of the air around the inner casing is kept up.

PERPETUAL MOTION.—Some years ago, says the *American Artisan*, the Patent Office was so beset with applications for patents on perpetual motion, that the Chief Examiner proposed the following reply which every applicant received:—*Dear Sir:* Bring your machine to Washington. It will be set in motion and placed in a closet secured by two locks, and I will give you one key, retaining the other myself. At the end of one year the closet will be opened, and if the machine is still in motion, your patent will be granted." This was the end of the correspondence.

Machines to Make People Honest.

Time was, when almost every stage driver in New York was known to abstract a greater or less share of all fares received, and his employer had no remedy and no sure means of detecting the rogue. But thanks to the ingenuity of the inventor, our Broadway Jehns have been transformed into honest men. They can't steal if they would. The patent money box in which the passenger drops his fare, relieves the driver from the duty of handling the money, and consequently none sticks to his fingers.

On the street railway cars, the pilfering conductor, although not rendered wholly honest, is considerably interfered with and his stealings reduced by means of the patent hell punch. He is required by the rules to punch a strip of paper for every fare received. The punch contains a hell, a dial numbering register, and a receptacle in which the punched hits of paper are received. The punch, paper and money are returned to the office by the conductor at the end of every trip. The dial pointer shows how many times the punch has been operated, and the count of holes in the paper, the punched bits within the punch, and also the money should all be found to agree. Any discrepancy is at once shown. But this device does not fully answer the purpose of detection, because the conductor may take fares and not work the punch, especially in a crowd, without being observed.

The money box plan is apparently the surest. There is a chance for some ingenious person to invent a portable box for conductors, which will be promotive of their integrity in crowded cars.

One of the latest dodges in this line comes to us from Constantinople. The driver or conductor of the car gives to every passenger a prize ticket bearing a number which is recorded on the company's books. A drawing takes place monthly, the company providing a certain number of prizes. We read of one passenger who lately drew a prize of \$100 in this way. The hope of drawing a prize makes the passenger careful to send in his tickets; and, if the money returns of the driver or conductor are not equal to the number of tickets returned, there is a showing of dishonesty, and the particular culprits may be detected by comparing the return tickets with the records of the tickets issued to the several conductors.—*Sci. American*.

FLOATS FOR SHIPS' BOATS.—The Marine Department of the London Board of Trade have been making experiments with the boats of coasters, and find that any old boat can be converted into an efficient lifeboat by using air casings outside. The Marine Department have, for this purpose, used air cylinders, which they have specially designed, fastened outside the boat by a netting; so that the boat can be used for an ordinary boat as long as wanted, and converted into a lifeboat when occasion requires it. The material used for these cylinders, and approved by the Marine Department, is a combination known as Clarkson's. It consists of a layer of cork, about a quarter of an inch thick, between two layers of strong canvas. One cubic foot of air space in these cylinders will support about 60 pounds. The cylinders of this material are the cheapest, most efficient, and most durable means yet invented for converting an old boat into a lifeboat. Mr. Clarkson has made the experimental cylinders on models furnished to him by the Marine Department, and, as we believe, prepared to supply any number demanded. Air cases, to place inside lifeboats, also made of this material, have been supplied to some of the mail steamers, and are much preferred by the Marine Department in cases of copper, iron, zinc or wood, as they are practically indestructible, are not affected by heat, and are very light.—*Nautical Magazine*.

COMPLETION OF AN IMMENSE SAFE.—Mr. Chubb, the well-known English manufacturer of safes, has recently completed, for the Government of Buenos Ayres, an iron safe of gigantic dimensions, designed to receive the title deeds and securities of the Department of Public Credit. It is a parallelopiped formed by plates of heavy iron, strongly riveted at the edges. Within this is a second box as strongly constructed as the first, and separated by an air space. In this interior safe the valuable property is placed. The interior filling is made with a composition whose character is at present a secret, but which appears to have a certain quantity of alum in it. The dimensions of the safe are: height, 11 feet six inches; length, 14 feet nine inches; depth, five feet. The plates are three-quarters of an inch in thickness, and at the corners the total thickness of the plates and braces is nearly five inches. Two doors, one and one-quarter inch thick, give access to the interior. They are made of steel and iron, and have compartments filled with non-conducting materials. The safety-locks are attached, containing each a charge of gunpowder capable of firing 14 projectiles in all directions. Each lock is of a different form. The safe, entire, weighed 15 tons. It was shipped in pieces, and is to be put together at its destination by a competent mechanic, who accompanied it for that purpose.—*Jour. of F. Ins.*

A new mitrailleuse is spoken of, which at 500 yards will distribute bullets one foot apart along a horizontal space of 22 feet. The 24 barrels are arranged in two circles, eight in the inner and sixteen in the outer, and 700 balls per minute can be discharged.

Mountain Company, on Quartz mountain, near Lower Rancheria. The ledge is well defined and the rock exhibits a fine array of free gold, and well charged with gold bearing sulphurates.

STILL IMPROVING.—*Dispatch*, May 23: Reports from the Amador quicksilver mine still continue to be more favorable as the work of development goes on. As an evidence of its increasing richness we are reliably informed that an offer of fifteen dollars per share was refused by one of the stockholders a few days ago, while only a few weeks ago a large number of shares were sold at one dollar each.

MORE QUICKSILVER.—Two or three additional quicksilver claims have recently been taken up within a few miles of the Amador mine, and are now being thoroughly prospected.

THE RIO DITCH.—Digging on the Amador canal is now about completed, and in the course of a couple of weeks the water will be turned in.

CALAVERAS COUNTY.

NEW MILL.—*Chronicle*, May 23: Preparations are being actively made for erecting a mill on the Zacateno mine at West Point. The lumber is upon the ground and everything being got in readiness. It is to be a ten-stamp battery.

QUARTZ DISCOVERIES.—Two additional quartz veins have been recently discovered at Mosquito Gulch. Fields & Co., and Rickman & Co., are the lucky parties. Work has been commenced on both ledges, which prospect very well.

GARLAND'S mill, at Mosquito, is still running on San Bruno and Dolly Varden rock.

COLUSA COUNTY.

FROM BEAR VALLEY.—*Cor. Independent*, May 23: The all-exciting topic here at present is quicksilver. Mr. Lovelace has struck as rich a lead as these hills have ever produced. A small seam of cinnabar, inlaid in some soft rock, led to the valuable discovery.

Mr. J. B. Turner and others have located a claim in the same vicinity, and found rich ore in paying quantities. H. M. Cromer, of Spring valley, has also struck it lucky.

It is a little amusing to see every morning the fortune seekers making for the hills in all kinds of style, in wagons, on horseback and on foot, bound to find a ledge before night. It is nothing unusual to find a man's coat tail or the leg of his pants hanging on a juniper in the hills west of Bear valley.

EL DORADO COUNTY.

SPANISH FLAT MINING INTERESTS.—*Cor. Mountain Democrat*, May 23: A correspondent from Spanish Flat under date of May 17th writes: "It has been one of the richest mining camps of El Dorado county, and undoubtedly is destined to be one of the most productive quartz regions in the State. The Spanish Flat Hill, which is situated on the line of this belt of porphyry, has been and now is rich in placer mines, which extend to the very summit. In fact, every pan of dirt, it matters not from what part of the hill it be taken, shows a good prospect. But now the Spanish Flat Tunnel Company have commenced work in their tunnel, and ere long we may expect to hear of some rich developments. The same company is also running a hydraulic claim in one of the gulches running down from the hill and it is evident that they mean 'business'."

"There is also a company running a tunnel about one mile from this place. I understand that they have already struck a good lode, but are still pushing their tunnel ahead to develop others."

LOS ANGELES COUNTY.

NEW MINES.—*Cor. Herald*, May 19: Cahunga claim was discovered by Mr. Bell and owned by him, in company with Gov. Downey, Mr. Potts, Mr. Desmond and another party whose name we did not learn. The ledge is about a foot thick, and is well defined for a distance of thirteen hundred feet. It rises like a perpendicular wall to a height of eight or ten feet for a part of this distance. The rock is genuine quartz, gold bearing, with a small proportion of silver. Specimens from it have assayed nearly ten dollars to the ton, taking both metals together, and that from surface rock. One of our party (a forty-niner, by the way, whose opinion is worth something on almost any subject), says that it presents one of the best indications which he has ever seen. It is what miners term in their vernacular an A lead, the ledge being shaped something like the outlines of that letter—rather thin at the top and gradually attaining a greater thickness as it descends. There is evidence of a great mass of rock at this place, and if it should yield no more than ten dollars per ton throughout, as the specimens have assayed, the ledge will pay handsomely for developing. It will be quite easily worked lying as it does, so well exposed already. The ore can be conveyed to the bottom of the cañon by chutes, whence it is only a mile to the valley. Over this distance a road can be built without great difficulty or expense. There is abundance of wood and water in the cañon for all mining purposes such as would be required. From this place we retraced our steps part of the way, and going further up the cañon climbed another mountain, less lofty than the first, where we found another claim, Rough and Ready. This ledge is not so well defined, as the first, but can be traced to a considerable distance, where it again crops out further up the mountain. It is a quartz formation like the other, and bears about the same proportion of gold and silver. This claim is in the hands of the same company as the Cahunga, and was also discovered by Mr. Bell. The company will commence work on the two claims this week, and will push them to a speedy development.

They are all men of well known enterprise, and have invested sufficient means to give a thorough test of the ledges. They will soon find whether they have fortunes in them or not.

At the bottom of the cañon and near the head of the stream, is another ledge owned by Mr. Plummer. It is called the El Dorado claim. The rock is of dark bluish gray color, containing pure gold without any accompanying base metals. Specimens have assayed over ten dollars to the ton. Mr. Plummer intends to commence work upon his claim very soon. He also has two other leads, called respectively the Solita and the Elko; the former was the first which was discovered in the cañon, and took its name, being at the time *solita*—alone. There are a few other claims in the section, but we did not visit them.

MARIPOSA COUNTY.

RICH QUARTZ.—*Gazette*, May 22: A specimen of the quartz now being taken out of the Blue Vein by Mr. A. H. Brooks, the proprietor, weighs about forty-three pounds avoirdupois, and is estimated to contain about \$100, in free gold, besides abounding in very rich sulphurets.

HITE'S COVE.—One of a superior quality is being taken out of the mine of Hite & Co., some three or four hundred feet above the lower level. The miners say it is paying better than ever.

NAPA COUNTY.

QUARTZ MILL.—*Free Press*, May 22: Tuesday and Wednesday heavy machinery came up destined to the American quicksilver mine. A quartz mill of twenty-four stamps was among the rest. The mortars to this mill weighed 2,500 pounds each. The owners of the mines are having a furnace built, retorts erected, and everything done to get to running on the metal. The mine when developed promises to be a good one.

On Thursday last, Mr. Livermore, superintendent of the Redington quicksilver mine, was in town. He says the Redington is losing none of her reputation as an excellent mine, but on the contrary is increasing her yield and paying handsome dividends.

NEVADA COUNTY.

RICH STRIKE.—*Transcript*, May 16: A rich strike is noted in the Lone Star mine near Nevada city, owned by Murchie brothers. They have been running a tunnel for some time and struck the ledge on Friday, finding it two feet thick, with specks of gold all through it and a large amount of sulphurets.

MOORE'S FLAT.—*Union*, May 22: The mines at Moore's Flat are mostly idle on account of the difficulties about water. The miners there want their water for eight cents an inch and the owner of this ditch wants 12½ cents an inch for the water. The miners will not pay the price demanded, and the ditch owners will not sell for the price offered and so work is stopped. The miners have some hopes that a second ditch will reach the Flat, and that when it does water will be furnished at eight cents an inch. The North Bloomfield Gravel mining company is looked to for this second ditch. It is probable that the Bloomfield company will have very little water to sell, no matter how many canals it may construct, since their own extensive mines will use all that can be obtained. Meantime the ditch owner now supplying Moore's Flat with water will soon have ground open upon which he can use all his water. The miners are not masters of the situation, we think.

PLACER COUNTY.

RICH STRIKE.—*Argus*, May 23: On Monday afternoon last Superintendent Crossman, of the Bellevue mine, showed us a sample of very rich rock, which has just been struck in the 240-ft. level of the Bellevue shaft, and which will assay on an average \$1,000 per ton. The vein is about thirty inches in breadth.

THE ORLEANS MINE.—Noticing an item in last week's *Herald* setting forth the fact that "a rich strike had been made at the Orleans mine," we wended our way a few days ago in that direction to see for ourselves, and had our most sanguine expectations satisfied at the result. The Orleans gold quartz mine is situated about a mile and a half from Auburn. The new development is a vein fully six and a half feet wide, the rock from which pays over \$100 per ton for the last 20 ft. in the tunnel. This rock is crushed at the Pugh mill, near Ophir, and can be mined and milled at \$4 per ton, so that from this estimate can be seen the great income and value of such a claim.

MINING.—*Herald*, May 23: At the Crater Hill the stopes are turning out immense quantities of very high grade ore. About 50 men are now employed on this mine.

At the Bellevue, work is being pushed ahead rapidly and systematically. Six different shafts are being sunk in pairs, each pair about 100 ft. apart, which will be connected by drift at a depth of 200, or 250 ft., for the purpose of facilitating work on the stopes and affording ventilation. They are working as on three different mines. The object of this plan, we understand, is to make room for a sufficient force to take out ore enough to keep their mill, which they intend enlarging to 20 stamps, constantly running.

THE LINCOLN COAL MINE.—Fourteen men are now employed about the mine; but the number will be largely increased when the new shaft is finished, which will be in about two weeks.

PLUMAS COUNTY.

RICH QUARTZ.—*National*, May 16: Mr. A. C. Light, whose mine is on the mountain south of Indian valley, is again taking out some very rich rock. We are told that a few days ago he "made a run" with his "hand mortar," and

cleaned up over \$2,000. This gold is in small veins of quartz, and occasionally a "pocket" or rich spot is found which yields fabulously. Mr. Light has already ponded out some \$18,000.

SAN DIEGO COUNTY.

THE BLADEN DISTRICT.—*World*, May 16: From Doc Martin, who has just returned from Bladen, we learn that matters and things are progressing in that locality in a cheerful manner.

Arrangements are being made to commence operations at once on the Topsy Johnson mine and develop it as rapidly as labor and money possibly can. Mr. Martin says the health and spirits of everybody at Bladen are excellent.

SANTA BARBARA COUNTY.

NEW MINES.—*Index*, May 21: There are several mining experts and well known quicksilver capitalists in our paradise to-day. We interviewed several of them without solicitation, but from others learn that extensive deposits of cinnabar have been discovered in the Santa Ynez mountains, about ten miles from Santa Barbara.

SIERRA COUNTY.

OAK RANCH.—The prospectors, at Oak ranch, some two weeks since, commenced running a lower tunnel to tap the large bed of pay gravel, demonstrated to be under the flat. They are working three shifts, and running ahead in bedrock at the rate of 24 ft. in as many hours. This seems hardly to be credited, yet our information is from a reliable source. The tunnel is already in about 180 ft.

GOON PAY.—The York boys are finding excellent pay in their claim near Mt. Vernon ravine, in the head of Hungry Month. They brought down 11 ounces last week, the result of a few days' run without a full load of water.

CAVE.—An extensive cave occurred in the claims of R. H. Bliss, at Indian hill, on the 16th, covering up his "little giants" and tools.

SISKIYOU COUNTY.

HAMBURG BAR.—*Union*, May 23: We hear very encouraging reports from this camp, situated on the Klamath, a short distance below the mouth of Scott river. There are a large number of rich claims which will furnish occupation to a large number of miners for years.

JOHNSON & CO'S QUARTZ CLAIM.—Johnson & Co. have made one crushing of rock from their claim near Oro Fino, with very satisfactory results. The amount of rock crushed was twenty-five tons, and yielded from \$38 to \$40 to the ton.

Miners are about through working on Little Humburg. They have sluiced off more ground this year than ever before. In a little while they will be washing up.

TRINITY COUNTY.

W. D. & H. M. Co.—*Journal*, May 23: Last Thursday we visited the works of the Weaver-ville and Hydraulic mining company, on the Oregon Gulch and West Weaver Divide, and found everything progressing favorably. Two hundred and fifty men are employed on the ditch, which will probably be completed in two weeks. Not a foot of flume is required on the line of the ditch and only one tunnel—about 80 feet through a point of rock.

In the claim, flumes and undercurrents are being made and placed in position, and everything there will be in running order by the time water can be got through the entire length of the ditch. The reservoir, cut and tunnel have been completed and as soon as water can be had a hole will be sluiced out for the reservoir. Many persons from other and older and more advanced mining counties have visited this ditch and unanimously speak of it as the best and prettiest piece of ditch in the State.

TUOLUMNE COUNTY.

KINCAID FLAT MINE.—*Independent*, May 23: A rich spot of new ground has been struck in this mine, and we saw, at Kenfield's, a few days since, a nice pile of coarse gold, valued at \$1,200, which was "picked up," without the formality of a regular "wash down," at the place indicated. One solid piece weighed about two ounces.

THE BIGGEST CLEAN UP.—The Golden Gate ledge has proved a success under the skillful management of Slocum & Thomas. Under the circumstances, our home scientists have done remarkably well—raising the product of the mine, as heretofore worked by an expert, from 75 cts. per ton to \$40, from the same dump and identical quality of ore. During the last four days' run, previous to delivering the charge to Mr. Deland, the new Superintendent, 28 tons of rock were crushed, showing 56 ozs. of gold, or at the rate of \$39 per ton. Running time of mill under their supervision, 23 days—reducing during that time 160 tons, and shipping 172 ounces of gold—\$3,354.

Nevada.

WASHOE DISTRICT.

CONSOLIDATED VIRGINIA.—*Gold Hill News*, May 21: The station of the 1,500-ft. level is completed, and a drift east started to tap the east wall of the ledge, which is in a distance of 40 ft. Two additional cross-cuts have been run on the 1,400-ft. level, one near the shaft, and the other midway between the shaft and the north winze. The middle, or cross-cut No. 2, has penetrated the ore body a distance of 70 ft., and is still in rich ore. Cross-cut No. 3, near the shaft, is just fairly entering the ore vein, and shows it to be even richer at this point than at the north winze, 200 ft. further south. The ore breasts on the 1,300-ft. level continue to improve in the quality of the ore extracted almost daily. Daily yield of the mine, 300 tons of ore,

which is all the mills can crush. This yield of ore can be greatly increased, whenever the necessary mills can be obtained.

SIERRA NEVADA.—The heavy flow of water at the bottom of the new shaft continues without abatement. Putting in a large and strongly constructed tank for catching up the water is making rapid headway. The lumber for the new hoisting works is nearly all on the ground, also almost all the new machinery. As soon as the water company have completed the necessary flume for conducting the water to the ground, the hydraulic washing will be commenced. Daily yield, 60 tons of ore, keeping the mill steadily running.

CROWN POINT.—The ore body extending upward toward the 900-ft. level, continues to improve. The ore stops on the 1,400-ft. level are opening out splendidly, and that level is now promising to equal, if not excel in point of yield, either of the levels above. Daily yield, 550 tons of ore.

BELOHER.—Daily yield, 550 tons. The ore breasts throughout the entire mine are looking splendidly and promise a rich yield for many months to come.

UTAH.—Crosscutting the ledge at a point 200 ft. south from where the ledge was penetrated by the main west drift has been commenced, with some very favorable prospects of an ore development in that portion of the mine.

CHOLLAR POTOMI.—Daily yield 140 tons of ore, the assay value of which is \$30 per ton. The ore breasts are all looking well. The newly opened ore deposit in the old Balvidere section is quite spotted, the ore being quite poor in places and again quite good in others.

IMPERIAL-EMPIRE.—Cross-cutting the ledge to the eastward, on the 1,850-ft. level, is still vigorously prosecuted. Sinking the main incline goes steadily on.

BALTIMORE CONSOLIDATED.—Two more large new boilers arrived at the mine yesterday morning. The new hoisting engines are expected to be ready to start up in a very short time.

SILVER HILL.—The ledge in the north drift at the second station shows somewhat of an improvement.

SUTRO TUNNEL.—Main header to-day in 5,947 ft. The character of the ground in the face has changed very materially, being a mixture of clay and porphyry, with little water. It is so soft as to require no blasting, but constant timbering. The Burleigh drills are of no use in such material.

DAYTON.—Preparations are being rapidly completed for resuming the sinking of the main shaft. The dumps are kept full of ore, which is being shipped to the Woodworth mill on the Carson river.

MINT.—Sinking the shaft is making steady progress. The flow of water continues much the same, necessarily causing some delay in the sinking.

YELLOW JACKET.—Sinking the main incline is making steady headway, the bottom in hard blasting ground. It is now down 100 feet below the 1,640-ft. level.

CALIFORNIA.—The north drift on the 1,300-ft. level made the connection with the south drift from the Ophir this morning. Cross-cutting on that level will now be in order.

UNION CONSOLIDATED.—The main north drift on the 1,300-ft. level is in 645 ft. from the Ophir shaft, still following the west wall of the ledge with some very favorable and increasing prospects of ore developments.

LADY BRIAN.—The shaft is now down 140 ft. the sinking making fine progress.

SAVAGE.—The new station at the 2,000-ft. level is completed, ready to start a drift for the ledge.

FLORIDA.—Superintendent Nagle is now concentrating all work in sinking a new working shaft, with excellent progress, and grading off for hoisting works, etc., at the same time.

OVERMAN.—The main west drift on the 1,200-ft. level is still pushed vigorously ahead.

SOUTH COMSTOCK.—At the 190-ft. level the cross-cut east to-day is in 21 ft. the rock being somewhat harder, but fully as favorably looking as at last report, and giving as good assays.

LEO.—The rich ore streak in the face of the main drift is about 20 inches wide.

GLOBE CONSOLIDATED.—The ore dump is full and no more can be extracted until mills can be obtained to crush it. The west drift 170 ft. below the ore body in the winze is expected daily to strike the ledge.

MCMANS.—The main west tunnel is in a distance of 685 ft., the face in low-grade ore with seams of clay and quartz.

HALE & NORCROSS.—It is expected that everything will be in readiness for commencing the opening of the 2,000-ft. station by the first of next week. Daily yield, 40 tons of ore from the old upper levels.

GOULD & CUBBY.—The double winze is down 100 ft. below the 1,700-ft. level, the bottom in fine favorable looking quartz, with excellent indications of future ore developments.

JULIA.—The shaft is now down 60 ft. below the 1,000-ft. station. The south drift on the 900-ft. level, is showing considerable of an improvement since our last report.

CALEDONIA.—The main west drift at the fourth station level, is making steady headway without change of interest to report. Sinking the air winze from the third station level is making fine headway.

SUCCESS.—The east drift on the 300-ft. level, from the little shaft east of the mill, has just reached the ledge, but has not penetrated it far enough to determine its value.

KNICKERBOCKER.—The main west drift at the 400-ft. level, is in 900 ft., the quartz in the face showing quite an improvement in the last few days.

What a Man is Worth.

Some very interesting facts and figures are given in this *New York World*, in regard to the actual coin value a man is worth to community, and the loss it sustains if, from any cause, he should "go to the had." It says: The value of an able-bodied, clear-headed, healthy boy, fifteen years old, who has been to school the average length of time—six years—it is not easy to compute. He is educated in the simpler branches of knowledge. He may have also learned the rudiments of a trade, and become already, in a small way, what society has a right to expect he will become in a very few years in a large way, a producer. The mere private cost of his production is by no means small. He has had his share besides in the protection and safety of government and the accumulated comfort of the past, all of which has been lavished on him in the legitimate hope that he would in his time shoulder a part of the taxes, and aid in accumulating comfort and capital for the future. As a child, supposing that his life has been passed in the family of a mechanic, his expenses for fifteen years cannot fall much below this estimate:

THE COST TO THE FAMILY.

Board ten years at \$2, and five years at \$3 a week	\$1,820
Share of rent at \$14 a month in a family of five persons	504
Clothing \$20 for ten years, \$30 for five years	350
School books	30
Miscellaneous, sickness, etc., in all	275
Total	\$2,979

All this on the supposition that the family home has included three rooms only, that the family has had not more than five persons in it, all told, and that food and clothing have been of the plainest description, with enough of both to produce a healthy and vigorous growth; but with nothing to vary the monotony of fare limited to the necessities of life. He has cost as a member of a family, and that a family inexpensive and economical, about \$3,000; as a citizen he has cost a much smaller sum, but still one that is fairly appreciable.

THE COST TO THE STATE.

Schooling, six years	\$ 63
Taxes—State, fifteen years	165
Taxes—County, fifteen years	123
Taxes for national expenses, fifteen years	195
Total	\$546

As a person up to the age of fifteen has done nothing to earn the cost of the protection which a civil government gives in all its different branches, it is evident that, so far as he is concerned, the aliquot share expended on him is so much paid out to rear and educate; a direct investment which the community makes in him with the hope of a return. This investment amounts to at least \$546. It is direct, and easily computed.

There is another just as certain, but which cannot be so readily reckoned. The total valuation of the country is placed at \$30,063,518,507 in real and personal estate, and all this accumulated wealth of the parts works together to make life easier for the young man, who, till he is 15 years old, is adding nothing to it. He stands, too, the representative of another expense as tangible, but even less easy to give definitely. About half the population die before they reach the 15th year from birth. That is, to bring 500 persons to this point requires the birth and support for a longer or shorter time of 1,000; and the cost to the community of each at the age just mentioned is enhanced by the expense of those who fail to reach it. There are a hundred thousand other influences which cannot be reckoned in dollars and cents, but they exist none the less, and should be taken into account and kept in mind as part of the loss which the community at large suffers when one man fails to make any return for the talent confided to his care. The gross, perceptible, enumerable parts of his cost price are, to his family, in money, \$2,979; to his country and community, \$546; his share of the income from \$30,000,000,000 of property, and the partially developed life wasted and cut off that his might reach maturity. In all, the direct outlay is \$5,000—an understatement in two directions.

At 15 years a man may begin to be a producer; or, as the most common, most dangerous means by which he becomes nonproductive, he may also begin to be a drunkard. Neither are likely before this age, though either contingency may occur years earlier, as well as after. Society has spent some thousands of dollars directly on him, and devoted some millions of capital in providing him with an education and throwing around him influences which make his life a profitable investment.

But society has also taken some pains and trouble to render null and void its own efforts. It licenses numerous places at which the means of forming the habit of drunkenness can be found, and society pays four times as much to support them as it does to protect and educate the boy whom it has raised at such trouble and expense. He enters his eighteenth year a drunkard. As least, the State loses by his intoxication the direct investment of \$5,000. At 18, the man's labor is worth at least \$728 a year, or \$14 a week. All this is lost, and it amounts to the interest on nearly twice the sum spent for his education. The average life of a man addicted to the use of ardent spirits is about 17 years, and the sum lost in this way is \$12,376.

It is even greater than this. At 20 a person in health has an even chance of living 44 years; a dram-drinker's chances are cut down to about

one-third of this period; the difference being a loss of \$19,656, making the total deficit stand thus:

Original investment	\$5,000
Loss of labor during life (17 years)	12,376
Loss of 27 years of labor by drink	19,656
Total	\$37,032

The article also gives statistics which prove that the drunkard commits a very large proportion of the crimes of the community, and thus greatly enhances his expenses by the amounts expended in conviction, punishment, etc. Altogether it is a showing that should make the thoughtful pause before condemning too rashly the efforts of the reformers in this direction.

Indians Burying their Dead.

While the subject of cremation is attracting so much attention, some of our readers may be interested in knowing how some of the California Indians dispose of their dead. It is somewhat singular that although in some districts in the State some Indians burn, and others bury their dead, they all prepare them for final disposition in the same manner. A blanket is spread on the ground and the corpse laid upon it; a brother or some other relative, after folding the limbs upon the chest with the knees towards the chin, proceeds to bend the body and limbs together as tightly as possible. It is then wrapped in the blanket and placed upon the earth with the face upwards and exposed. The mourners continue their wild lamentations



INDIANS BURNING THEIR DEAD.

for a given time and then the men build a funeral pyre or prepare a grave.

If the corpse is to be burned, when the fuel is about two feet high all the sounds of grief cease, and amid a death-like stillness the men place the body on the pyre. Wood is then piled upon it until all but the face is covered. The oldest and nearest relative then sets the wood on fire. As soon as the smoke begins to ascend the discordant howling of the women becomes almost appalling; while the men in some instances stand in sullen silence, and in others join their notes of woe to those of the women. Then, as our illustration shows, all the relatives who are nearest to the consuming dead, with long sticks in their hands, commence a frantic dance around the burning body, occasionally turning it over and stirring up the fire, that the corpse may be consumed more speedily.

A writer states that the motive which impels them to this, is that they believe there is an evil spirit who is continually contriving to give them trouble, and who will keep them from the "happy hunting grounds" if he can. They think the heart is the immortal part, and that he seeks to make it a prisoner; so they endeavor by noises and motions to attract the attention of this spirit while the body is burning, as it is at that season that the heart leaps out, and if the evil spirit's attention is distracted by their manœuvres, the heart makes its escape and is eternally safe. This is the reason for the hideous noises and waving of cloths practiced during the process of burning.

After the body is nearly consumed, the blackened remains are taken from the fire and rolled in a cloth and blanket, to cool it a little, when his wives separate the remaining and unconsumed portions of the body, and around each piece wind a long string of beads. Every particle is then placed in a basket that has been beautifully beaded and worked for such an occasion, with any other valuables that have been reserved. This being done, and the fire rebuilt, the basket and its contents are placed upon it; and while this is being consumed, cloths, blankets, dresses, beads, arrows, knives, pocket-handkerchiefs, and everything else that has been touched by the dead body, are added to the flames. When these are burned, every unconsumed log is carefully scraped, all the ashes swept together, and the whole, with the exception of a small portion reserved for mourning, is placed in another basket, and then buried.

The reserved ashes, after being mixed with pitch obtained from pine trees, are spread over the faces of the female relatives as a badge of

mourning, and which, although very hideous to our sight, are sacred to theirs, and allowed to remain until they wear off.

Beach Mining.

A correspondent of the *Call* writing from up the coast speaks as follows of the beach mining: The mining interest is in its infancy. That there is gold in paying quantity there is no doubt, not only on the beach, but back in the interior, where no prospecting has been done, although it is known that in the early days of the settlement, Indians would dispose of large parcels of heavy gold, which they stated was hammered out of rock. So numerous are the other interests about Coos Bay that mining is neglected, except at Reudolph, twelve miles down the coast, where a number of claims are working on the beach successfully. But the most remarkable is the "Old Beach," as it is called, where several claims are located. One, worked by Laue & Co., is exceedingly rich. To understand what the "Old Beach" is, it is necessary to state it was only discovered through accident, by finding gold in the black sand of a creek fully three miles from the ocean beach. To reach there a thickly timbered country must be passed, and a person would never imagine that it had once been a beach; but all doubt would be settled by a visit to the claims, where each stratum of sand is the same as it is on the regular beach, with a greater depth of black golden sand.

The formation must be very old, to judge by the banks of the mine, which are 50 feet high and thickly timbered on top. The formation

The Comstock.

The Comstock lode is about entering upon a new career of productiveness, of which the great Crown Point ore body is the prelude. The 1,400-foot level new confirms the old impression that that body is continuous, and those of the Virginia mines are opening out similar convictions as to that end of the lode. The public mind is apt to be impatient of the time which, with the best improvements in means that are constantly taking place, is required not only to develop new levels in old ore bodies, like that of the Crown Point, but entire new bodies like that of the Consolidated Virginia, California, etc.; and the gambling element in every lull of advancement takes the "heer" shape, notwithstanding the experience that the inevitable rise destroys the bear operators. As we look back to the "flush times" of the Comstock we find that up to April 1, 1866, it had given \$51,380,588 in bullion to the world. The mines were then 600 feet deep. In the last four years they have given out, from a depth of 1,800 to 2,000 feet, \$56,187,208, and the producing points increase in number. There are constantly new inventions and new applications of old inventions which facilitate the exploration for ore, its extraction, production and transportation.

The modes of operation at present in no degree resemble those of ten or even five years since, before the experience and genius of men like Superintendent Fair. What were supposed insurmountable obstacles are easily overcome; what were difficulties are swept away. The cost of extraction and reduction sinks under inventions or discoveries like Mr. Fair's fuel-saving engine; and ores that were rejected formerly are made to yield a profit. "The stone that was rejected becomes a corner in the hands of the builder." Depth has now no terrors for the expert miner, and every body of ore turned up is no longer worked wastefully and unintelligently, but is made to yield all it is worth, or, as our gambling bear friends would say, "played for all it is worth." Under the inventive skill and energetic action of American management more progress has been made on the Comstock in ten years than in other parts of the world in similar formations in a century. It results, as a matter of fact, that shares on the lode are daily rising in intrinsic value. It is no longer a question of shares of a company in an isolated spot on the lode, but shares in the lode as a great whole, every portion of which will, under the growing science of quartz mining, give back its full value. Men invest money in unimproved lands because they know the growth and population, with its increasing wants per head, will impart to the land an ever swelling value. So of the Comstock lode. The inexperience and doubts of the past, which gave a fluctuating value to different bodies, have consolidated into present conviction of the permanent value of the whole lode. The doubt only is as to the most immediate realization. Every foot on it will, sooner or later, have its well determined value. "A share on the Comstock" will be a well defined property. —*Alta*.

Copper in Nevada County.

As long ago as 1861 or '62, some parties engaged in digging a well down near the Zinc House in the lower part of this county, came upon a peculiar—to them—substance, which created considerable talk in that neighborhood and upon examination of a party who had recently been in the Copperopolis mines was pronounced genuine copper ore. At that time the idea was prevalent that a copper mine was far more desirable than any gold mine and this discovery at once set the community astir for more copper indications and more or less were found all along that range of the foothills. The discovery was known as the Well lead and considerable work done for a year or two; enough to prove that a fine body of ore existed there, but copper went down in price to such an extent that this in common with other well known properties in California failed to remunerate the owners and work ceased thereon.

About a year ago Prof. G. F. Deetken, long well known in this place as a metallurgist of superior ability, took charge of this mine for a company of capitalists of this town and San Francisco and since that time work has been pursued so systematically as to render the success of the enterprise certain. They have secured patent from Government to their mine and recently incorporated with Wm. Watt, John C. Coleman and F. G. Beatty of Grass Valley, and E. V. Sutter and Robert Morrow of San Francisco as Trustees. Prof. Deetken will continue to act as Superintendent. They have a new shaft down 45 feet, the ledge at this point showing a width of over 70 feet. The ore is said to be free from arsenic and antimony and so better adapted to working than many copper ores. Tests have been made on a large scale, proving that this ore can be smelted at the mine and pure copper sent to market with good profit. Mr. Deetken is now building a roasting furnace of 25 tons a day capacity, combining the best features of well tried furnaces with some of his own invention, which, together with the larger blast furnace now also being erected, will render the works quite extensive and make the little town of Spenceville quite a lively place soon.—*Foothill Tidings*.

HAYCOCK, of Gopher Hill, Plumas county, melted out a \$3,500 bar the other day, at Spanish ranch, the result of two small "clean-ups."

The incrustation of boilers is a subject which interests so many classes of manufacturers that every chemical discovery which promises to prevent or remove the scale is heartily welcomed. The use of lime for rendering hard waters soft is not new, but the means of determining the amount required, and upon which all depends, have been greatly simplified by the use of volumetric means. The best preventative of scale in boilers is, however, tannate of soda, which is now furnished in quantities at prices which permit of its extensive use.—*Journal of Ap. Chem.*

RICH ORE.—Here is a little item that doesn't occupy much space, but we should like (for San Juan's sake) to see something in the *Prospector* that will rival it: One and a half tons of ore from the Saco, crushed at Cree & McCann's, last Tuesday, yielded at the rate of three thousand five hundred and thirty-five ounces per ton. The ore was taken from the workings of Bennett & Co.—*Colorado Miner*.

USEFUL INFORMATION.

Hints on Building a Stone House.

The use of stone in building dwelling-houses finds more opponents than any other material. To the architect's question, "Of what material do you propose to build?" the reply of the client is almost invariably, "Stone;" but a few facts concerning the cost very soon cause the owner to abandon that material, and take one less expensive. A stone house, properly built, is undoubtedly the most expensive edifice that can be erected. It has its advantages and its faults; and, unless it is carefully and thoroughly put together, the latter certainly predominate. Its two principal recommendations are its fine, substantial and showy external appearance, and the facility with which creeping vines may be grown upon it. The building, not requiring paint, permits these vines to grow at random, producing a much desired romantic effect. It cannot be claimed that such a house is any warmer in winter, or cooler in summer, than a brick one; while in comparison with a frame house it maintains the same relation as a cast iron stove does to a sheet-iron stove. The one being much thicker than the other, absorbs more heat, and hence we are required to wait longer before feeling the benefit of the fire; but when once heated, it retains it much longer. The interior of a frame house changes much more readily under the influence of the outside atmosphere. We have seen the walls of the interior of a stone house in midsummer covered with moisture caused by a sudden change in the atmosphere from a close murky atmosphere to a cool, clear one, causing probably a difference of ten or fifteen degrees in less than half an hour, thus producing condensation on the walls. This could not occur in a frame building, both on account of the material of which the walls are constructed, and also of the rapidity with which the outside can affect the inside. In this case the moisture would be removed, not precipitated. The walls of a stone dwelling-house should never be constructed of rough rubblework, for the reason that it is almost impossible to thoroughly fill all the joints with mortar; the stone being rough on the face, does not allow the water to pass off freely, and the result is that, in a driving storm, a very small opening, hardly large enough to admit the small blade of a pen-knife, will take in a large quantity of water and produce dampness. In the construction of churches and other buildings, not dwellings, we have often worked long and diligently to find these small crevices, to stop the flow of water. Stone naturally absorbs moisture, and that, together with any leakages that may exist, produces too much dampness for health or comfort. The proper construction for the walls of a stone dwelling is to have the beds and joints squared, (what is termed squared random-work.) This enables the workman more surely to fill the joints with mortar. All the outside joints should be thoroughly pointed with cement before the building is occupied.

A stone house can be constructed either with hollow or with solid walls. The former method is the plan we generally recommend, for the same reasons as have been given for its adoption in a house constructed of brick. The outer wall should not be less than 16 inches thick, of stone; leaving a space of three inches, and backed up on the inside with four inches of brick work; the inside and outside work to be bound together with iron ties, the same as for a brick house, only that the ties should be about 15 inches long. If a stone house be built in this way, and the same precautions taken as described for a brick house, no fear need be entertained of dampness; but where this system of hollow walls is adopted, and the inside and outside work is bound together by stones going through the whole thickness of the wall, or with binders of brick (instead of iron), dampness is sure to ensue. Hollow walls to be thorough and effectual must have outside and inside work entirely separate from each other.

To build a house with stone use great care in laying up the walls. As this is, unquestionably, the most thorough method of building, it is also (except in some rare cases) the most expensive, even in cases where stone is obtained for only the expense of carting; the cost of the brick for a brick house being more than counterbalanced by the additional labor required in cutting and dressing the stone, and in handling and building it into the wall. In conclusion, we would advise those contemplating building of stone to do so in the most thorough manner. If the cost is too great, do not economize by building cheaply, for the sake of having a stone house. It is far better to adopt a cheaper material. A well-constructed frame house is much better and healthier than a cheap stone house.

Whatever you do, in the use of any kind of building material, do thoroughly, and you will be relieved of much care and perplexity. Your enjoyment of your home will be much greater, your health promoted, and everything which tends to give that quiet and repose for which home is chiefly valuable will be greatly increased.—*American Homestead.*

To obtain anhydrous or absolute alcohol, boil strong alcohol with quick lime for one hour in a vessel with an inverted condenser, and then distill.

The Strength of Materials.

Gold may be hammered so that it is only 1,360,000 of an inch thick. A grain of iron may be divided into 4,000,000 parts. Still chemistry tells us that there are ultimate parts called atoms or molecules, which are absolutely indivisible. These atoms are attracted to each other by the attraction of cohesion, and repelled by the force of repulsion. By the action of both these forces the atoms are kept in a state of rest. The solidity of a solid depends upon the fact that each pair of atoms are in this state of equilibrium. These atoms are supposed to be of an oblate, spheroidal form. An iron bar would support its own weight if stretched out to a length of $3\frac{1}{4}$ miles. A bar of steel was once made which would sustain its own weight if extended to a length of $13\frac{1}{2}$ miles.

Our ideas of great and small are no guide to be used in judging of what is truly great and small in nature. The Bunker Hill Monument might be hilted to over a mile in height without crushing the stones at its base. When bars of iron are stretched until they break, those which are the strongest increase in length less than the weaker ones. A piece of wood having a breadth and thickness of three inches and a length of four feet, if supported at its ends, would be bent one millionth of an inch by a weight of three pounds placed at its center, and a weight of one-tenth of an ounce would bend it one-seven-millionth of an inch. Prof. Norton described a machine for testing the variation of sticks of wood. The machine consists of levers and screws so contrived that the amount of weight brought to bear upon the stick can be accurately measured, and the variation of the stick from a straight line can be measured, even though it do not exceed one seven-millionth of an inch.—*Jour. of Ap. Chem.*

The subject of food, its preservation and adulteration, has attracted more attention than formerly. M. Sacc proposes to use acetate of soda for preserving meat; another substance suggested is a mixture of boracic acid and common alum, while Lajourroie has found that one per cent. of magnesia will preserve meat for several months. The passage of an adulteration act in England has directed the attention of analytical chemists there to the study of the best means of detecting adulterations. At present adulterations in tea are attracting so much attention that it is very probable that much of the worst tea in the world will seek a market in America, where no such laws exist. Attention has been frequently directed to the dangers attending the use of impure water, and we have from time to time indicated the best methods of testing potable waters, and of purifying those that require it.

TO MAKE PAPER TRANSPARENT.—The best kind of paper is the class known as wove, not laid paper. A varnish formed of Canadian balsam dissolved in turpentine supplies an excellent means of making paper transparent. The mode by which we succeeded best was to apply a pretty thin coating of this varnish to the paper, so as to permeate it thoroughly, and then give it a good coating on both sides with a much thicker sample. Keep the paper warm by performing the operation before a hot fire, and apply a third or even a fourth coating until the texture of the paper is seen to merge into a homogeneous translucency. Paper prepared in this way has come nearer than any other to our ideal of perfection in transparent paper.—*British Journal of Photography.*

NEW APPARATUS FOR REGISTERING THE DIRECTION OF CLOUDS.—M. de Parville proposes for this purpose a board some 12 inches long by eight inches broad, fixed on a suitable support. A square of unpolished glass, placed vertically, divides the plane in two equal parts. The left hand side of the latter is covered with a mirror; on the right is a sheet of paper. As the clouds pass above the horizontal glass, they are reflected; and at the same time the observer sees their images on the vertical glass projected on the paper. It is only necessary to trace their direction on the latter with a pencil. On the mirror is engraved a compass card, which is also reproduced on the paper, and a small magnetic needle is suitably arranged so as to adjust the apparatus.

PRESERVATION OF VEGETABLE POWDERS.—Mohr's method of preserving vegetable drugs consisted in placing in the drawers with them preformed tin boxes containing quick lime. Louis Cornish, pharmacist at Diest, proposes a modification of this plan, which is especially adapted to the preservation of powdered drugs. The bottles in which the drugs are kept are fitted with large hollow stoppers, which are filled with fragments of quick lime. The large opening through which the lime is introduced is secured by tying over it double thicknesses of linen and filtering paper.

REPAIRING MIRRORS.—To replace the small patches of quicksilver often found removed from the back of looking-glasses, clean the damaged spot by very careful rubbing with fine cotton until there is no trace of grease or dust; then with the point of a knife cut the size of the required piece of the silvering off another glass; a small globule of mercury (the size of a pin's head for a surface the size of the finger nail) is dropped upon the cut piece. The mercury penetrates as far as the cut, and allows the piece to be removed. It is then gently pressed on the spot with a piece of cotton.

GOOD HEALTH.

Can a Person be Anesthetized During Sleep?

This is a very important medico-legal question, and is ably discussed, though not conclusively settled, by Professor Dolbeare, in the January number of the *Annales d'Hygiene*. Professor Dolbeare performed several experiments, and found that sleeping animals were readily aroused by the presence of even small quantities of chloroform in their immediate vicinity. The cases of three patients are also given, who while sleeping were readily aroused by applying small quantities of chloroform at no great distance from the nostrils. In a second series of experiments made on seven patients, ten drops of chloroform were poured on a napkin folded in four, which was gradually brought to the vicinity of the air passages, so that all air inspired had traversed it. In all these cases patients were suddenly aroused from their sleep, come immediately and only one after the eleventh inspiration.

A third group of cases, consisting of twenty-nine patients, was next experimented upon, furnishing different results. These are given in some detail, but it will suffice to say that it was found that in ten out of the number, that is, in more than a third, complete anesthesia could be induced without awakening them. Dexterity in the mode of procedure seemed to have something to do with the proportion thus obtained, for this increased progressively with the number of cases experimented upon.

"New researches will still be required in order to establish the influence which may be exerted on the results by the age of their subjects, their sex, their prior condition of health, personal habits, etc. The purity of the chloroform employed is also a matter of importance. While thus appealing to future researches, your reporter, making certain reserves, still feels he is authorized in drawing a somewhat positive conclusion. Scientifically it is difficult, but often possible, to render persons insensible by means of chloroform who are in a state of natural sleep. Certain precautions, the employment of a very pure article, and great practice are conditions that favor the success of the attempt. It is probable that certain subjects are absolutely refractory, that is, it is impossible to anesthetize them, in spite of every precaution that can be taken. Others, on the contrary, and especially young children, easily undergo anesthesia without being aroused from their sleep by the irritation which the anesthetic produces in the air passages. Under the criminal aspect it is certain that chloroform administered to sleeping persons may facilitate the perpetration of certain crimes. It is, however, probable that the conditions favorable for anesthesia will be rarely combined on the occasion of criminal attempt. But before the tribunals the expert should declare that it is possible, if not easy, to render a sleeping person sufficiently insensible by chloroform to allow his becoming the victim of a criminal attempt."—*Phil. Med. Reporter.*

ARTIFICIAL FEEDING OF CHILDREN.—Nursing by the mother is the only natural feeding, and it can not be substituted by any other with safety to the health of either the mother or child. Wet nursing is only to be resorted to when the mother's milk is not suitable, and when a proper wet nurse can be obtained. The so called "prepared foods" with their flaming advertisements and testimonials, oftentimes egotistic, and accompanied, as in one instance, by the picture of a wonderful baby "brought up entirely on this and no other food"—all of these originate in a desire to meet the wants of children deprived of mother's milk, and often stand in the way of a mother's duty of nursing. The country is flooded with them. Some are harmless, many dangerous, and a few useful. The thoughtless indorsement of physicians is easily to be deplored. A perfect substitute for mother's milk has not yet been made, and it is doubtful whether it ever will be. An exact analogy in solid and fluid constituents can not take the place of human milk, with its inherent, unexplainable, life-giving principle.—*Sanitarian.*

USE OF SWEET OIL AS A DRESSING FOR WOUNDS.—Dr. Jos. W. Howe has recently introduced at this hospital ordinary sweet oil for the treatment of all kinds of wounds. It has several advantages over any of the other dressings in use, and apparently yields better results. The advantages are, that it keeps the air from the wound, and at the same time is a grateful dressing to the patient. It also promotes healthy granulations. The mode of application varies with the variety of wounds for which it was intended. In necrosis, after the sequestrum is removed, the cavity is filled with the oil, and a lint tent introduced. Every day the oil is renewed. In one case of necrosis of the lower jaw this procedure was had recourse to, and, shortly after, the patient was attacked with facial erysipelas, but, strange to say, the side of the face which had been operated on was not affected. In incised wounds, the edges are brought together, and soaked in oil used as an external dressing.

Too much lemon juice if taken in an empty stomach might do harm, but it would be slight. Taken after the food is in the stomach there would be no objection to it on this ground.

Longevity of Man.

The great physiologist, Flourens, concluded that the natural extreme age of man is 100 years, and his conclusions have been adopted by Faraday and all other philosophers and physiologists. The duration of life is measured by the time of growth. When once the bones and epiphyseae are united, the body grows no more, and it is at twenty years that this union is effected in man. In the camel it takes place at eight, in the horse at five, in the lion at four, in the dog at two, in the rabbit at one. The natural termination of life is five removes from these several points. Man being twenty years in growing, lives five times twenty years—that is to say one hundred years; the camel is eight years in growing, lives five times eight years—that is to say forty years; the horse is five years in growing, and lives twenty-five years; and so with other animals. The man who does not die of sickness, lives everywhere from eighty to one hundred years. Providence has given man a century of life, but he does not attain it, because he inherits disease, eats unwholesome food, gives license to passions, and permits vexation to disturb his healthy equipoise; he does not always die from age, but kills himself. Professor Flourens divides human life into infancy, youth, virility and age. Infancy extends to the twentieth year; youth to the fiftieth, because it is during this period that the tissues become firm; virility from fifty to seventy-five, during which the organism remains complete; and at seventy-five old age commences.

To some persons it may appear that to extend virility to seventy-five years and let old age commence then, is rather extending the numbers too high; but we suggest that all persons descending from a healthy stock of family, and who have lived wisely, have certainly not spent their virility before the age of seventy-five; who is there who has not often had occasion to admire some venerable white-haired men of about that age, who are fully equal in bodily health, and especially in mental vigor, to those who have lived only half that period of time.

Usually the vitality runs down quite rapidly at about that period; life then lasts a shorter or longer time as the diminution of reserved force is hastened or retarded either by the then existing conditions surrounding the individual or by the impression which his system has received by his previous manner of life, or experiences undergone.

It is evident that only those for whom every thing has conspired in their favor can attain the limit of one hundred years; and this shows at once why these cases are so rare; man is so complex a being and the causes of derangement so multifold, that it is rather to be wondered at why many who by no means live wisely do not die sooner. This is actually the case; but a naturally strong constitution often overcomes the results of the most pernicious habits, as the drinking of alcohol, excessive smoking, etc., which very soon destroy the weak, who act very foolishly, when they try to follow the example of those who survive in spite of these follies.—*Manufacturer and Builder.*

Typhoid Fever.

The prevalence of this justly-dreaded disease in several localities just at present leads us to offer a few suggestions as to its prevention by proper hygienic measures. That it may be defied in almost every instance by observing proper precautions, there is no doubt at all. All admit that it has its origin in decaying animal or vegetable matter; probably the former, possibly both. This fact was forcibly impressed on our mind during a late trip in the country. In a remarkably healthy neighborhood we found two families quite a distance apart, too, both having several members down with this disease. One glance at the location of each, instantly told why they were there attacked while their immediate neighbors escaped. The houses in both instances were old and decaying, and stood in such a position that all water which fell near, and all refuse from the houses, flowed directly to them, and were absorbed by the soil underneath. Here the accumulations of years, perhaps, were rotting; both places had a damp, foul smell about them, and the cause of the fever was at once apparent. Farmers are too apt to think that drainage is all well enough for large cities, but of no use about a farm house, whatever. This is all wrong; and the first desideratum in choosing a location for a dwelling ought to be that there shall be efficient slope or elevation to secure good drainage. If this is not practicable, then the structure should be placed at a sufficient height from the ground, to allow free ventilation beneath; and this should always be left unobstructed; securing the warmth of the building by very tight floors. Another simple precaution of great value is to have the pit or sink, which almost every family has for the reception of refuse matter, so arranged that no foul vapors can escape. This can be arranged by having a double elbow in the pipe leading to it, so that there will be a constant stratum of water in the elbow, to intercept any noxious or unhealthy gases, as they escape. By allowing no animal or vegetable matter to decay around the house, and by keeping the ground dry by proper drainage, with such other little sanitary precautions as will suggest themselves to the ordinary thinking mind, this dreaded, lingering, prostrating disease might almost be banished from the land.

MINING SCIENTIFIC PRESS.

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Saturday Morning, May 30, 1874.

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Fish Importations from the East.

An aquarium car will start on its journey to his coast on the 3rd of June, to make a second attempt to cross the continent with a load of living fish. The car will be in charge of Livingstone Stone, the gentleman who was in this State last year obtaining salmon eggs for the Eastern States. The car in which the fish are to be brought this time is 40 feet long, with broad head, passenger trucks, twelve wheels, air brake and Miller platform, and is well made, and appropriately fitted for the purpose. The salt water fishes on the list to be taken are as follows: Lobsters from Massachusetts bay; oysters from same place; soup from Martha's Vineyard; striped bass, New York harbor; tan togo, Martha's Vineyard; salt water eels, same place; king fish, weak fish and blue fish from New York harbor.

The fresh-water fish to be brought are black bass, glass-eyed pike and horn-ponies, from Lake Champlain; eels, from the Hudson river; cat-fish, from New Jersey; Shad, from the Hudson river; red minnows and alewives, from Massachusetts.

To take across almost any of these varieties would be a great care and labor; and to take across the whole is quite an undertaking. The car will leave Charleston, N. H., about the 3d of June, reaching Sacramento and this city about the 10th. It is to be hoped that the experiment of bringing these fish across will be more successful than the attempt was last year, when the car was wrecked, and those of the fish which did not fall into the river where the accident occurred, were destroyed.

A PATENT to the first placer claim ever located in Utah was issued at Washington on the 30th ultimo.

The St. Helena gold mine, Napa county, is to have a mill, and ground has been broken for the foundation.

SEVENTY men are employed at the Benicia Tannery.

The Emma Mine.

While we regret the late unsatisfactory reports concerning the workings of the famous Emma mine, in Utah, we are at the same time glad to see that the reports of eminent mining experts hear out the opinion of the present manager, who has been much maligned for saying what he believed to be true. Interested parties in Salt Lake city and elsewhere have done more than enough to inspire holders of stock in the Emma with confidence in the future of the mine, when there was no foundation for this confidence. Apparently well authenticated accounts of rich strikes in the Emma have appeared in the press of this country and England at different times, when in truth no such developments were being made, or from indications were likely to be made.

In a certain degree the Americans have been disgraced by the action of persons of their own nationality in matters connected with this mine; but past transactions have been quite sufficient to injure the mining interests of Utah, and in fact this whole coast, in the opinion of the English capitalists, without any fresh instances of want of good faith on the part of these interested parties. Therefore it is greatly to be regretted that certain persons—not one but many—have taken such trouble to misrepresent the actual condition of the mine in order to induce the English shareholders to invest heavily in a losing concern.

During the past year explorations have been going on, levels run, winzes and shafts sunk, and the sides of the ore body thoroughly prospected, all of which work has proved very unsatisfactory as regards the future prospects of the mine. The ore reserves in sight in the mine are very small, and the Attwood winze at the bottom of the ore body has failed to show any ore. These facts have been transmitted from time to time by the present manager of the mine, Mr. Attwood, and his full report was probably made on the 15th instant in London. When this report comes to hand we will quote liberally from it and show the diagrams of the mine, explaining the internal workings, etc. Meanwhile we are enabled through the kindness of a friend to quote as follows from the reports of three eminent mining experts, who all agree with the manager as to the future supply of the mine.

Report of Clarence King, Director of the United States Geological Survey of the 40th parallel, dated June 11th, 1873: "In conclusion, I can only reiterate that the great Emma 'bonanza' the object of such wide celebrity, the basis of such extravagant promises, is, with insignificant exceptions, worked out, and the future of your company is hung on a mere geological chance, which may be eternally against you, and if in your favor, may only be secured by the wise expenditure of much time and money."

Report of E. S. Blackwell, Esq., Manager, Ophir mining and smelting company of Utah, (Limited), dated June 7th, 1873: "The future of the mine depends entirely upon the virgin ground, and to explore this you must be prepared to wait some time and spend a large amount of money in developments."

Report by Andrew Murray, Esq., F. L. S., etc., dated August 6th, 1873: "In my opinion the famous Emma mine is exhausted, and nothing more is to be extracted from it but the leavings of the old workings, the scraping of the walls, the ore which may have been entombed by the cave, the old fillings and the second-class ore on the dumps."

From report of George Attwood, manager of Emma mine, dated May 11th, 1873: "That your property is in a most unfavorable condition, and that the former management cannot be too highly censured for the way in which your mine has been worked, as they have exhausted all the pay ore accessible and not even well timbered or secured the same, and have neglected to make 'explorations to the deep.' The result of all this is that the future prospects of the mine are most gloomy, and until the explorations are carried much further ahead, cannot conscientiously give any encouragement."

The statements made in these four reports have been borne out by the result of the workings of the past year. As to what the directors of the mine intend doing we cannot say, until the result of the meeting in London on the 15th inst. is made known.

OREGON.—A number of capitalists are in Baker county looking at the mines. They contemplate the erection of a silver mill in Rye valley.

A new silver discovery has been made at Rosita, Colorado. Ore taken out two feet below the surface shows a value of about \$1,100 per ton.

A "POCKET" in the Kincaid Flat mine, Tuolumne county, yielded \$1,200 last week. One piece weighed two ounces.

REPORTS from the Amador quicksilver mine still continue to be more favorable as the work of development goes on.

ONE hundred and thirty car-loads of ore are daily shipped over the Virginia and Truckee railroad.

THE yield of the Gwin mine, Calaveras county, averages \$1,500 per day.

Work on Mining Claims.

The mining community is very much exercised as to the amendment to the mining law of May 10th, 1872, which extends the time for the first annual expenditures on claims to June 10th, 1875. As the law now stands the time for the first annual expenditure is June 10th, 1874. There is now, at the time we go to press, (Thursday night,) some indecision as to what has been done with the amendment in Congress. As far as we can learn it was recommended favorably by the Senate Committee on Mines and Mining; passed the Senate, and is now awaiting final action by the House. This being the case, in all probability the amendment will be adopted and the time be extended to June 10th, 1875.

Many miners not anticipating any further extension of time, have done the required work. Others again, are anxiously awaiting the result of Congressional action, with the hope that they will be allowed another year's grace. Many are, however, prepared to begin work on the 10th of June, which the law allows them to do, and still hold their claims. Some are beginning now to do their work, for fear the amendment to the law will not pass in Congress. Those who propose commencing their work on the 10th of June, had better be prepared to be on the ground early on that day, since numbers of men have "spotted" promising claims, and stand ready to locate them in case the owners do not do the work required by law.

The placer miners are in a quandary as to whether their claims are on the same footing as lode claims. Some owners have done work on their placer ground to be on the sure side; whilst others have concluded that although the law may include placer claims it does not specify them, and they therefore consider themselves free of the operation of the law as far as their annual expenditure is concerned. This question will, however, have to be settled by the Commissioner of the Land Office, who will probably take some action in the matter very shortly. There is little doubt that the clause was intended to apply to all classes of claims; but in reading the law the natural inference is that only lode claims are meant, so that many owners of placer mines intend taking advantage of the want of clearness in the law.

The Stickeen Mines.

News of a very discouraging nature comes from the Stickeen river mines, and if reports be true, those who intended going thither and changed their minds, may congratulate themselves on their luck. It is stated that about one hundred disappointed miners arrived at Olympia on the 16th inst. from these mines and they say the Stickeen mines are the worst "bilk" ever gotten up on the Pacific coast; that hundreds of men are in the mines without a dollar or a pound of provisions and that great suffering must consequently follow.

It seems as if repeated bitter experience would prevent most prospectors going to these periodical "excitements" without at least money enough to get back again; more especially when the mines are in as inhospitable and distant a district as the Stickeen river country. The long winters were enough to deter most men, but the stories of fabulous richness—always prevalent about new mines—led many others to try their fortunes in the snowy regions of Dease's lake. It is probable, however, that some of the men who went to these mines must have made something, for a month or so ago a correspondent wrote that all the claims worth anything were taken up. We suppose that the late arrivals at the mines, most of whom expected a good claim immediately, must have been disappointed in seeing all the available mining ground already located; and fully realizing by that time the rigor of the climate of the region, they made up their minds to return. Of course such men will give the country a bad name, as those who are lucky will give it a good one. Many enthusiastic prospectors will not take the words of other parties about new mines but must see for themselves, and in so doing they often get "bit" badly. It is strange, but nevertheless true, that all the mining "excitements" in British Columbia and that region have turned out badly, and a large proportion of the men who went to the different localities, returned poorer but wiser men.

MINING is quite active in the vicinity of Garrote. Several good veins will soon be opened and put in working order.

HUNTER and Stewart, of San Francisco, have purchased the Italian mine, located at Deer Flat, Tuolumne county, for \$30,000.

TWENTY miles of the Palisade and Eureka narrow-gauge railroad have been graded, and for six miles the track has been laid.

SEVERAL very important water right suits are pending in the District Court of Plumas county.

A TEN-STAMP mill is being erected on the Zacafero mine, at West Point, Calaveras county.

Interesting Mining Decision.

A decision of much interest to miners was recently made by Judge Belden, of the Sixteenth Judicial District, the property involved being worth about \$1,500,000. The contested property is located in the town of Cerro Gordo, about six miles east of the north end of Owen's lake, Inyo county. It owes its origin and magnitude to mining interests. These mines were discovered in 1855. The most valuable mine yet worked is the Union. Its working-shaft is down 500 feet, and the ledge and works of the mine are valued at fully a million and a half of dollars. On the same hill and running across the Union, is the San Felipe mine. The Union was discovered by one Beltran and two of his workmen, who were engaged in sinking a shaft on the San Felipe. They went on working apparently harmoniously together, although some of the locators in the San Felipe complained because they were not included in the Union location.

In February, 1873, an action in ejectment was commenced in the Sixteenth District Court, by the San Felipe Mining Company, against M. W. Belshaw and others, owners of the Union mine. At the time this suit was instituted, Belshaw was in possession of the San Felipe mine under a sheriff's deed, but the San Felipe company set up a redemption of the property. The case came on for trial at Independence, in July last, and lasted ten days. There were thirty-six witnesses examined, and the testimony in the case is contained in about 6,000 folios. The attorneys for plaintiff were B. S. Brooks and John McHenry, of this city, and Mr. Freeman, of Kern and P. W. Bennett, of Inyo county. W. H. Patterson, of this city, and Patrick Raddy, of Inyo, represented the defendants.

J. J. Moore, Recorder of the district at the time the claim was located, testified that he wrote the notice of location, and that he was shortly afterward called to measure the claim. He commenced at the south San Felipe shaft, ran up the hill in a southeasterly direction 1,200 feet. The vein was silver quartz, from eighteen inches to two feet thick. Twelve hundred feet were also laid off in the opposite direction down the hill. There were no croppings to be seen northerly from the shaft.

Bentura Beltran, the discoverer and locator of the San Felipe and Union mines, testified that he posted the Recorder's notice above the original shaft on the quartz vein. He could trace the vein some 600 feet up the hill, and did work there in 1866.

Giardo Valenzuello snuk the first shaft on the San Felipe vein, in 1866. He found silver ore, with specks of lead; vein varying from 2 to 2½ feet thick.

Pedro Astorga, one of the locators, said he claimed the vein for silver, and he followed the croppings a distance of 1,200 feet.

The jury, after an absence of two hours and a half, found a general verdict for plaintiffs, which, under the construction of the Court, gave plaintiffs possession of both mines. A stay of proceedings was granted until argument on motion for a new trial could be heard. The motion came up for argument in San José, on December 27th. Judge Belden took the matter under advisement, and a few days ago he filed a voluminous opinion, denying the motion, and finding no warrant to set aside the verdict. Meanwhile defendants have been in possession of and working the mines. The defendants have filed an appeal bond in the sum of \$50,000.

In the decision the Judge said: "If there is one class of cases above another in which the verdict of a jury, fairly obtained, should not be lightly set aside, in my opinion it is a mining case, in which propositions of disputed identity are supported by testimony of this character."

If the fact that I might have reached a different conclusion from the same testimony, or that I probably would have found otherwise, is sufficient to set aside the verdict, then jury trials may well be dispensed with; for in such a case to differ from the Court upon a proposition of fact is to annul the verdict. This is not the rule. The verdict of the jury, when fairly attained, is entitled to some weight, even though it may not be such as the judge would have found, and it must be something more than a doubt that will justify the court in disturbing it. I find no warrant in the cases I have examined for saying that a fair construction of the testimony in this case does not sustain the finding of the jury."

THE following are the Mexican grants covering a large portion of the county of Ventura: Simi, 119,000 acres; Conejo, 50,000; Guadalupe, 40,000; Calegua, 10,000; Las Posas, 28,000; Santa Clara Del Norte, 15,000; San Miguel, 7,000; Sespe, 25,000; ex-Mission, 75,000; Ojai, 15,000; Santa Ana, 25,000; San Miguelito, 10,000; Canada Larga, 8,000; El Rincon, 9,000; San Francisco, 8,000, and a small tract belonging to the Temescal grant.

THE shipments of bullion from Eureka last week amounted to 315,167 pounds.

A BOOT and shoe factory is flourishing in Redwood City.

THE Summit mine, Napa county, was last week sold for \$10,000.

THE Amador canal is nearly completed.

Reconnaissance—Exploring Made Easy.

Science and the march of civilization have sent the explorer to the remotest parts of the earth. And close in his footsteps go the geodist, the geologist and the topographer; and then before us is spread a faithful picture of the new country and its resources. In this, England took the lead—having mapped accurately her home domains, she then covers all India with a net-work of triangles which challenges at once the wonder and admiration of the scientific world. And few are the nations who have not already accomplished much in the same direction.

Whether the object be to pioneer a road across the Alps, the Apennines or our own Sierras, or to connect sea with sea or ocean with ocean by canal, the same knowledge of the general principles of the earth's topography is indispensable. And this knowledge should be most accurate—for to a cursory glance of even the most intelligent, hills and valleys show nothing of order or system in their arrangement, but appear to be confusion confounded. Yet a closer scrutiny reveals a wonderful symmetry in their forms and positions. A symmetry which at once declares them the effects of natural laws—which are as simple in theory, and uniform in action as they are useful in practice.

Hills are most generally disposed in chains or ridges, though occasionally collected in groups and at other times detached or isolated. The chains usually consist of several ranges parallel in the main to the back-bone of the chain and often sending forth branches or spurs in transverse directions. At times, however, they are merely the slopes of a table land in which their summits merge. A marked exception to this though exists in our coast range of mountains; here we do not find one single continuous ridge or system of continuous parallel ridges bordering the Pacific, but we see it made up of a system of parallel ranges which appear to be distributed *en echelon*, and overlap towards the north-west in an ascending order from south to north. This is characteristic of the California coast range of mountains; and is visible on a good topographical map—the general direction of the small parallel ridges being north-west and south-east.

It is generally true if a principal ridge is met by two secondary ridges at the same point, the point of meeting is a maximum of height—and if a principal ridge is met by the sources of two water-courses at the same point then that point is a minimum of height; but, if it is met by a secondary ridge and water-course at the same point then nothing can be inferred.

The waters which have come down from the mountain tops from time immemorial have adopted in their descent the lines of greatest slope. And in coming down the slopes of a range of hills they form principal valleys whose directions are perpendicular to the crest of the ridge when it is horizontal, but when it is inclined, share its general inclination. These streams thus divide the chain or range into ridges which have the same general directions as themselves. And the feet of two of these opposite slopes which enclose a valley are generally parallel in all their windings, a projecting point of one corresponding to a receding cavity in the other. This symmetry is however occasionally replaced by alternate expansions and contractions.

The main ridge is cut down at the heads of these streams into gaps or passes. And since the heads of these streams are at the lowest gaps in the ridge we hence have but to follow up the main water courses to find the lowest passes or gaps in a range of mountains. But as the ascent of a river to its source is often extremely difficult, if not altogether impracticable, on account of marshes, hogs, falls, etc., hence, in searching for the lowest pass in a main ridge, it will often be found most expeditious to ascend some tall neighboring peak and from thence follow the main ridge—determining as we go, our successive elevations by a level or barometer—until we find the lowest gap or pass.

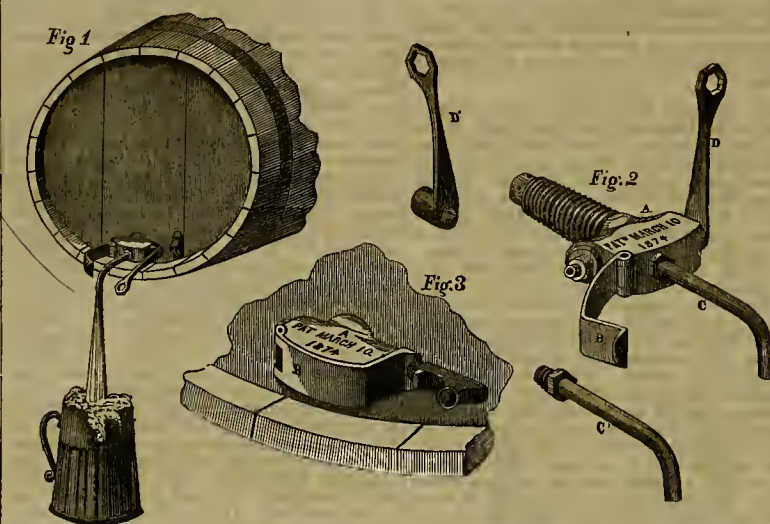
Each peak has its ridges radiating from its summit and widening (though tortuously it may be) to its base, and from hence the rule when scaling a mountain peak, get on and follow a ridge. If we ignore this idea and strike a hee-line for the summit, we find to our sore chagrin that "the nearest way around is not always the shortest way through."

The explorer should be able to read topographical maps; so well conversant with them that when he looks upon one it will not appear to him, as it does to the inexperienced eye, a mere plane surface of paper and curved lines, but up before his mind will rise the topography of the region, in bold relief—Yes, a model in relief of the country with its gentle slopes and steep declivities, its hills, valleys, mountains, plains and water courses.

But as the contours of only comparatively small portions of the lands of the earth have been mapped, it becomes all important that the explorer be able to read the tale which the water-courses tell of the topography of the country. If two water-courses flow in opposite directions from a point, it indicates that there is a ridge of hills separating the two streams, and that this is the lowest point of the dividing ridge. And if the water-courses of a region are found to all diverge from a certain point, then it shows that is the highest point of that region; but if they all converge to one point, then this is the lowest point of that region. Yet, if two water

courses flow in the same general direction, and parallel to each other, it merely indicates a general inclination of the dividing ridge in the same direction. Still, if any of their tributaries approach each other at their sources, the point of their nearest approach is the lowest point of the separating ridge. And if two streams have been flowing in the same parallel directions, and at a certain point diverge from each other, that spot is the lowest point on the ridge between them. But if we have two streams in the main parallel in their course, but flowing in opposite directions, there is nothing to indicate the direction of the inclination of the ridge separating them, if any exists; and the lowest point in this dividing ridge will be shown by the approach of the sources of their tributaries to each other or by the principal streams approaching each other at any point.

To readily find one's position is another essential point in reconnoitering. If provided with azimuth compass, pocket chronometer and sextant, positions can not only be readily determined but also a sketch made of the sections of country traversed. But when none of these facilities offer there are other approximate means of orienting one's self and taking bearings when the sky is overcast. Thus in sparse forests the weather side, generally the north in the northern hemisphere and the south in the southern, is known by the bark of the trees on that side being coarser and thicker, and more moss covered than the other sides. In trees cut down the tops of the stumps show the circles narrower together, so that the heart lies



BRIZEE'S IMPROVED FAUCET.

nearest this side. Boulders are often grown over with moss on the weather side, the ground under the same being especially damp. And hills are covered on the north side with grass and moss, but not on the south side, because the little insects keep that clear so that their larvae may bask in sunshine.

It has been suggested that panoramic views or plans of a country might be obtained by sailing over it in a balloon. Yet however convenient this might be in determining the relative amounts of land and water and the meanderings of streams, it would clearly be of little or no utility in sketching the general topography of a country, since we know that the undulations of the surface of the earth do not show from a balloon.

The striking contrast of our Atlantic and Pacific coast lines is patent to the most superficial observation. While on our eastern coast we see numerous bays and rivers reaching far inland and producing a broken and serrated coast line, on our western coast we find a coast line remarkable for its regularity and continuity, indented by but few large bays and rivers. This great difference is due to the geological structure of the regions. It is true that the mountain ranges run parallel with the coast on both sides of the continent, yet on the Atlantic side the mountains are separated from the seashore by a broad slope of sedimentary strata in which the long bays have been excavated and the rivers found their clear, winding ways to the sea; while on the Pacific side the mountains rise directly from the ocean like huge walls and are rarely flanked by broad low slopes towards the sea. These mountains by their hardness and continuity prevent the formation of rivulets.

To the hydrographer a knowledge of the general principles of the earth's topography is also invaluable—enabling him to better judge of the general topography of the sea bottom adjacent to the coast. "Off our western coast, at irregular distances, appears to be a range of submarine mountains."

QUICKSILVER IN UTAH.—They talk about having discovered a "ledge" of cinnabar in Camp Floyd District, Utah, which assays from 20 to 75 per cent. in quicksilver. Utah does not want California to be ahead of her in mining matters, but 75 per cent. cinnabar ore even beats this State and in fact most any country in the world. Perhaps if we discount 70 per cent. the report may be true, but even that is perhaps doubtful. Utah assays are generally pretty heavy ones.

Mechanics' Institute.

The Nominating Committee of the Mechanics' Institute have nominated the following gentlemen as Trustees for the coming year: A. S. Hallidie, A. R. Wells, R. B. Woodward, W. P. Stout, Henry L. Davis, George Spaulding and James Spiers. The building in which the approaching exhibition is to be held is rapidly going up. The floor is laid and the heavy timbers and large lumber necessary are on the way from up north. The Institute do not intend this year to give diplomas or prizes of any kind; but if the representatives of any one class of articles desire a report made on exhibits in that class, the report will be made by a special committee.

The reason why the Institute has concluded to dispense with the diploma and premium system, is that it gave great trouble, consumed a large amount of time, and in the end gave cause for much dissatisfaction among the exhibitors. It is, of course, impossible to please all, and the Trustees think the better way will be to allow articles to stand on their own merits without any official recognition by the Institute as to what is best or worst in any particular class. Subscriptions are now being solicited to aid in defraying the expenses of constructing the pavilion. The contract for constructing the building was let for the sum of \$69,600; but it is estimated that the structure will cost upwards of \$95,000 before ready

Permanent Faucet for Beer Casks.

Whether "Local Option" prevails generally in this State or not, as it does now in several localities, people will drink beer. If it does prevail, more people will have their kegs of beer in their houses than do so at present, and the community generally will therefore be more interested in an improvement which is more for the benefit of brewers than any other class. The improvement to which we refer is the invention of John Brizee of Alameda county, recently patented through the Scientific Press Patent Agency, and is intended as a permanent faucet for beer and other casks which contain liquid under pressure. Its object is to permit the contents being drawn without the trouble of driving a faucet into the cask by driving out the plug or bung at the risk of losing the liquid.

The arrangement is very simple and effective, as the following description and accompanying engraving will show. Referring to Fig. 2, A, represents a casting which is provided with a short projecting tube at one side. This tube is provided with screw threads so that it can be screwed down into a hole in the head of the barrel, leaving the casting, A, fitting closely down against the outside of the head. This casting, A, is not as high as the chimes of the barrel or cask, so that it will not interfere with the standing of the cask on end. A conical hole passes horizontally through this casting, parallel with the head of the cask, and in this hole is placed a tapering plug similar to an ordinary tap plug, secured by a nut at its small end.

In the outer face of the casting, A, is a hole with interior screw threads. The hole is in line with the hole through the short tube which screws into the barrel head on the opposite side of the casting. The tapering plug passes directly across through the casting between the two holes, and is itself provided with a hole which will form a direct communication with the interior of the barrel when the plug is turned so as to bring the hole in line; but when the plug is turned out of this position the communication is closed in the same manner that an ordinary faucet is operated.

A bent tube, C, has one end provided with screw threads so that it can be screwed into the hole in the casting, and through which the liquor will flow. This tube is removable so that it will not be in the way when the barrel is turned on end. The tap can be turned by a lever handle, D, which is detachable. This tap is provided with a countersunk triangular end, over which a small triangular wrench, E, is fitted, in order to turn the tap. B is a cover hinged to one corner of the casting, so that it can be shut down over its upper face and end, when the tube, C, and wrench, D, are removed, and thus protect the openings from becoming filled with dirt. This is shown in Fig. 3, the cover being closed over the hole in the casting.

Fig. 1 shows the faucet when liquid is being drawn, the lever, D, being down. Fig. 2 shows the faucet closed, the lever, D, being up. Fig. 3 shows the arrangement when closed, the barrel not being in use. The invention provides a permanent faucet which only needs the tube, C, to be screwed into its place and the tapering plug to be turned by the lever, D, to draw the liquid, thus avoiding the trouble of driving in a faucet every time the barrel is tapped.

SAGACITY OF BIRDS.—Certain facts render it probable that birds, in some manner, become aware of cholera infection in the air. Recent European journals state that at Munich, where several cases of cholera have occurred, the rooks and crows, which flew about the steeples and through the trees of the public promenades, have all emigrated; and the same thing happened during the cholera seasons of 1836 and 1854. According to Sir Samuel W. Baker, the same phenomenon occurred at Manritius, where the martins, which exist in immense numbers the year round, wholly disappeared during the prevalence of the cholera.

The mines at Moore's Flat, Nevada county, are mostly idle on account of the difficulties about water. The miners there want water for eight cents an inch, and the owner of the ditch wants twelve and one-half cents an inch for the water.

THE BULLION.—The long-pending suit in the Supreme Court, between the Bullion and the 420 Mining Company, has been decided in favor of the Bullion, giving it a clear and now undisputed title to that portion of its claim.

The Diamond Drill has bored a hole 1,040 feet deep in Canada, and at Midlothian a bore hole made by one of these machines is 1,142 feet deep and it is 4 feet 8 inches in hard granite at the bottom.

The ore vein on the 1,500-ft. level of the Consolidated Virginia mine is much wider than it was on the level above, as well as being richer ore, promising a body 100 feet in width.

The new hoisting-works building on the Ledy Bryan mine, on the Comstock, is nearly completed, and the engines will soon be ready to start up.

The mills are all running up to their full capacity on Crown Point ore, and the future of that mine looks very prosperous.

The ore shipments for the week, says the *Battle Mountain Measure for Measure*, have been 100,855 pounds of copper ore, destined for Liverpool, and 170,700 pounds of antimony ore, consigned to A. M. Star, of San Francisco.

PLACER mining is being carried on very actively at Silver City, Nevada. Large parties of men are engaged in sluicing in both the eastern portion of the town and also in a cañon situated a short distance west of the same. They are meeting with good success.

The Virginia and Truckee Railroad Company have made arrangements to lay their track with steel rails, all the way from Virginia to Empire. Three hundred tons of steel rails have already been shipped from Liverpool for this purpose, and two hundred from Pittsburgh, Pa.

There are eleven woolen mills on the Pacific coast—eight in California and three in Oregon. They have in the aggregate 28,840 spindles and 232 broad looms.

Of the thousands of mines owned in Utah, but one is owned and controlled exclusively by Mormons, and of all the smelters and mills in the Territory, only one is owned by Mormons.

COMPROMISED.—The suit of the Constitution Mining Company vs. the Morning Star, of Cornucopia district, has been compromised. Both mines are to be consolidated.

The Casket mine, Tybo district, the property of J. D. Page, has been bonded by Mr. McGee, of Eureka in the sum of \$20,000.

There are six furnaces working ores in Eureka now, and three more will soon start.

A post office has been established at Pine Flat.

The Holcomb Valley Mines.

The Los Angeles Herald publishes the following facts, gleaned from a conversation with Mr. Goldsworthy, Deputy U. S. Surveyor, who has recently returned from the Holcomb valley mines:

Holcomb valley is located in the Coast Range mountains, about 120 miles northeast of this place, and 65 miles by wagon road or 36 by bridge-path from San Bernardino. It is a small valley, about 8,700 feet above the sea level, varying from one and a half to one and three-quarters miles in width, by about four in length. The entire area included in this valley does not probably exceed 10 square miles. Undersliding this surface are the placer deposits, and in the adjacent hills are found the ledges of ore-bearing rock. There is abundance of pine timber and a good supply of water for milling and sluicing purposes. The mines are accessible by a good wagon road running through the mountains.

The Quartz Mines

Are in a granite formation, the veins varying from six inches to six feet in width, comprising veins bearing free gold and iron pyrites, with slight tints of lead, copper and base metals. As yet, mining in this section may be said to be at its very commencement. Some of the mines were worked 10 or 15 years ago, but were long since abandoned, and it is only within the last year that work has been resumed.

The Holcomb Valley Company

Control the principal quartz mines of this section, under the supervision of Capt. John Haley. They alone have sufficient machinery for the successful prosecution of the work at present. This company has a quartz mill which reduces about 15 tons of ore per day. They have a shaft sunk to the depth of 170 feet, all the way through ore, with side drifts running to the westward from the shaft and covering a block of ore 170 feet long by 80 feet in height. The ledge averages from 18 inches to two feet in thickness, and pays in the neighborhood of \$40 to the ton.

A Sawmill

Is in course of construction by the company, and during the summer another 20-stamp mill will be built for the reduction of ore. Under the efficient management of Superintendent Haley, the affairs of this company seem to be in a most prosperous condition.

The Ozier Ledge.

Owned by Judge Widney, Mr. Ward and Mrs. Ozier, is the next in prominence. It has not yet been worked (the survey having but recently been completed), but it gives great promise of containing valuable ore, and is in the hands of those who will push it to a speedy development.

The Green Lead.

Worked by Mr. Garvey, is also said to show some fine specimens, and work is carried on upon it with vigor.

The Carter and Hub Mines

Are also said to promise excellent results, and they are worked by the owners in a most enterprising manner. Another 20-stamp mill will be built upon these premises by the proprietors.

Other Ledges.

A large number of outside leads, worked by various individual miners and mining companies have been sunk from three to twenty feet deep, and all show first-rate prospects. Some of these same mines, when worked in former times, had as much as \$15,000 to \$20,000 taken from them by assays—a very rude form of securing the metal from the ore. It is said that what has been done can be done again, and if these mines, worked by such inefficient means, yielded so well fifteen years ago, it is beyond a peradventure now that they can be made to pay handsomely. In

The Placer Mines

Underlying the whole valley there is supposed to be a gold-bearing stratum of gravel from six inches to three feet in thickness. Only the outer edges of the basin have been worked, where the deposit, lying near the surface, is most accessible. These more shallow mines were also worked in former times, together with the quartz mines, but also were abandoned by the men engaged upon them for more alluring prospects in the upper country. In some places excavations have been made to a depth of twenty-five feet, when bed-rock is found. The pay-dirt yields from one-half a cent to five and six cents per pan.

The Center of the Basin

Is still virgin soil, having never been worked on account of the great depth to the bed-rock, probably 125 feet, together with the lack of sufficient machinery to pump the water from the excavation. The probabilities are that the richest deposits will here be found. Judging from the deposits around the rim of the basin, there is without doubt untold wealth waiting for those who have the means and pluck to dig through the one hundred feet or more of soil, and take it from its lodging place upon the bed rock.

The Lazarder Company

Have sunk a main below the first hard-pan and have found a second stratum yielding gold-bearing dirt equal to that above. This mine is now worked by Lazarder & Brothers with success.

The Resources of the Valley

Are as yet almost unknown, having been pro-

pected in only the most accessible portions, and doubtless the richest discoveries are yet to be made.

Sufficient Water

For sluicing purposes is pumped from the mines as they are dug. In every respect there are ample facilities for developing the mines in their utmost capacity. A lack of proper machinery is the most noticeable want of the region. The abundant supply of wood and water, together with the unlimited amount of soil yet unprospected and the cheapness of machinery sufficient to carry on the work, offer

Excellent Opportunities

For miners to try their fortunes in Holcomb valley. About one hundred miners passed the winter in the valley, and since the opening of the season others have flocked there from other sections, so that there are probably 150 men now at work in the mines, and still they come. The snow is well cleared away, so that no difficulty is experienced by the miners from that source.

A New Town

Has been laid out in the eastern end of the valley. One store is already in operation, and a number of houses are in course of erection. Town lots are finding quick ready sale. There are at present some accommodations for travelers here, but they are limited, and there is a good opening for some enterprising man to start a boarding house.

A Great Rush

Will doubtless be made for this section during the coming season as its resources become better known. We shall take every opportunity to keep our readers fully posted in regard to any new developments which may be made. Meanwhile, we can but wish the best of success to the industrious gold hunters in Holcomb valley.

NEW ZEALAND MINES.—Ten years elapsed after the gold appeared in New South Wales and Victoria before it burst forth in its glory upon New Zealand. Some small fields were known before, but the year 1860 gave but an export of 4,538 ounces. The year after, the amount was 194,234 ounces; in 1862, 40,862 ounces, and in 1863, 621,450 ounces, valued at £2,431,723. After this famous rush to Otago, the yield fell. The export for 1864 was 480,174 ounces; for 1865, 574,574 ounces. But 1866 gave the summit of prosperity—735,376 ounces, or £2,444,517. Fortunate as Auckland was in 1873, the export of the whole period preceding 1871 realized only £1,005,238; while Nelson had raised £4,018,404. Westland, £5,812,187, and Otago £10,588,000. The total amount exported up to 1873 was valued at £26,816,323. The distribution of gold is far greater in the south island than in the north. With the latter it is confined to one province out of four, Auckland, and to but few places there. The south island has diggings in every province. Wellington offers £2,000 for the discovery of gold fields. The gold exported for the year ending June 30, 1873, was 447,759 ounces, valued at £1,732,687. Besides gold, the mineral wealth of the colony is not great. Silver, though known, has not been found in paying quantities. It is found with gold in the iron sands of Westland shores. Tin, seen at Tapano and Shortland, may be valuable some time; for, though recognized for many years in Australia, it has only just begun to be worked there. Platinum sand exists on the coast of Southland and Westland. Chrome iron ore is in such quantities at Dun Mountain, Nelson, as to have an excellent prospect of being a paying export. Chrome iron is also found at Milford Haven. Iron of a rich quality can be procured from large boulders of iron stone. The Taranaki iron sand has long been known and valued, though the difficulty of rescuing it on that stormy coast for many years prevented persons undertaking the work. Copper once promised well. Barrier Island was spoken of as a second Burra Burra. Paying lodes may eventually be found there at Kawan, Coromandel, etc. Tin is found in the Buller. Coal is being worked at Greymouth, on the west coast. That of a tertiary kind at Port Chalmers, Malvern Hills, Auckland, and many parts of the interior of Otago, Nelson and Canterbury will be utilized. Raglan and Westport are turning out good coal. The Bay of Islands seam is thirteen feet thick.

NEW SMELTING WORKS.—The Boulder county (Col.) News states that Gold Hill is at last going to have a home market for the valuable ores its mines are contributing to the annual production of Colorado's wealth. Mr. F. A. Hunt has purchased Horton's place at the junction of Boulder and Four Mile creeks, where he will at once proceed to erect ore concentrating works. The News says "his process is by 'wet concentration,' and the most approved machinery is provided, both for crushing and separating." In regard to Boyd's Smelting Works, in Boulder, the News says: No more welcome news could be given to our readers than the announcement we are now able to make, that the work of erection of the smelting works began the first of this week, in earnest, and will be energetically pushed to completion, it is said, in 60 days; but making allowance for the delay that usually attends such enterprises, it is not unreasonable to believe that in 90 days the work of smelting ores will have been begun in the town of Boulder. All the machinery—eight car loads—has arrived, in charge of Mr. Boyd, who is on the ground, superintending the erection. As the material is all on hand, no more disheartening delay is apprehended.

Coal Mines at Coos Bay.

A correspondent of the Call writes from Eureka, Humboldt Bay, as follows:

The Newport coal mine is owned by Flanagan & Mann, of San Francisco, who must have expended an immense amount of money to open the mine and put it in its present working trim. Few mines are worked so systematically; everything, no matter how trifling, is managed with the greatest regularity. The main tunnel is in over 1,800 feet, and the chambers occupied by each miner are about 20 feet square; in quartz mining it would be called stoping out. The style of mining resembles quartz mining very much—timbering, filling in and cutting out the face of the drift are the same—this only difference being that the rock is black instead of white, and the angle of the vein not so great. The miners are paid by the ton, and often make much more than wages, and even so high as \$100 per week, owing to good work and the increase of the vein. Each miner, after filling his car, labels it with his number; it is then attached to the train, which runs out on an incline, and in charge of the brakeman to the scales, over which each car passes, and is weighed by a receiver, who enters on a bulletin board the weight and the miner's number, so that on quitting work each man, by referring to the board, knows how much he has made. The coal after being weighed, is dumped into the bunkers, which are capable of holding 500 tons. At the bottom of each bunker a lever lifts a slide through which the coal drops into a train of cars backed up by the steam locomotive.

A CHAPTER OF ACCIDENTS.—William Cook, of this place, was quite severely hurt on Tuesday last, while at work in his hydraulic claim at Sport Hill. Cook was standing at the pipe, close to the bank, when a cave occurred. A rock struck him on the head, just back of the ear, cutting an ugly gash and contusing the bone considerably. Pleaded to learn that no serious results will ensue from the accident. Wednesday last a man named Daniel Keyes was terribly injured while at work in the San Bruno mine, at Mosquito Gulch. A large timber being hoisted up into the stope, caught, and Keyes ascended the ladder to disengage it. Subsequently, the timber having been raised several feet higher, the rope attached to it slipped off and it fell, striking Keyes a glancing blow, tearing his flesh from the side of his face, cutting and bruising his shoulder and side, and knocking him down into the level some fifteen feet below. His escape from instant death was miraculous. He will probably recover. Wednesday a Frenchman, named Barrot, had one of his arms broken in two places and four of his ribs fractured by being run over by a wagon. He attempted to jump from the vehicle to the top of the bank by the road side, but missed his footing, fell back, and one of the wheels passed over him. Dr. De Chesne was called, and the broken bones set, and the injured man is getting along as well as could be expected with an anatomy so badly smashed. The accident occurred near Rich Gulch Flat. —*Calaveras Chronicle, 16th instant.*

A CASE OF LEAD POISONING.—A miner named Anderson, living near Cement hill, has been afflicted with a derangement of the stomach and other digestive organs for a year or more, without receiving the expected relief from medical treatment. Suspecting that this spring-water which he had been using might be the cause of his troubles, he brought two samples to town for analysis, stating that the water of that spring had been considered unwholesome by those who had used it before he came there, and that it did not form the usual suds in washing, and that he had attempted to cook some split-peas in it, but failed. Upon being tested with nitrate of silver, a white, cloudy precipitate was observed, indicating the presence of chlorides. Other tests were applied, without remarkable results, until a given portion evaporated to dryness, when a residue was formed, equal in weight to eight grains to the gallon. Upon further examination the residuum was found to contain a large proportion of lead. A second analysis was made, with similar results, indicating lead in solution in sufficient quantity to produce serious symptoms of lead-poisoning. Other springs about Cement hill have long been suspected of containing poisonous waters, and have been tested for arsenic, without any definite result. Possibly if those waters were tested for lead, the colic and other painful symptoms that they cause might be easily explained. —*Nevada Transcript.*

S. FOSSELLI, an Italian, has invented a new method for exploding any mine or torpedo without electricity, the use of which agent he considers expensive, uncertain and often dangerous. He states that a torpedo, at any distance whatever, can be placed in immediate communication with a hydraulic pump by means of a small hollow, metallic tube, .08 in. in diameter, the tube being bare or coated according to the locality in which it is laid. The apparatus is simple. In a hermetically sealed case attached to the top of the torpedo, a hammer with spring action similar to that of an ordinary musket-lock, is placed and maintained in the position of "full cock" by a catch; against this catch rests a small hydraulic ram which communicates through the side of the case with the hollow tube. When the tube is filled with water, one or two strokes of this pump are sufficient to free the catch and effect the explosion. Air can be used in the tube instead of water.

Coal Cutting Machinery.

At the outset, it is apparent that if mechanical coal-cutters could be extensively and successfully employed, several advantages would be gained besides supplanting the man. Not only would strikes be at an end, but ventilation improved, and the depth of mining probably increased, since most of the difficulties caused by the limit of human endurance under exhausting exertion would be at once overcome. Collateral benefits of several kinds, particularly the disuse of gunpowder to at least a large amount, would follow; and on this account the question of the possibility of their adoption becomes highly important. Can mechanism of any kind, whether partly or wholly employed in coal mines, or can improvements in applied mechanism, be made to supersede the labor of man?

In thick seams like those of Staffordshire, in ten yard or even ten feet seams of coal, there is plainly no serious obstacle to the use of coal-cutting machines. You have only to cut and bring down, and deliver at the pit's mouth. But in thin seams and in the innermost passages of long-worked pits the case is very different. Any one who has actually seen a hewer at work in the most awkward places in thin seams, and no other person, will at once understand the difficulties to be overcome. A hewer in the worst "faces" of coal-getting must squat and twist and contort himself like a posture-master, and do so for some hours at a time. This adaptation the human body is capable of affording and enduring, and that most wonderful vital machine, the human arm and hand, can so twist and turn and harmonize itself to natural necessities as to show in this very circumstance its immeasurable superiority to any mechanism which the mind of man has conceived. Watch, for instance, a northern hewer making his "jud" and his "jeukin" in the coal seam, and then turning and squatting, and sidling and squeezing, and gasping and sweating, and picking and poking with perfect bodily adaptation to mining exigencies, and you will form such a conception of the peculiarities of the work as will very much modify your expectations of a mechanical substitute for the grumbling and perspiring hewer. —*Coal Trade Journal.*

HIDDEN TREASURE MINING DISTRICT.—A correspondent of the Tulare Times writes as follows about the Hidden Treasure district:

Knowing that a great many are expecting to hear the latest news from the new mines through your most valuable paper, I therefore give the following from this district: People wishing to visit the rich mines in this district will take the old Kaweah trail, up the South Kaweah river. Ten miles above Mr. Blossom's they will come to the Topsy lead, or the one nearest the valley yet discovered. Near the west side of this mineral belt, the main course of the leads are from the southeast to the northwest. The mineral belt is about ten miles wide. There have been seventeen mineral bearing leads or veins found in this district. Up to the present time the average width of the leads is about fifteen feet. As far as they have been tested the most of them are paying leads. There have been found in the district gold, silver, copper, zinc, galena, iron and tin. The dark brown zinc blende is very rich in silver, and contains some gold; this district is abundantly supplied with that character of ore. Then we have the glance-silver, red and brittle silver ores, glance-copper, silicate of copper, and the red and gray copper ores. The snow has disappeared so that prospecting can be done from the May Flower lead for six miles in width down the river to the Topsy lead. There have been recently fifteen rich leads discovered between these two points. We will have more thorough prospectors soon, we have no doubt, and they will be well paid for their trouble. We have the thriving town of Cedar City. Buildings are going up as they always do in mining towns—that is, in a hurry. We expect to have a saw mill running in two or three weeks. Several families expect to make Cedar City their home during the hot summer months. It will be only about fifteen miles from Cedar City to the principal mines in the Mineral King district, and over a very good trail. Those who are desirous of visiting Mineral King district will do well to come up the south fork of the Kaweah river, as they will pass through the Hidden Treasure district.

A SPECIMEN NEWSPAPER ITEM.—An enterprising citizen of Philadelphia has proposed to build, in time for use at the international celebration, a ship capable of carrying ten thousand passengers. It is to combine a steam railway, a race course, theater, shooting gallery; circus, and every imaginable modern attraction. He claims that his plan is complete, and has been approved by some of the ablest engineers. He proposes to moor it in the Delaware, and convey it at intervals to the different cities, ports, and watering-places of the continent. It will make about six miles an hour, and will be three or four times larger than the Great Eastern.

For the last five or six years the Society of Industrial Sciences at Lyons have been carefully investigating the capabilities of the common broom (*Sarothamnus scoparius*) as a textile plant. From a recent report we learn that the fiber makes an excellent coarse cloth, suitable for domestic purposes.

CINNABAR prospectors continue to flock to Lake county.

THE MINES OF TASMANIA.—Gold is not plentiful, though licenses are regularly issued for its working, but at the high rate of £2 a year. Coal ought, one would imagine, to be of more commercial importance than it has been. But the fields are difficult of access. The bituminous product of the east coast cannot be made so available as is wished, owing to the approach being simply an open roadstead. The Mersey coal is easier reached, while that of Jerusalem and other inland fields is too far away from a port. Iron promises to be an important source of wealth. Mr. Gould calculated that 700,000 tons of hematite iron was easily obtainable at Ilfracombe, on the north coast. The ore is being worked by the Tasmanian Charcoal Company. A valuable lode of the same crops out in other parts near. The iron of the Severn and Forth will be of future value. Good specular iron may be wrought in the Dial range. Nodules of pyrites are found on the island of D'Entrecasteaux Channel. Red and brown hematite is known on the west bank of the Forth and on the Hellyer. Tin in rich lodes and sand is known at Mount Bischoff, forty miles from Table Cape. Lead ore is known at the Forth, is a seam one foot thick. Manganese and zinc are at Penguin creek, to the northwest. In the creek, also, were specimens of copper. Plumbago, in small quantities, is seen on the Norfolk plains, and crystals of oxide of titanium are picked up in the river Forth. Mr. Gould thought that the Gordon river limestones would prove highly metalliferous. When the coal of the country can be utilized in the smelting of iron ore, Tasmania will be famous as a mining country. The Flinders Island topazes are valuable.

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Froiseth's New Sectional, Topographical and Mineral MAP OF UTAH.

SIZE, 40 BY 56 INCHES; SCALE, 8 MILES TO AN INCH.

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19v28-3m

Locomotive Steam Plow Company.

Notice is hereby given that a meeting of the stockholders of the above named Company will be held at the office of the Company, No. 7 Montgomery Avenue, San Francisco, on Monday, June 8th, 1874, at 4 1/2 o'clock a.m., for the purpose of adopting by-laws and for the transaction of such other business as may properly come before the meeting.

By order of the President.
24-m23 F. W. VAN REYNENEGOM, Sec'y.

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Fire and Earthquake Proof, can be placed in any part of the house with perfect safety. Light and strong, so substantially put up as to render them impossible to be shaken down by earthquakes; can be used as Heaters and Ventilators, and are unquestionably superior to anything of the kind invented in the United States. Are recommended by all architects and Fire Insurance Companies.

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4v27-11

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To be held under the auspices of the

MECHANICS' INSTITUTE

OF SAN FRANCISCO, CALIFORNIA,

Opening on August 18th, 1874.

The Board of Managers herewith announce that a grand Industrial Fair will be held in the city of San Francisco for 30 days, opening on August 18, 1874. In view of the increasing commercial and manufacturing importance of San Francisco, its contiguity to and close connection with the various countries bordering on the Pacific, the managers have constructed a Pavilion having a floor area of 150,000 feet, and have invited to it all who are disposed to come and exhibit. All exhibitors will be placed on the same footing. Motive power will be furnished free.

The building will be open day and evening, and every facility will be extended to exhibitors and visitors. Application for space must be made without delay to the Secretary of the Board of Managers, 271 Post street, San Francisco, and all inquiries will be answered and information extended promptly.

No space can be secured unless applied for before the 20th of July next.
A. S. HALLIDIE, Pres.
13v28-3m J. E. OULVER, Sec'y.

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Prices of Admission:

Dress Circle and Orchestra.....	\$1 00
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Doors open at half past seven; Commence at eight o'clock.	12v24-11



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2v27-1v

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On the "Causes of Nervous Debility and Premature Decline." Also, "Twenty Years' Experience in Reform Medication," treating upon disease in its various forms, the Causes, Prevention and Cure, home treatment, etc. The two sent postpaid upon receipt of 25 cents.
18v28-3m

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Plumbing and Gas Fitting as usual.
March 16, 1874. m24-1m

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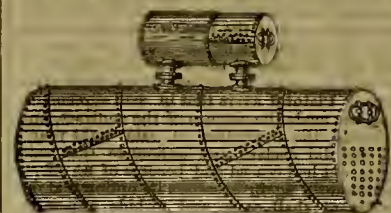
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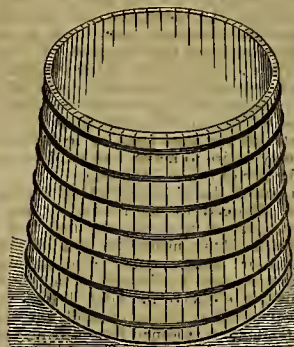
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GOBLER, 43 lbs. HENS, 20 to 26 lbs.

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Eggs for Hatching, packed to travel safely by rail or stage and hatch after arrival. 17v28-2m

Suits Against the Sutro Tunnel.

Complaints have been filed this week in the 15th District court by the mining companies on the Comstock lode against the Sutro Tunnel. The following companies have filed the complaints: Crown Point, Chollor Potosi, Gould & Curry, Imperial, Overmen, Ophir, Savage, Hale & Norcross, California, White & Murphy, Best & Belcher, Alpha, Bacon, Gold Hill Quartz, Confidence, Empire, Yellow Jacket and Belcher. The suits are commenced against the Sutro Tunnel Co., Adolph Sutro, Henry K. Mitchell, Louis Janin, Jr., and William M. Stuart, to rescind the agreement between the company and the mines; to release the mines from all lien by the defendants, and to join them from setting up any claim or title upon said mine.

Each complaint goes on to say that from the 4th day of February, 1865, said Sutro conceived the project of running a tunnel from the foot hills of the Carson river valley into the Comstock, for the purpose of discovery and development of the bodies of minerals, which by the laws, customs and usages then and ever since prevailing in the State of Nevada, would on such discovery become the property of Sutro and associates, and for the purpose of inducing the owners on the Comstock and other lodes to avail themselves of the advantage of said tunnel at prices to be agreed upon, and for other purposes.

That pursuant to said project Sutro procured the passage by the Nevada Legislature of an act granting the right of way, and authorizing Sutro and his associates to construct a mining and draining tunnel, approved February 4th, 1865.

That after the passage of the act, and before a blank day 1866, Sutro and other individual defendants, and D. E. Avery, deceased, associated themselves together, and in accordance with the terms of the aforesaid law. That on and before the last named day the mine of plaintiff was affected by the flow of water therein and was in need of better ventilation, and was supplied with hoisting works of simple character and quite limited power, and said Sutro and his associates represented to plaintiff that they could complete said tunnel within the time named in the said act, to-wit: eight years from the 4th of February, 1865, and in accordance with the other terms and conditions thereof; and that the mine of plaintiff would be drained and ventilated, and the labor and expense of plaintiff's business be greatly reduced, and the plaintiff and the said individual defendants and the said deceased Avery made a written agreement in relation to the premises, a copy of which is annexed to the complaint.

And the plaintiff further avers that on blank day of 1867, at the request of individual defendants, the plaintiff further extended the time in Articles 1st, 3d, 4th and 5th, so that it should read August, 1868, instead of August, 1867.

And plaintiff avers that it hath in all promises on its part kept them, but that said defendants did not keep the promises made in said agreement on their part; that the defendant did not commence this work on or before August, 1865, and did not prosecute the work with reasonable energy or vigor, nor were the tunnels and drifts mentioned now excavated or completed, or put in condition for use, in accordance with the Act, or with the agreement, by which they agreed to simultaneously sink three shafts on the line of the tunnel, nor has the said work been performed continuously or without interruption, although no unavoidable accident has happened in relation thereto; that on the contrary the little work that has been done has been done feebly, with great intervals of delay.

And plaintiff further avers that there has not been subscribed in good faith, or at all by responsible persons, any sum nearly so large as \$3,000,000 for the said work, nor any sum sufficient to complete said work; and that on the first of August, 1868, there was not expended \$400,000, or any other considerable sum, nor has there been expended after said fiscal year \$200,000 annually, or any sum approximating that amount. And the said defendants have not furnished any statement whatever, of the expenditures on the work, during all or any of said years. The completion of the work has been immeasurably delayed, and without just cause.

And plaintiff further avers that the agreement declared that if work was not commenced before August 1st, 1867 (extended to 1868), and the sum of \$3,000,000 subscribed and 10 per cent. paid in, and after commencing should fail to expend the first year or any year the sums agreed, the said agreement should, at the option of the plaintiff, cease and thereafter be of no effect.

And the plaintiff avers that before November 29th, 1869, the plaintiff exercised its option that the agreement should be of no effect, and that defendants had notice thereof, and the plaintiff, to the knowledge of the individual defendants, declared and treated said agreement as rescinded, and the plaintiff does now again exercise its option and forbids the prosecution of the work under said agreement.

And the plaintiff avers that on November 29th, 1869, the defendant became a body politic, and organized as such under the laws of California, and acquired all the rights and franchises of the now individual defendants.

And the plaintiff avers that shortly after the said incorporation, the individual defendants

made a legal transfer of all their rights, franchises and property owned under the Act of the Nevada Legislature.

That the defendant has failed to perform its agreement, and that all the breaches of the agreement set forth have been made; the time fixed by the act of the Legislature—eight years—for the completion of the work, has passed; that not one-tenth of the work has been done, nor will the work be completed in eight years more. Plaintiff avers that in said agreement, time was made the essence of the contract, and that after the expiration of said eight years, plaintiff did declare and announce that said agreement had ceased and become of no effect, and plaintiff again exercises its option that the agreement shall cease, and forbids any more work to be done under said agreement.

Plaintiff further avers that on the failure of defendants and of said Avery to perform their agreement, and on becoming satisfied of their inability to perform the remaining portions thereof, plaintiff prosecuted its work in its mine without reference to defendants or said agreement, and by other means has secured the objects intended to be accomplished by said tunnel, and that by a great expenditure of money and labor it has got rid of said flood of water in its mine, and secured other means of drainage and ventilation, procured machinery for hoisting, and entered into contracts for transporting its supplies and ores, and that the works of plaintiff in said mine have long since reached a depth far below the level of the tunnel as contemplated by defendants.

The plaintiff avers that by reason of defendant's delay, and of said Avery's, in prosecuting said work, and their feeble and inefficient manner of conducting the same, other expedients have been planned and executed for working mines in the Comstock lode; that mills have been built at places more convenient than the mouth of said tunnel, a railroad constructed to carry ores from the mines to the mills, and that the conditions and surroundings of the mines have been materially changed since the agreement was made; and if the tunnel is hereafter completed, it will be of no use for any purpose whatever.

Plaintiff further avers that the work already done has been upon defendant's grounds, and is of no use to plaintiff, and has been almost entirely done since plaintiff rescinded the agreement.

Plaintiff further avers that defendant insists that it has the right to go on and perform said work under said agreement, and that the same shall be binding upon plaintiff and its mine, and that it shall have a lien upon the same as its security in the premises, and plaintiff declares that the agreement was made in triplicate, one copy being in possession of defendant, another in the custody of the plaintiff, and the third deposited by consent in said city and county; and that said agreement remaining uncancelled throws a cloud upon plaintiff's title, and obstructs any sale, lease or hypothecation that it may desire to make, and subjects plaintiff to danger of future litigation.

The plaintiff therefore prays that said agreement be adjudged to be rescinded; that the same be delivered up to be cancelled, and that the plaintiff hold its mine free, and discharged of any lien or claims under said agreement; that the defendant be directed to acknowledge and deliver a release of its alleged lien in the mine of plaintiff by reason of said agreement; that defendant be enjoined from setting up any lien or claim, to or upon said mine, and for such other relief as is meet in the premises.

The complaint is signed by Wilson & Wilson, attorneys for plaintiff, and R. S. Mesic, J. P. Hoge and S. M. Wilson, of counsel for plaintiff.

Treating Textile Products.

Some time ago we made an inquiry for a machine capable of treating ramie fiber so as to quickly and thoroughly place it in a marketable condition. We now receive a letter from Mr. Chas. F. Dennet, of Brighton, England, in which he claims that he is able to answer the demand for a machine which will really do all that is desirable for the grower, the merchant and the spinner, speedily economically and perfectly; producing the largest quantity of available fiber, without loss or injury, from the stems, thus bringing the crop from the hay and grass level up some sixty per cent. in value. Mr. Dennet has given ten years' time and much money to promote the introduction, growth and use of the rhea or ramie plant, considered only a nettle, *l'ortie de la Chine*—into America and European countries, and received for his valuable services in this direction the silver medal of France. He is certain, he says, that a new industry can be raised up in California, in the culture and manufacture of the ramie staple, which will add greatly to its present prosperity.

Mr. Dennet also sends us a description of his new machine for disintegrating, breaking, "scutching" or rendering supple ramie or rhea fiber, as well as flax, hemp, jute and all textile materials and vegetable matters generally, with or without rotting. We use the inventor's own words: Two grooved posts rubbing against each other, in a peculiar manner, cause the softening of the ramie, hemp, flax, or other material, at once removing the epidermis, wood, gum, gluten, etc., adhering to the matter.

The system of softening or rendering supple offers several great advantages over those hitherto adopted. First, in the lightness of

the working of the machine. One horse-power is sufficient. Second, consists in that the material rendered soft or supple suffers no waste, no deterioration, no breaking, no pulling, tangling or mixing, so that the return in the combing is greater than that of any of the textile materials softened by the means hitherto known; not a fiber is wasted, injured or lost.

As to the stripping and breaking, it is effected in nearly the same way as the softening. Thus, suppose the raw hemp coming from the setting, the handful or quantity introduced to the machine passes first to the rollers, which break and bruise the straw; it then undergoes the friction operation by the grooved apparatus (worked by a cone and go movement) and leaves by the second rollers almost entirely free from straw. Each machine comprises several arrangements of friction plates, and this number will vary, according to the nature of the textile material operated upon. In the center of each friction plate, when fixed or movable, and of the first or second kind, is made an opening to give passage to the textile material being treated. The very little wood still contained in the fibre is detached and a shake renders it perfectly clean. This applies equally to all textile materials. The time during which the batch of rhea or ramie, hemp, etc., undergoes its friction or manipulation by the apparatus, may be modified by changing the pinions according as the nature of the material requires more or less softening. If it may happen that the workman in charge of this machine does not make very regular batches, the defect is obviated by springs with which the apparatus is provided, and the provision is made that the rollers may be equal upon each batch however thick it may be.

Such is the newly invented machine without going into more particular, scientific and mechanical detail, and by the aid of which can be treated, with or without rotting, by changing parts of the same machine, every kind of vegetable fiber intended for spinning, for which it can be rendered suitable. The machine works speedily, does a good day's work with great economy in labor, affords a large return, and without causing loss of strength. It has been tried long enough by skilled and experienced men, and pronounced the thing *par excellence* for the ramie plant and the purposes for which it was designed; in short, says the inventor, it is the only machine that will take the raw material, turning it out in bulk per diem in a commercial condition, enhanced in value ready for the manufacturer, and any other process to follow.

By the aid of this new means of operating it has been demonstrated, it can be modified, transformed and appropriated for spinning the most varied raw textile materials; reducing, dividing and fining so as to draw therefrom the thin, delicate fibers intended for spinning for every denomination up to the finest.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., May 26, 1874.

FOR WEEK ENDING MAY 12, 1874.

BUILDING AND PAVING BRICK.—Bar Adler, S. F., Cal.

BROOM MACHINE.—Henry Anderson, S. F., Cal., and James F. Houghton, Sacramento, Cal.

REFINING BULLION.—Frederic H. Bouafeld, S. F., Cal.

BRACE SHOE.—Henry C. Deering, Hope Valley, Cal.

ANIMAL TRAP.—Augustus M. Gass, Campo, Cal.

CAP AND FAUCET FOR BEER CASKS.—John G. Schiffer, S. F., Cal.

WHEEL FOR VEHICLES.—Michael Mickelson, Ashland, Oregon.

TREADLE.—Edward Duffly and Robert Swarbrick, Oakland, Cal.

TRADE-MARK.

FLAVORING EXTRACTS OR SYRUPS.—McMillan & Keater, S. F., Cal.

"The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. Note.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest time possible.

VICTORIA C. WOODHULL, the somewhat noted social agitator (reformer) is to lecture in Platt's Hall, Monday evening at 8 o'clock. Subject, "Reformation or Revolution, Which?" Of this lecture the Dubuque (Iowa) Herald says: "Victoria C. Woodhull is a woman of brains, of eloquence and elegance—like herself and nobody else—Victoria C. Woodhull to the core—bold and defiant in her theories, and unrelenting in declaring them. She has a perfect grace of oratory; every gesture and attitude is refined and eloquently expressive, and she sends forth her silver voiced sentences as though she had the power of a hurricane behind them."

SCIENTIFIC PRESS.—The attention of our readers is called to an interesting article on the Mining Interests of Northern Sierra, on the first page of this issue, from the SCIENTIFIC PRESS, San Francisco. This is the ablest, most instructive and influential Mining Journal published in the Great West, and should be liberally patronized by all our mining friends.—Mountain Messenger, April 25.

DEWEY & CO.

American & Foreign Patent Agents,

OFFICE, 338 MONTGOMERY STREET, S. F.

PATENTS obtained promptly; Oaths filed expeditiously; Patent reissues taken out; Assignments made and recorded in legal form; Copies of Patents and Assignments procured; Examinations of Patents made here and at Washington; Examinations made of Assignments recorded in Washington; Examinations ordered and reported by Telegraph; Rejected cases taken up and Patents obtained; Interferences prosecuted; Opinions rendered regarding the validity of Patents and Assignments; every legitimate branch of Patent Agency Business promptly and thoroughly conducted.

Our intimate knowledge of the various inventions of this coast, and long practice in patent business, enable us to abundantly satisfy our patrons; and our success and business are constantly increasing.

The shrewdest and most experienced Inventors are found among our most steadfast friends and patrons, who fully appreciate our advantages in bringing valuable inventions to the notice of the public through the columns of our widely circulated, first-class journals—thereby facilitating their introduction, sale and popularity.

Foreign Patents.

In addition to American Patents, we secure with the assistance of co-operative agents, claims in all foreign countries which grant Patents, including Great Britain, France, Belgium, Prussia, Austria, Victoria, Peru, Russia, Spain, British India, Saxony, British Columbia, Canada, Norway, Sweden, Mexico, Victoria, Brazil, Bavaria, Holland, Denmark, Italy, Portugal, Cuba, Roman States, Wurtemberg, New Zealand, New South Wales, Queensland, Tasmania, Brazil, New Grenada, Chile, Argentine Republic, AND EVERY COUNTRY IN THE WORLD where Patents are obtainable.

No models are required in European countries, but the drawings and specifications should be prepared with thoroughness, by able persons who are familiar with the requirements and changes of foreign patent laws—agents who are reliable and permanently established.

Our schedule prices for obtaining foreign patents, in all cases, will always be as low, and in some instances lower, than those of any other responsible agency.

We can and do get foreign patents for inventors in the Pacific States from two to six months (according to the location of the country sooner than any other agents.

Home Counsel.

Our long experience in obtaining patents for inventors on this Coast has familiarized us with the character of most of the inventions already patented; hence we are frequently able to save our patrons the cost of a fruitless application by pointing them to the same thing already covered by a patent. We are always free to advise applicants of any knowledge we have of previous applications which will interfere with their obtaining a patent.

We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents, or purchasers of patented articles, can often receive advice of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarried, and it has repeatedly happened that applicants have not only lost their money, but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency. The principal portion of the patent business of this coast has been done, and is still being done, through our agency. We are familiar with, and have full records, of all former cases, and can more directly judge of the value and patentability of inventions discovered here than any other agents.

Situated so remote from the seat of government, delays are even more dangerous to the inventors of the Pacific Coast than to applicants in the Eastern States. Valuable patents may be lost by the extra time consumed in transmitting specifications from Eastern agencies back to this coast for the signature of the inventor.

Confidential.

We take great pains to preserve secrecy in all confidential matters, and applicants for patents can rest assured that their communications and business transactions will be held strictly confidential by us. Circulars free.

Engravings.

We have superior artists in our own office, and all facilities for producing fine and satisfactory illustrations of inventions and machinery, for newspaper, book, circular and other printed illustrations, and are always ready to assist patrons in bringing their valuable discoveries into practical and profitable use.

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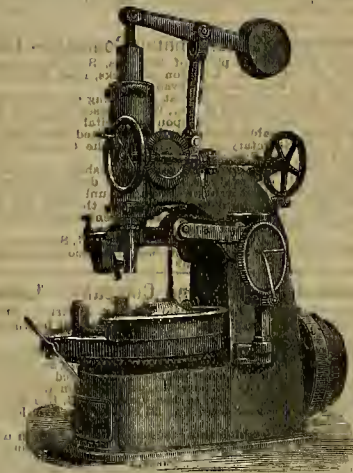
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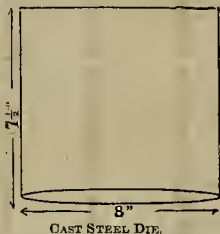
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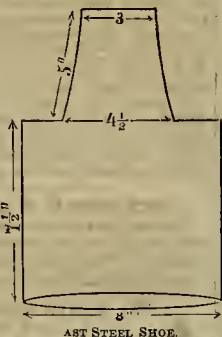


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Percentage of part gate, 1/4 50.08; 1/2 59.64; 3/4 78.73; 1 82.55; 3/2 82.90. Percentage of whole gate, 83.14.

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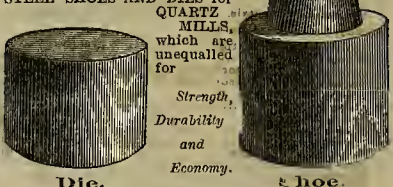
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Strength, Durability, and Economy.

Will wear three times longer than any iron Shoes.

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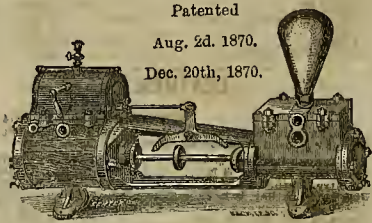
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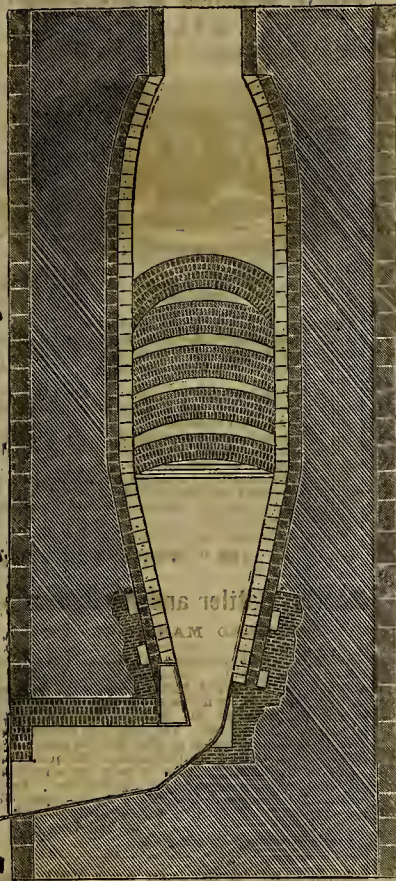


Fig. 1.—Cross Section of Furnace, Walls and Vapor-Way Arches.

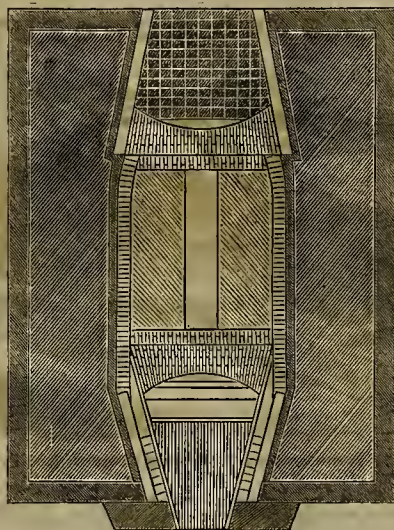


Fig. 3.—Horizontal Section at Fire-Grate Level.

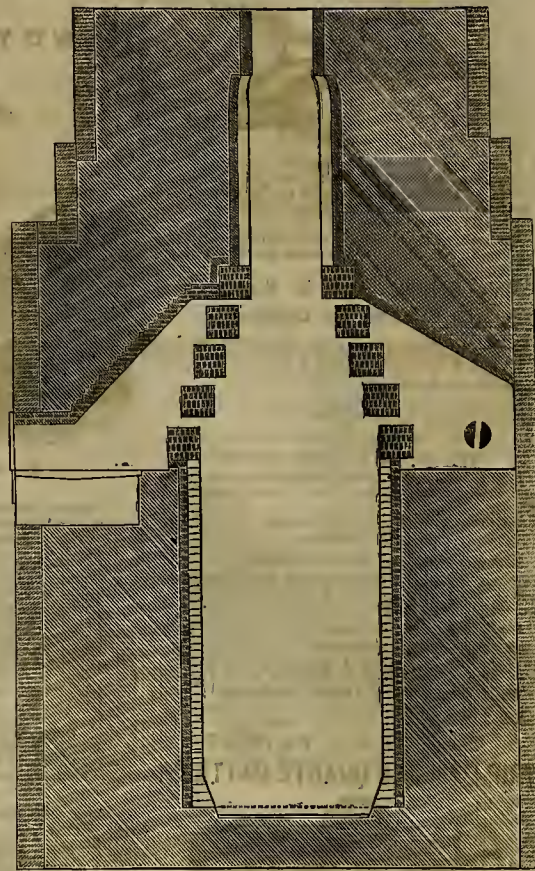


Fig. 2.—Cut Transversely from Fig. 1.

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WORKS CLOSER TO AN ASSAY

And at **LESS COST** per ton than any other furnace. It will work continuously Twelve to Twenty-four months without stopping.

No Man Has Ever Been Salivated

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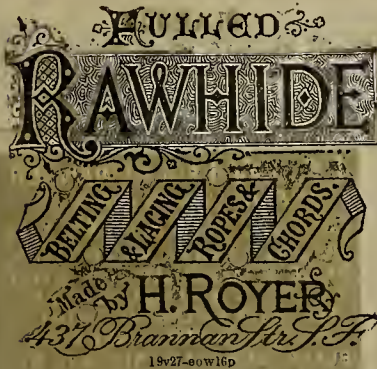
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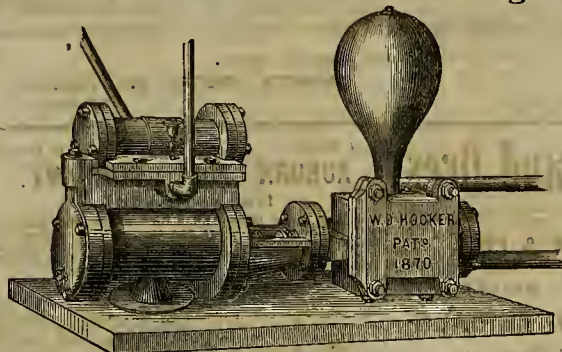
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Work on Mining Claims.

Our mining friends, who have been worrying along for the past few weeks awaiting the action of Congress in reference to extending the time for the first annual expenditures on mining claims, may now rest easy, for the time has been extended. How long it has been extended is still rather uncertain, as the reports from Washington are so contradictory. The bill as first telegraphed to this coast represented the amendment as extending the time to June 10th, 1875. Another version of this bill, sent by the Washington correspondent of the *Bulletin* sets the date of extension at January 1st, 1875. Dispatches to some of the daily papers set it at July 1st, 1875, others July 1st, 1874, and others again to June 1st, 1875. The House committee on mines and mining, after the Senate had passed the Bill extending the time to January 1st, 1875, voted to report a bill extending it to May 10th, 1875. However, the bill has passed both houses extending the time, and if it is only to the 1st of January, it is a respite. Before that time arrives the full text of the bill will be published, so miners may know the exact date.

This action will relieve the minds of many who have neglected complying with the law in hopes that Congress would extend the time for another year. Others, however, have complied with the requirements of the law and have done the necessary work, so as to be on the sure side in case Congress refused to extend the time. The latter feel a little sore about it just now, thinking, justly, too, that a matter of so much importance should have received the immediate attention of Congress and not been delayed until within ten days of the date which it was the purpose of the amendment to change. However, Congress does pretty much as it chooses in these matters, not always being desirous to allow important affairs to pass through its hands too soon; but whether this view is always taken for the advantage of the persons interested, or the individual members of Congress, is a question with the skeptical.

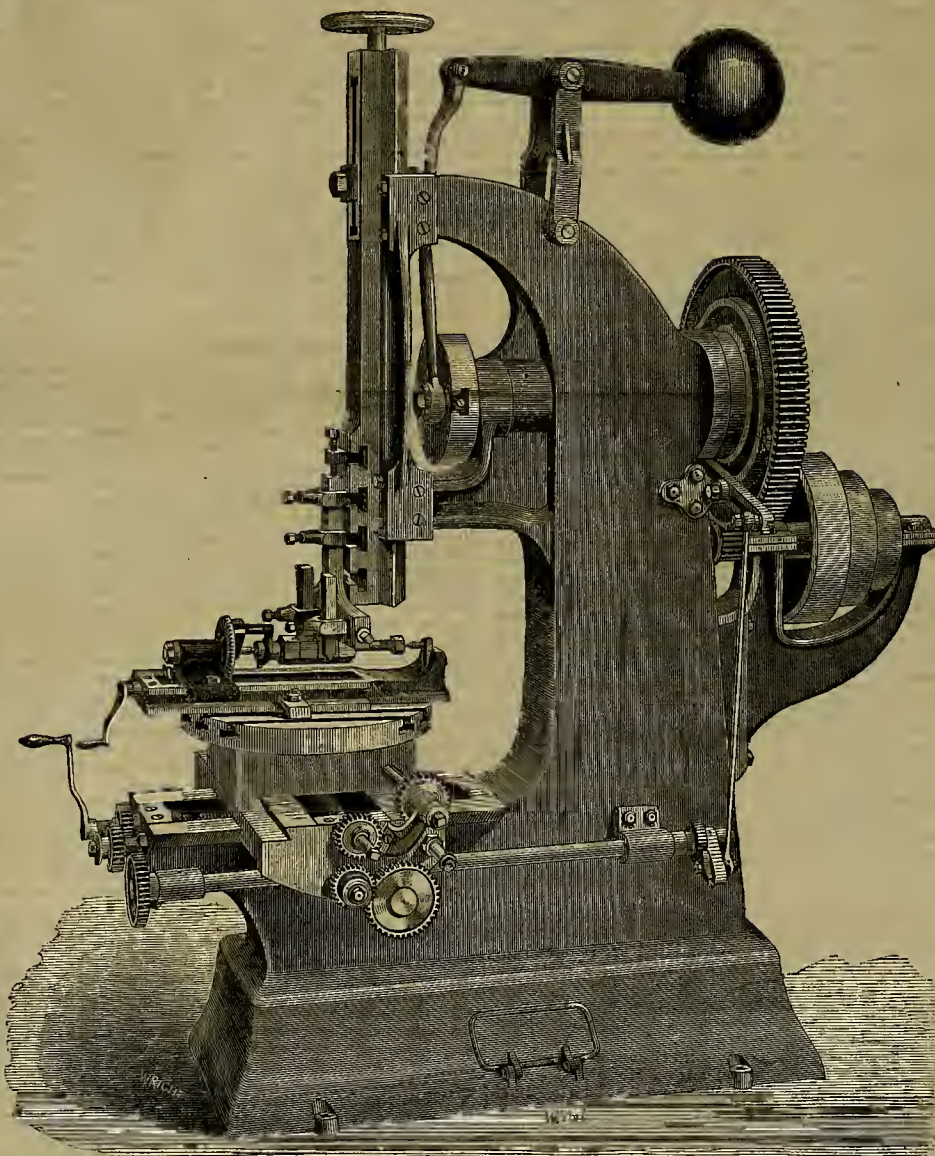
It is stated that the entire delegation from the Pacific coast and Territories opposed the extension, on the ground that Congress should stand by the mineral law or repeal it; but members from east of the Mississippi voted against the Pacific coast delegation almost solid. To the casual observer this seems rather strange, inasmuch as the delegation from this coast knew that the miners of the coast would be under pretty heavy expense in complying with the law. It has been stated that the amendment was gotten up for the benefit of Eastern parties owning mines out here; but we all know that for one mine owned in the East, there are fifty owned here. Moreover, most Eastern people who buy mines proceed at once to work them, while the prospectors and miners here often get ten or a dozen claims, and hold on to them, in order to sell. This being the case, if the section of the mining law of May 10th, 1872, which provides for the annual expenditure on each claim, was intended to compel owners of mines to work them, or give them up to someone who would, it manifestly trod on our toes worse than it did on those of eastern people. Taking this view of the case it seems rather strange that the amendment which relieved these miners from operation of the law for a year, was supported by the eastern delegation and opposed by the western. Still, our representatives may have concluded that it would be better for the country if those idle claims were either worked or thrown open for re-location, and they accordingly advocated the law as it stood, thinking that all the claims

worth anything would certainly be worked.

It seems after all, that placer mines did not come under the provisions of this section of the law, and no annual expenditures were required upon that class of claims. If this fact had been made known a couple of months ago, it would have saved considerable expense and anxiety among the miners of placer ground. The full text of the decision setting this matter at rest is given in another column. The mining towns throughout the Coast have had slight temporary accessions to their population

Improved Slotting Machine.

We illustrate this week an improved slotting machine made by the New York Steam Engine Company, 98 Chambers street. The works of this company are at Passaic, N. J., within 11 miles of New York city. The slotter shown on this page has an extreme stroke of $8\frac{1}{4}$ inches, and will slot to the center of 36 inches. The crank shaft is $3\frac{1}{2}$ inches in diameter, driven



NEW YORK STEAM ENGINE COMPANY'S SLOTTING MACHINE.

within the past few weeks, by the presence of those whose interests had to be attended to by June 10th. These persons will probably now regret that they took the trouble they did, but the towns and mines are none the worse off for it.

The placer miners, who during the fall and winter had much idle time on their hands, are now busy as bees, all over California, and joyful in the hope that their labors will be richly rewarded. The bountiful supply of snow in the mountains gives assurance that the washing season will be unusually long, and the amount of water will be plentiful.

One of Crocker's five-stamp mills is being put up in the Ohio mine, West Point District, Calaveras county.

by a differential crank motion, giving a quick return to the bar, the bar having a continuous guide, and is perfectly balanced by lever and weight. The crank motion is driven by gearing seven and a quarter to one, the pinion shaft having a cone of three changes, driven by a 3-inch belt; largest end of cone, 14 inches. The table has feed in three directions, viz: longitudinal, transverse and circular, and has a traverse of 16 inches longitudinally, and $16\frac{1}{2}$ transversely. The circular table is 20 inches diameter. All of the feeds are driven from one feed shaft in a simple and effectual manner.

The bar has a vertical adjustment of 10 inches. The wrought iron work is all case hardened. It is provided with patent hollow self-oiling counter-shaft, that will run, after once being oiled, twelve months, and is in every respect complete.

This company also manufacture Chapman's slotting and planing tool, which consists of a steel yoke bar which can be attached to the main slotting bar of any slotting machine. At each end of this yoke bar is a screw passing through the poppits or tool holders, and by these screws the cutting faces of tools can be placed at any required distance. The piece to be planed is placed in indexed centers, and by this means square bars, hexagon bars and nuts, octagon bars or pieces, and in fact any piece with two parallel sides, can be planed or pared with these tools. In attaching to a planer, the yoke must be fastened to clapper or tool box.

Mining Accidents.

A fearful accident occurred in the Consolidated Amador mine at Sutter creek on the 30th ult. The last cage was being hoisted at six o'clock, with five men on, when the bolts holding the reel broke, detaching the drum from it and letting the cage and wire rope into the mine, a distance of 1,700 feet, killing all in it. The Sutter Creek *Independent* says: The cause of this distressing event was the giving way of the braces holding the reel within the grasp of the clutch, when, causing the wheel to slip away, it became at once like a wheel on a spindle, and was, in a few seconds, revolving with such speed that no power at hand could check it. The cage alone weighs over 1,000 pounds, and the five men nearly as much more, one of them being over 200 weight. To this must be added the constant paying out of the immense cable, weighing many tons and 1,900 feet in length.

The fall was inevitable, notwithstanding the patent safety brakes on the cage, which only operate when the rope slackens. In this case, instead of the rope breaking, which would have caused the cage to stick on the timbers, the wheel containing the rope got loose on the shaft, so that the weight of the cage and contents kept the rope tight. The names of the victims are John Moyle, who leaves a wife and three children; Luke Glanovich, who leaves a wife and six children; Samuel James, family in the States; A. A. Corilas, who leaves a wife, and Frank Fallon, single.

At Columbia, while Andrew Vanderwerf was working on his claim alone on the 1st inst., a bank caved upon him, and the sand and rocks covered him in such a manner that he could not move or give the alarm. After lying there for 24 hours, suffering terribly, he was discovered by his friends, and taken out alive. He was sensible, and spoke some, but was soon relieved by death. He was a single man and had been mining for many years.

Michael O'Connor was caved upon in a hydraulic claim below Coloma, on the 26th ult., and was instantly killed.

Richard Preston, an old resident of Downville, was killed by a cave in the Bald mountain gravel mine at Forest Hill on the night of May 26th.

The Iowa mine, which is under the management of Samuel Owens, the efficient Superintendent of the Utah, is located on the old Virginia ledge, south of the Sierra Nevada and northwest of the Ophir. The old shaft, sunk several years ago, has been cleaned out and repaired to the depth of 204 feet. This company is going to work as though they meant business, and the encouraging prospects of other mines around them, located in close proximity to the Iowa, give strong hope of the development of a valuable mine. — *News*.

The new machinery in the Lady Bryan has been started up, and the new shaft will now be pushed ahead with vigor.

CORRESPONDENCE.

Economy in the Use of Quicksilver.

EDITORS PRESS:—As you have kindly offered the columns of your valuable journal, by inviting experimentalists to record the result of their labors while searching for a more economical method for the use of quicksilver, I take this opportunity to contribute something to the general stock of information, hoping it may interest others pursuing this subject.

Numerous experiments have been made with a view of determining the best means of saving mercury in our metallurgical operations; after many ineffectual attempts, it was found necessary to institute a more thorough examination of the subject, which led to important results in the Mexican patio process; viz: by restoring floured quicksilver or *dishecho*, there was found the means of preventing that metal from flooring while in use. A much smaller quantity may be used to recover the precious metals than is now employed. A great number of experiments have been made, and the only interest that can be attached to many of them is to enable the experimentalist to avoid certain features not desirable, in his future efforts. In your issue of April 18th, Mr. Hookine suggests that lead and copper balls can be amalgamated, which will secure a useful purpose in the working of gold and silver ores. I fully concur in the statement made; the idea has been anticipated, however, by letters patent granted to me, Dec. 12th, 1871.

While pursuing this subject later, I may mention that metals of easy solution in mercury are not the best fitted for the purpose of amalgamation; lead, tin, etc. are of that class. The more insoluble metals may be objected to from the difficulty of amalgamating them. The writer has now working in his amalgamator a quantity of iron and copper S's. The iron is readily amalgamated by first tinning the iron, or better still, zincing it, then replacing it by substitution. These two metals, copper and iron, act with great energy, no doubt from the electro-chemical action induced by the two dissimilar metals. With regard to the best method of using those metallic pieces or balls, it may be mentioned that the practical difficulties are avoided by the use of an invention especially directed to meet the case.

As this apparatus possesses such distinctive features from any now in use, a description of it will be given if so desired.

JOHN TURNERIDGE.

37 Pacific street, Newark, N. J.

Society of Engineers of California.

The following inaugural address was read before the Society of Engineers of California, at the meeting of May 5th, by G. F. Allard, president of the society. It gives some suggestions as to the work possible to be accomplished by this new society, which has been inaugurated under very favorable auspices:

Our society being now fully organized and in complete working order, it may not be out of place for me, as its presiding officer, to offer a few remarks setting forth the aims and purposes we have in view, and the various subjects that will demand our attention. The primary object of the society is the advancement of engineering science and practice, more especially as the same may be applicable to the engineering wants of the Pacific coast; at the same time we hope, by the means of essays and discussions, to furnish our quota to the general fund of engineering knowledge. We shall aim to promote that unity and cordiality of feeling which should ever exist between the several members of our profession; to aid and instruct the younger members, and to create in the older and more experienced members a laudable ambition to excel in their special branches, to spur them on to further study and research, to incite them to read up and keep step with the engineering progress of the times. It is also the intention of the society to provide files of mechanical and scientific periodicals, and to accumulate, as its means will permit, a library embracing those valuable but costly books of reference and descriptions of great public works, so indispensable as a guide to the engineer who has to plan and execute works of any magnitude. I am pleased to state, in this connection, that the managers of the Mechanics' Institute have kindly offered us suitable rooms for our meetings, and have expressed a desire to assist us to the extent of their ability.

I had intended to present to you a summary of the subjects that might be profitably discussed and investigated, but found the field of inquiry so very extensive that I can not do more than throw out a few hints which may serve as an index to our future deliberations. The city of San Francisco, for instance, is today demanding the solution of three weighty problems: First, how and from what source to procure a cheap and plentiful supply of pure, fresh water; whether from the watersheds of San Mateo or Alameda counties, whether from Lake Tahoe or Clear Lake, or whether from the mountain lakes on the western slope of the Sierras. Second, to mature and carry into execution an efficient and comprehensive system of sewerage, and co-relatives thereto, a corresponding system of permanent street grades; and third, to establish a new water front that will bring ship and car together and can be at-

tended with the least possible shoving of her harbor. Scarcely of less importance, is a satisfactory answer to this question: what shall be our future street pavement? whether of wood, stone or iron, or a judicious combination of those materials; whether of asphaltum mixed with sand, gravel or broken stone, or powdered limestone; or perhaps of iron slag, a substance that has recently introduced with good results in European cities. The policy of pumping up the salt water of the bay for purposes of sprinkling the streets and flushing the sewers, has been advocated both as an economical and sanitary measure. We want more light in the matter of constructing our houses proof against earthquake shocks and general conflagrations. We shall soon require increased facilities of travel, not alone in the city itself, but also to and from its suburban towns, and we may yet require a grand bridge to connect us with the rapidly growing cities across the bay.

Turning to the State at large, we are led to inquire into the best methods for promoting our vast mining industries; to extend and perfect our mining machinery; to insure ventilation in deep mines, and prevent accidents; to facilitate the extraction of ores at great depths either by hoisting or through adit tunnels; to provide canals and water ditches for our undeveloped gravel mines; to establish a definite and uniform *modus* or miners' inch, for buying and selling water, etc.

Again, the subject of irrigation is looming up in importance; how to distribute the rain fall where it is most needed without depriving the more favored localities of their just quantities of moisture. On the other hand, we may examine the subject of reclamation, and suggest the most feasible and economical plan for reclaiming our salt marsh and tule lands; how to accomplish that object without incurring the risk of flooding the adjacent uplands by an undue contraction of the present waterway. Intimately connected with irrigation and reclamation, and in a measure resulting therefrom, is a system of navigable canals for transporting the surplus staples due to the increased fertility of the soil and the greater area brought under cultivation.

Referring to railroad matters, we find that the "war of the gauges," after a truce of some twenty years, has again been inaugurated. The question now is: shall the gauge of the future be a wide gauge, narrow gauge, or no gauge at all, as is the case in the single rail system? Each theory has its warm advocates, and the controversy is carried on generally with more feeling than judgment. As I look at it, the great desideratum in railroad practice is not so much the fixing upon any particular gauge, as it is the perfection of the present railroad rail; wanted, namely, a rail that shall be as strong and inflexible at the joint as in any other part. I am satisfied that nine-tenths of the wear and tear of track and train are due to the increasing sledge hammer blows caused by the passage of the wheels over the imperfect joints. Innumerable devices to that end have been invented and patented, but as yet the vexed problem remains unsolved.

The substitution of iron where wood is now used, as in bridges, bridge piers, buildings, for piles, railroad ties and cars, for mine supports, for telegraph poles (already adopted in Germany and Sweden); the substitution of steel where iron is now used, as in railroad rails, locomotives and other machinery; of wrought iron in the place of cast iron, as in tubular bridges, in water pipes, etc; the protection of iron exposed to the action of sea water; the preservation of wood from the ravages of the teredo and other sea-vermin; all these subjects are well worthy the patient investigation of the engineer. I refer to the introduction of steam as a motor on common roads, in the grain field and on inland canals; the transmission of packages, and may be passengers, through pneumatic tubes, or by means of wire ropes. The subject of boiler explosions, of railroad and steamboat accidents should likewise be taken up and adequate preventatives suggested. In short, there is no end of material to work upon. Let each of us, then, take in hand what he understands best, and in a well written essay present the result of his labors to our society. If found worthy it shall be published in our future annals for the benefit of the outside world.

In concluding these cursory remarks, I wish to congratulate you, gentlemen, upon the favorable beginning already made. May we continue to increase and multiply. At the same time I would advise caution and circumspection in the admission of new members. However desirable a large membership might be, let us look to quality rather than quantity; let us keep our standard high, so that to be a member of the Society of Engineers of California shall not signify, merely, that a certain party has paid his initiation fee and monthly dues, but that he stands acknowledged an expert in one branch, at least, of our honored profession. By adhering to a rigid policy in this respect, we may hope to draw around us, in course of time, the ablest talent on the Pacific coast, and compete, in point of numbers, respectability and influence, with the long established kindred associations in the eastern States and in Europe.

MINING SALE.—We see by the *Eureka Sentinel* that John R. Murphy and associates have bought the Industry, Chief of the Hill and other mines in the same series, for \$10,000.

THE Box mine, in Little Cottonwood, Utah, has been sold to a Chicago company for \$30,000.

The Sierra Nevada.

The *Enterprise* says that the improvements being made by this company are the most important now in progress anywhere on the Comstock lode. Their work, when completed, will be the most extensive and powerful ever erected in the State. The main building of the hoisting works will be 105x45 feet in size; the wing for the carpenter shop will be 45x30 feet, the boiler room the same and the blacksmith shop 25x30 feet. Eight or ten carpenters are already at work framing the timbers for the main building, and the foundations for the machinery and buildings will be so far completed that the majority of the masonry will be discharged to-day. A few men will be retained to assist in putting up the cut stone, upon which will be bedded the machinery. This work will be completed next week. The heavy influx of water still continues at the bottom of the main shaft—continues unabated. The shaft is 425 feet in depth, and at a depth of 420 feet—just where the water comes in—a pump station is being put in. This station is of a large size, and is being constructed with a vaulted roof. The tank for this station will be 14 feet long, 8 feet wide and 7 feet deep. The work of putting in this station, tank, etc., is about half completed. When the tank is finished and ready for use, the work of sinking the main shaft will be resumed. The timbering of the drain tunnel will be completed in about two weeks. It is being timbered in the most substantial manner, as it is quite probable that in course of time a track will be laid in it and ore will be run out through it—the flume for carrying away the water pumped from the mine being laid beneath the car track. The flume through which will be worked the company's hydraulic diggings is completed, and the wooden blocks that are to be laid in its bottom arrived from California yesterday. The hydraulic pipe for these diggings is not yet completed, owing to an accident to the machinery used in punching the sheets of iron of which the pipe is made, but all will be in readiness to start up week after next. The ho-e and all else is in readiness. At the old mine all is going on as usual. The yield is sufficient (55 tons per day) to keep the company's mill in constant operation, and the quality of ore remains about as usual. In regard to the new shaft, we may say that it is the intention of the company to put it down to the depth of 1,200 feet before starting their first drift. Even then the work of sinking will not cease, as the shaft will be put down to the depth of 2,000 feet before any halt is made.

Nevada District.

We have made mention of the above named district in the columns of the *News* on several occasions, and have pronounced it a most promising locality. Now, however, new discoveries have made the promises of its early history a certainty, and tangible proofs of its richness are being daily given in the quantity and value of rock produced. To Frank Almon, one of the original locators, we are indebted for the following facts regarding the locality: Nevada district is situated about twelve miles east from Mineral City, and the mines are found in the low range of mountains visible from the road leading down Steptoe valley. For many months several prospectors have been quietly at work developing their various locations, and are now being rewarded with splendid results. The Sumner mine is the principal property at present, and has been recently sold to the Watson Mining Company for a considerable amount. The croppings on this ledge are traceable for nearly 500 feet, and work has been done in various places its entire length, revealing rich and considerable bodies of free milling ore. A perfect foot wall has been discovered and is being followed steadily downward. Some specimens exhibited to us are equal in richness to those found in the famous Eberhardt of early days, being interlarded with horn and ruby silver which will make it assay away up into the thousands. D. T. Elmore, superintendent of the Watson Company's property, has put some forty men at work on the mine, and is confident of making a big run at his mill on the product of the same. It is gratifying to know that our neighbors at Robinson and vicinity are meeting with so great encouragement in their mining operations, and it is to be hoped that the many months of hope deferred have now given place to a season of prosperity, with the permanency of the mines fully assured. At Nevada, a town-site has been selected and laid off, possessing all the adjuncts for a town, with abundance of good and water. It has been called Tamarlane. The energetic proprietors have our best wishes for a numerous population, and, if present appearances are not deceitful, we anticipate an excitement to result from discoveries made there. A stage line has been started from Mineral City to the mines, rendering it an easy matter to visit the new camp.—*White Pine News*.

MOHAVE.—News from Mohave county, Arizona, is to the effect that mining matters are making good progress. The Keyetone has reached a depth of more than 100 ft. Considerable difficulty has been experienced in working the steam pump. It has also caused much delay, but it is now thought that the trouble has been overcome. The mine has improved very much, indeed. The ore is rich, say \$250 per ton, and the ledge three feet wide. Much of the ore will assay more.

Idaho Mines.

We take the following mining notes from the *Owyhee Avalanche*, published at Silver city, Idaho: The stope between the fifth and sixth levels of the Golden Chariot, and between the sixth and seventh levels of the Minnesota continue to look splendid and are yielding very rich ore. The other portions of the mine are also looking first-rate. The ballion yield of the Golden Chariot for the month of April was \$55,135.55. We learn from a reliable source that the Golden Chariot company has purchased the New York mill for \$40,000—cheap at that price.

The prospects for the Mahogany are excellent, and it is confidently expected that the eighth level will turn out more million than did the seventh. Judging from present indications the ninth level will be better than either the seventh or eighth.

Superintendent Carter has been compelled to suspend sinking the War Eagle shaft for the present on account of the large amount of water coming into the mine. The sixth level north continues looking splendidly.

The Red Jacket gives indications of soon striking something good in the main shaft.

The Empire continues looking as well as ever, and Superintendent Hoyt will commence milling ore as soon as the roads will permit of hauling, which will probably be week after next.

The South Chariot still continues to open up splendidly. A recent assay of average ore taken from the bottom of the seventh level winze, gives gold \$197.40 and silver \$89.70; total, \$287.10 per ton.

Just as we go to press the news reaches us that they have struck a two foot ledge in the eighth level drift of the South Chariot; richer ore than any hitherto found in the mine.

Judge Martin informs us that he is compelled to suspend work in the Glenbrook, on account of the large quantity of surface water coming into the mine from the melting snow in that vicinity. He has a nice pile of ore on the dump which will be milled as soon as he can get it hauled. The Glenbrook will astonish the natives this summer.

Superintendent Boyle expects to make the Silver Cord a dividend paying mine before the summer is over.

The surface water caused by the rapid melting of the snow in the vicinity of the Ida Elmore, seriously interferes with the working of that mine at present.

The placer mines are now in full blast. The hydraulic claim below the Elmore mill, on Florida mountain, is running night and day, with a good head of water.

Several parties have commenced doing the necessary work to hold their claims under the new mining law, which takes effect on the 10th day of June.

The prospects of this mining camp are decidedly better than they ever were before, and at least double the amount of bullion will be produced here this summer than during any previous season.

Iowa Hill Water-Ditch.

A correspondent of the *Bulletin*, writing from Iowa hill, Placer county, gives the following detailed description of the Iowa hill water-ditch, which it is anticipated will greatly aid in the hydraulic mining of the district:

The ditch was commenced about twenty months ago, and the people of that section have been looking forward to its completion with no ordinary amount of interest.

The main canal, 5 feet on the bottom, 4½ feet deep, with a capacity of carrying 7,000 inches of water, was completed some 25 miles last season, allowing about three weeks' work more to finish certain minor points. The first large reservoir is about eight miles from town. This, now containing about 30 feet of water, and covering some 64 acres of ground, will be raised this season at the wall to 50 feet in height, which will then give 48 of water and cover 100 acres of ground. The water in this main reservoir is now available for mining. From this central reservoir the main canal proceeds past the Forks' House to Tadpole, New York, Sailor, Long, and by cañone tapping all in turn to the North Fork of the American river, making a total distance of 40 miles. The total cost with reservoirs will be \$500,000, of which \$95,000 have already been expended.

To insure a constant supply of water, to the capacity of the ditch at least, throughout the year, the company have several excellent reservoir sites in different places, namely: One at Sailor's Cañon, 25 acres; one at Big Cañon, 25 acres; and several at the head of the ditch, which probably will cover 500 acres more. In the event of those not being sufficient, a tunnel will be run through a gravel ridge 2,500 feet long, to connect with the waters of the Middle Fork of the American river. This district for years past has only had water for about three months in the year, and yet yielded from \$160,000 to \$300,000 per season, miners working through short days, and with a very limited supply of water. It is, therefore, safe to say, when this ditch is thoroughly completed, the receipts of gold from the Iowa hill district will approximate, if not exceed, \$1,000,000 per annum.

PROSPECTING on the hills immediately around Pioche and its neighborhood is being resumed to a considerable extent.

RENO has subscribed \$2,650 toward building a road from that place to Loyalton, Sierra valley.

SCIENTIFIC PROGRESS.

Electroplating.

(CONCLUDED.)

The galvanoplastic art has extended itself in three directions: 1. For covering other metals, as in electroplating with gold, silver, copper, steel and nickel. 2. In producing objects formerly cast in metal. This has been brought to great perfection in several German cities, especially Mayence, where the smallest natural objects are copied and the largest works of art produced. Among the latter are three colossal figures on a monument in Frankfurt. 3. The reproduction of engraved and stereotyped plates, and the like. In the latter, farther progress is still possible.

Early in 1840, Pélégot reduced protochloride of iron by passing hydrogen gas over it, and in this way obtained metallic iron in octohedral crystals and in malleable plates. In 1846, Professor Bottger made the first attempt to decompose the chloride of iron by the electric current, and with success, but soon found that a mixture of the double sulphate of iron and ammonium and the double chloride of iron and ammonium was better for electroplating. As anodes he employed a piece of sheet iron; the cathode at once acquired a polished appearance from the metallic iron deposited on it. The iron is very hard, like steel, but unfortunately very brittle, so that it frequently breaks in taking it from the mold. No technical use could at first be found for it. In 1859 Jacquin found an application of it in covering copper plates with steel. This consisted in precipitating on the copper an extremely thin film of iron, which did not destroy the sharpness of the impression, but by its hardness offered such a protection to the copper that the latter was almost as durable as a steel plate.

Recently, a chemist in St. Petersburg, also named Klein, has brought electroplating with iron to a remarkable degree of perfection. In 1868 he deposited the iron in large plates both thick and thin, as copies from engraved copper plates, and thus combined a soft, easily wrought plate for the engraver, and an iron plate as hard as steel for the printer. The iron thus deposited was very brittle. By heating the iron, he succeeded in expelling the hydrogen, when it became more dense, and had a specific gravity of 7.811, which is higher than wrought iron. It was perfectly malleable, highly elastic, and could be welded like sheet steel, in short, was an excellent malleable iron. Klein has prepared plates of this iron weighing 16 lbs.

Electroplating in iron will find an important and extensive use in manufacture of stereotype plates, especially for printing government paper and postage stamps, where colored inks are employed, for the iron would not be attacked by the colors containing mercury, which acts on copper and other metals.

Hardinger believed that he could prove that the surface of the earth was the anode and the interior of the earth the cathode of a galvanic battery. According to this, native metals should only be sought deep down in the earth, which is not always the case. It is much more probable that native metals have been reduced by the decomposition of organic matter. This applies especially to copper, and also to the very rare telluric iron. The graphite found in the latter is to be considered as the residuum of decomposed organic compounds. In the Rotanger sea in Sweden, native iron is found replacing particles of wood, as if petrified, and the microscope is able to detect the cells and determine that it was a species of pine wood. The interior of the cells is also filled with a deposit of iron. This is not to be attributed to the action of a galvanic current, but to the reducing power of the hydrogen liberated from the decomposition of organic matter.

A NEW THEORY OF WATERSPOUTS.—It has been hitherto assumed that the column of air which revolves to produce a water spout is an ascending column. M. Faye, the astronomer, has recently maintained before the French Academy the theory that the air in these columns is a descending one. Precisely as in a river, vertical layers of water, moving with different velocities, form whirlpools in shape like funnels, drawing the water away from the center, so, when currents of air above the clouds move in different directions, or in the same direction with different velocities, they produce upon their borders a gyratory motion of the interposed air. This air descends like the water in the whirlpool, and if the gyratory movement be powerful enough, the tube of rotating air may reach the earth. At the same time the centrifugal force determines the matter to the exterior, and causes a partial vacuum in the interior, thus explaining the lifting of objects over which the whirlwind passes, and in the case of water producing waterspouts. Of course the barometer in the center experiences a sudden fall. The solar spots Faye explains in this way, supposing them to be whirlwinds seen vertically. The solar gas drawn into them being cooler, appears as the dark umbra.

M. G. TISSANDIER, the editor of *La Nature*, is completing a series of observations, for calculating the amount of atmospheric dust falling each day. The mean found is said to be several pounds in twelve hours for a surface not larger than half a square mile.

The Earth's Strata.

The greatest depth yet attained, says Dr. Chandler, into the bowels of the earth, below the sea level, is at Minden, Prussia, where, at the salt works, the boring extends 1,970 feet below high water. Other mines are of greater depth from the surface, as the old one at Kurtenburg, in Bohemia, which is 3,545 feet in depth; yet its bottom is above that at Minden. But the geological revolutions afford us a means of investigating vastly deeper into the crust of the earth. During the interminable ages that have passed since the crust has been cooling, from a once molten or incandescent condition, mighty and violent revolutions have from time to time taken place. As the earth's temperature has constantly been subsiding by radiation, a corresponding diminution in size has been the natural sequence. In this manner protuberances and corresponding depressions have been formed, which we call mountains and valleys. Other agencies co-operating with the lowering of the temperature of the earth, have caused the lower strata to be so tilted and bent as to be at, or near, the surface, in inclined or carved positions, and geologists have thus been enabled to study the material constitution of the globe to the depth of seventeen miles. Of the many evidences of this abrupt displacement afforded in various parts of the earth, perhaps none are more manifest and conclusive than those at Herkimer county, N. Y., where geologists have most positively determined the formation and elements of our globe to the depth of sixteen miles. The chemist has proved that the materials revealed consist of sixty-six elementary parts, and that sixteen of these, united in different combinations and proportions, form nearly all the known matter of the globe.

ALL bodies get larger as they get warmer. To this rule there is no exception amongst gases, and only three or four amongst liquids and solids, and these exceptions only occur at special temperatures. A solid without any structure—that is, having neither a crystalline form nor any kind of lamination or fibrillation, or "grain," expands the same fraction of its measurement in all directions when heated. A sphere will remain a sphere, a cube a cube; the hot body will be as similar in shape to the cold one as a near body is to a far one. Thus a wire a hundred inches long and a hundredth of an inch thick, will, when heated to a certain temperature, increase a hundredth of its thickness and a hundredth in length, thus increasing one ten-thousandth of an inch in thickness, and one inch in length. Instead of taking wires of enormous length in order to get appreciable elongation, we can multiply the apparent elongation by the mechanical means of levers, or optically. The examination of the expansion of liquids is more simple, because they have merely to be enclosed in flasks provided with narrow tubes, the bores of which may be made exceedingly small in comparison with the capacity of the flasks. When such vessels are heated, the glass at first expands, and forms a flask of greater capacity, so that the liquid falls in the tube. But anon the liquid expands, and as, invariably, the expansion of a liquid is greater than that of glass for the same increase of temperature, the liquid rises in the tube.

PLATE-GLASS STAINING.—Stained glass is daily becoming more popular in all styles, and since the introduction of polished plate glass—whose sole ornamentation hitherto has been embossing—various attempts have been made to solve the problem how a large plate could be stained with vitrified colors, so as at the same time to preserve uninjured the polish on the reverse side. The difficulty was the circumstance that the flames could never be made to play equally on so broad a surface. One part of the work invariably became heated before another, and the result was breakage and failure. The plate to be stained is placed in an iron box of a novel description. One side of the plate is imbedded in a powdered preparation; the other, with the vitrified colors upon it, is, of course, left exposed; and the peculiarity of the furnace is, that while the heat is brought to bear equally upon the upper surface, so that it softens and readily absorbs the colors, the under side is kept so cool that the polish upon it is entirely uninjured.

A CORRESPONDENT of the Scientific American says: I have in my possession a live fish which has the body and tail of a dog fish, and the head of a cat fish. Its habits are those of a cat fish, sleeping in the day time and waking at night. I presume that it gets this habit from the head. It is clearly a hybrid of the two kinds. Here is something for the development theory.

BEQUEREL has succeeded in producing artificially many native crystalline minerals, such as malachite, arragonite, by the slow action of solutions of some of their elements on solids containing the other elements; but the time required is very long, namely, from two to twenty years. He has thus illustrated the manner in which these bodies have been formed in nature.

JANNETAZ calls attention to the fact that a fragment of bisulphate of potassa thrown upon coarsely powdered galena gives rise to an immediate development of anhydric acid gas. With the sulphide of antimony, iron, mercury and silver, no sensible disengagement of gas is obtained.

MECHANICAL PROGRESS.

Japanese Dentistry.

An American dentist, living in Yokohama, gives the following account of the Japanese habits in regard to their teeth. He says that as the young women have very fine teeth, it is remarkable that they should keep up the practice of blacking them after marriage. The Japanese, as a race, possess good teeth, but they lose them very early in life.

Their tooth brushes consist of tough wood, pounded at one end to loosen the fibers. They resemble a paint brush, and owing to their shape, it is impossible to get one behind the teeth. As might be expected, there is an accumulation of tartar, which frequently draws the teeth of old people. The process of manufacturing false teeth is very crude. The plates are made of wood, and the teeth consist of tacks driven up from under the side. A piece of wax is heated and pressed into the roof of the mouth. It is then taken out and hardened by putting it into cold water. Another piece of heated wax is applied to the impression, and, after being pressed into shape, is hardened. A piece of wood is then roughly cut into the desired form, and the model, having been smeared with red paint, is applied to it. Where they touch each other a mark is left by the paint. This is cut away till they touch evenly all over. Shark's teeth, bits of ivory, or atoms, for teeth, are set into the wood and retained in position by being strung on a thread, which is secured on each end by a peg driven into the hole where the thread makes its exit from the base. Iron or copper tacks are driven into the ridge to serve for masticating purposes, the unequal wear of the wood and metal keeping up the desired roughness. Their full sets answer admirably for the mastication of food, but, as they do not improve the looks, they are worn but little for ornament. The ordinary service of a set of teeth is about five years, but they frequently last much longer. All full upper sets are retained by atmospheric pressure. This principle is coeval with the art. In Japan dentistry exists only as a mechanical trade, and the status of those who practice it is not very high. It is, in fact, graded with carpentry—their word *hadyikefsan* meaning tooth-carpenter.

IMPROVED BURGLAR ALARM.—The object of this invention is to provide simple and convenient means for detecting burglars when entering buildings; and consists of an alarm movement and bell in combination with a wire or cord and gas burners, so arranged that, in the act of opening the door or window with which the alarm is connected, gas is turned on, a flame produced and the alarm given. A wire or cord is attached to an arm in the wall and to a second arm, which is attached to and projects from the escapement shaft of the alarm movement. The alarm movement is wound up by means of a key on the main shaft, and is held and prevented from giving the alarm by the wire. This wire is attached to the vibrating escapement shaft by a crank, so that the movement is held stationary by it. When this wire is broken or parted the alarm is given. A gas pipe is connected with the service pipe, and the burner on the end thereof is supplied with a small jet of gas, which is ignited when the alarm is set for use. When the door is opened a bar is drawn back, a gas cock is turned which admits of a flow of gas through a pipe to a second burner. The two burners are so formed and placed so near each other that the gas which escapes from the second burner is ignited by the flame from the first burner. The former gives a full flame, which envelops the wire and in a few seconds burns it off, and allows the alarm movement to vibrate the hammer and give the alarm.

ELECTRO SYMPATHETIC CLOCKS.—The master clock, which is one merely of an ordinary kind, requiring to be wound up periodically, is placed on the platform of the large hall. The oscillations of its pendulum are used to complete contact between the poles of a galvanic battery, placed on the top of the clock case. There are two cells of the ordinary "Daniell's" sulphate of copper battery, one pole of each being placed in metallic connection with the gas pipe, and the other pole terminating in a slender spring, against which the pendulum rod impinges; and while contact is thus obtained alternately with one or other spring, a current of positive or negative electricity is sent through the pendulum rod, along the insulated wire connected with it to the other end of the hall, where the sympathetic clock is placed.

THE NEW PRUSSIAN NEEDLE-GUN.—The lock of the gun is an improved needle-lock, arranged for self-cocking, and combines the simplicity and solidity of the needle system, with quick and convenient loading, with rapidity of firing equal to the best rifles. The lock consists of six parts, and the loading requires only three movements—the opening of the chamber, by which operation the lock is cocked at the same time; throwing in of the cartridge into its bed, it not being necessary to put it in exactly; and closing of the chamber. The gun is now ready for firing. The empty cartridge is ejected at the next opening by means of an extractor, fixed at the movable round of the chamber. The maximum number of shots per minute is 24.

Armor Plates.

Armor plates were first used in the construction of ships of war in the case of an iron steam battery for the harbor defence, commenced in Hoboken, U. S. in 1844. At the suggestion of the Emperor Napoleon some floating batteries, clad with four-inch armor, were built during the Crimean war, and employed in some of the operations in the Black sea, but these as well as some built by the Admiralty in imitation of them, were of very little use, on account of their clumsy form, and it was not till the advent of the French *La Gloire* and *Warrior* that it began to be seen that the war ships of the future would be iron-clads. In 1861, when the *Warrior* was built, it was believed that, while the thickness of her armor (4½ in.) represented the maximum of weight which a seaworthy steamship could carry on her sides, it, at the same time, provided a defence practically invulnerable. Both these views were soon shown to be defective, and it is now seen to be practicable to build, as well as desirable to have, seagoing iron-clad ships with armor averaging seven inches in thickness, and in some large ocean cruisers, without masts, 10 to 12 inches of armor have been used on their sides, and 12 to 14 on their turrets. Nor does this great increase in the thickness of armor constitute the sole advantage which recently constructed iron-clads have over the *Warrior*. Besides the important consideration that the armor is so distributed over the surface of some of our latest iron-clads that a belt at the water line throughout the ship, and other really important parts are protected, which is not the case with the *Warrior*, where merely the middle portion of the ship is iron-clad, it must be added that armor plates are now better made and are fastened to the ship's side much more securely than formerly.

Judging from recent improvements, it seems quite possible that armor plates in the future will be much heavier than are now used, and will be restricted to the defence of the more vital parts of the vessel, as in the *Infexible*, where two feet of armor plating has been laid on

THE WHITEHEAD FISH TORPEDO.—The report of Commodore Kirkland and Master Berwind, of the United States navy, sets forth the performances of the torpedo during the trials conducted recently by the Italian government. The main point to be determined was whether the fish would, after being lowered down several feet below the surface of the water in a directing tube, and then started, proceed in a direct line for several hundred feet. The result of the experiments proved that the torpedo would run 600 feet in 35 seconds, that is, 10½ knots per hour, under 50 atmospheres pressure, and maintain its direction perfectly at four and five feet immersion; that it would run 4,500 feet at seven knots per hour, under 57 atmospheres, with a slight deviation; that the device could be easily launched and accurately directed from an ordinary boat, and that changes of depth can be effected at the will of the operator, without impairing the qualities of the torpedo. In conclusion, the reporting officers endorse the apparatus in the highest terms.

BRONZE CASTING UNDER ARTIFICIAL PRESSURE. A cast iron platform is laid on foundation walls; and upon the former rests, first, the ground plate of the mould, and secondly the mould itself, which is of great strength. This mould is surrounded by a heavy cast iron jacket, which is bolted to the platform; springs are arranged to protect the bolts and other parts of the apparatus against the effects of the dilatation of the mold after the running. The cover is furnished with a cylinder formed of clay or other bad conductor of heat, and on this is placed a metallic piston with a pocket or receptacle. The piston and pocket form one solid piece, which is supported in its position at the required level by iron bands. The opening for the metal as well as the pocket is lined with fire clay. The upper part of the mold and the interior surface of the cover are also lined with fire clay, in order to retard as much as possible the cooling of the upper part of the casting. The air and gases escape from the mould by means of several conical vents.

A NOVEL dining table is now in use in one of the palaces of the Emperor of Russia. The table is circular, and is placed on a weighted platform. At the touch of a signal, like a rub of Aladdin's lamp, down goes the table through the floor, and a new table, loaded with fresh dishes and supplies, rises in its place. But this is not all; each plate stands on a weighted disk, the table cloth being cut with circular openings, one for each plate. If a guest desires a change of plate, he touches a signal at his side, when, presto, his plate disappears and another rises. These mechanical dining tables render the presence of servants quite superfluous. In this country, at the Oneida Community, they employ dining tables having the central part made to revolve. Here the goblets, spoons, tea and coffee, casters, pitchers and other necessary articles of table furniture are replaced; revolving the center piece, the waiter brings before him whatever article may be desired without the intervention of a special waiter.—*Builder*.

THE FLIGHT OF BIRDS.—M. Penaud now demonstrates, first, that a bird sailing in the air falls as slowly as possibly when he employs for his horizontal movement one-fourth of the work of the fall; second, a bird sailing with a uniform movement clears a given space with the least possible fall when the work of suspension is sensibly equal to the work of translation.

Weekly Variations in Stocks.

(Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.)
For 6 days ending Wednesday, June 3, 1874.

NAME OF COMPANY.	FEET IN MIN.	SHARES IN MIN.	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.						
Alamo	300	5000	5¢	5¢		
Alta	3600	5000	12TH	10 3/4 W		
American Flat	65	5000	6W	9 1/2 S		
Bacon M. & M.	224	22400	25TH	23M		
Belcher	1040	104000	81 1/2 TH	79M		
Best & Belcher	224	22400	25TH	23M		
Bowers	160	16000	1W	2W		
Bullion	2500	25000	1W	16W		
Calaveras	5000	50000	1W	16W		
Chollar-Fotos	2000	20000	52TH	58S		
Confidence	130	24800	7 1/2 TH	7 1/2 W		
Con. Gold Hill Quartz	3440	34400	1W	16W		
Con. Virginia	160	16000	1W	2W		
Cook & Ceyer	1600	24000	8TH	8 1/2 W		
Crown Point	600	100000	8TH	8 1/2 W		
Dansey	1200	24000	8TH	8 1/2 W		
Deer Creek	1200	24000	8TH	8 1/2 W		
Dayton	200	25000	52TH	5W		
Eclipse	20	25000	5TH	4 1/2 S		
Empire M. & M.	700	8000	34S	32S		
Eschscholtz	3000	12000	1W	16W		
Farmington	3000	12000	1W	16W		
Flower	3000	12000	1W	16W		
Franklin	3000	12000	1W	16W		
Gold & Curry	1200	40000	20TH	17 1/2 W		
Hale & Norcross	400	16000	42TH	37 W		
Imperial	160	100000	1W	16W		
Insurance	2000	20000	1W	16W		
Jacob Little	3000	12000	1W	16W		
Justice	3000	21000	1W	16W		
Kentuck	95	30000	14 1/2 TH	13M		
Knickerbocker	1200	24000	8TH	8 1/2 W		
Kosuth	1200	24000	8TH	8 1/2 W		
Lady Bryan	3000	25000	1W	16W		
McMeans	1000	50000	1W	16W		
Mint	1000	50000	1W	16W		
Mod. Comstock	1000	50000	1W	16W		
New York Con.	3000	30000	1W	16W		
Occidental	800	10000	1W	16W		
Ophir	1000	16000	25TH	23M		
Phil. Sheridan	1200	24000	8TH	8 1/2 W		
Pictou	2000	30000	1W	16W		
Rock Island	2400	24000	1W	16W		
Sage	1600	16000	1W	16W		
Seg. Belcher	160	6100	61W	61W		
Seg. Calaveras	160	10000	1W	16W		
Seg. Rock Island	160	10000	1W	16W		
Senator	1600	16000	1W	16W		
Sierra Nevada	2000	15M	15M	15M		
Silver Hill	4000	54000	7 1/2 TH	6 1/2 W		
South Comstock	1000	10000	1W	16W		
South Overman	2400	24000	1W	16W		
Succor M. & M.	7600	22800	1W	16W		
Sutro	2400	24000	1W	16W		
Trench	220	500	1W	16W		
Tyler	2200	22000	1W	16W		
Union Con.	600	20000	1W	16W		
Utah	2000	20000	1W	16W		
Woodville	1600	16000	1W	16W		
Yellow Jacket	1200	24000	1W	16W		
NEVADA.						
Adams Hill	5000	50000	5S	5S		
Alps	800	30000	3 1/2 TH	2 1/2 TH		
Amador Tunnel	1000	10000	1W	16W		
American Flag M. & M.	300	30000	3 1/2 TH	3 1/2 M		
Arkansas	300	30000	3 1/2 TH	3 1/2 M		
Bowers	3000	30000	1W	16W		
Chapman M. & M.	3000	30000	1W	16W		
Charter Oak	1000	10000	1W	16W		
Chief of the Hill	3000	30000	1W	16W		
Chief East Extension	3000	30000	1W	16W		
Columbus M. & M.	10000	50000	1W	16W		
Condit	2500	25000	1W	16W		
El Dorado South	5000	50000	20 1/2 W	20S		
Eureka Con.	1000	10000	1W	16W		
Excelsior	1000	10000	1W	16W		
Harper	1000	10000	1W	16W		
Hermes	1000	10000	1W	16W		
Home Ticket	1000	10000	1W	16W		
Huhn & Hunt	1000	10000	1W	16W		
Ingram	1000	10000	1W	16W		
Ivanhoe	1000	10000	1W	16W		
Jackson	1000	10000	1W	16W		
Keokuk	1000	10000	1W	16W		
Junius Con.	1000	10000	1W	16W		
K. K. Con.	1000	10000	1W	16W		
Kentucky	1000	10000	1W	16W		
Knickerbocker	1000	10000	1W	16W		
Lehigh	1000	10000	1W	16W		
Lillian Hall	1000	10000	1W	16W		
Louise	2400	24000	1W	16W		
McMahon	1000	10000	1W	16W		
Marion	1000	10000	1W	16W		
Meadow Valley	2400	24000	1W	16W		
Monitor-Belmont	1200	30000	2 1/2 TH	2 1/2 M		
Murphy	2000	20000	1W	16W		
Newark	800	22000	3TH	2 1/2 M		
Newton Tunnel	2400	24000	1W	16W		
Page & Panach	1000	10000	1W	16W		
Peavine	1000	10000	1W	16W		
Phoenix	1000	10000	1W	16W		
Pioche West Ex.	1000	10000	1W	16W		
Pioche-Phoenix	1000	10000	1W	16W		
Portland	1000	10000	1W	16W		
Raymond & Ely	5000	50000	2 1/2 TH	2 1/2 W		
Rye Patch	1000	10000	1W	16W		
Silver Peak	1000	10000	1W	16W		
Silver West	1000	10000	1W	16W		
Standard M. & M.	1000	10000	1W	16W		
Star Con.	18000	50000	1W	16W		
Starlight	6900	25000	1W	16W		
Stirling	3000	30000	1W	16W		
Spring Mount	2000	20000	1W	16W		
Spring Mt. Tunnel	2000	20000	1W	16W		
Ward Beecher	200	30000	1 1/2 TH	1 1/2 S		
Washington & Tread	200	30000	1 1/2 TH	1 1/2 S		
Watson	200	30000	1 1/2 TH	1 1/2 S		
Yellowstone	200	30000	1 1/2 TH	1 1/2 S		
CALIFORNIA.						
Alpine	1200	12000	1W	16W		
Bellevue	1200	12000	1W	16W		
Calaveras	3200	20000	1W	16W		
Cedarberg	2400	24000	1W	16W		
Chollar Hill	2400	24000	1W	16W		
Con. Amador	2000	20000	1W	16W		
Cottonwood Creek	2000	20000	1W	16W		
Dunderberg M. & M.	2000	20000	1W	16W		
El Dorado	1600	16000	1W	16W		
Eureka	1600	16000	1W	16W		
Gillis	1600	16000	1W	16W		
Independent	1600	16000	1W	16W		
Keokuk	1600	16000	1W	16W		
McJefferson	1600	16000	1W	16W		
Oakville	1600	16000	1W	16W		
St. Lawrence M. & M.	1600	16000	1W	16W		
St. Patrick	1600	16000	1W	16W		
Teumseh	3000	30000	1W	16W		
Yule Graft	400	10000	1W	16W		
IDAHO.						
Empire	25000	14TH	13TH	1 1/2		
Golden Chariot	750	30000	16TH	15 1/2 W		
Ida Elmore	1300	10000	23TH	23M		
McNary	720	10000	54W	4TH		
Red Jacket	650	20000	12W	11 1/2 W		
South Chariot	650	20000	12W	11 1/2 W		
War Eagle	1000	10000	4W	3 1/2 W		
WHITE PINE.						
General Lee	1000	20000	1W	16W		
Mammoth	1500	30000	1W	16W		
Noonday	1000	20000	1W	16W		
Old Hiden	800	21333	1W	16W		
Silver Wave	2400	24000	1W	16W		
Ward Beecher	2400	24000	1W	16W		
UTAH.						
Deseret Con.	2400	30000	1W	16W		
Wellington	2400	30000	1W	16W		
OREGON.						
Virtue	20000	20000	1W	16W		

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq't.	Sale.	Secretary.	Place of Business.
Alps S M Co	Ely District	7	25	April 23	May 29	June 25	O D Squire	426 Montgomery st
Buckeye G & S M Co	Washoe	10	50	May 7	May 29	June 25	C A Sankey	331 Montgomery st
Bowers Cons M Co	Ely District	5	20	May 14	June 23	July 16	O F Elliott	419 California st
Calaveras G M Co	Idaho	1	150	April 18	May 22	July 8	D T Wingard	318 California st
Empire M Co	Idaho	1	150	April 18	May 22	July 8	W Willis	419 California st
Gold Mt G M Co	Holcomb Valley, Cal	1	25	May 15	June 20	July 10	J P Cavalier	513 California st
Ingonar S M Co	Ely District	7	25	May 4	June 19	July 2	O S Neal	419 California st
Julia G & S M Co	Washoe	18	100	May 23	June 29	July 29	A Noel	419 California st
Justice M Co	Washoe	9	150	April 18	May 20	June 10	E Swift	419 California st
Mahogany G & S M Co	Idaho	12	150	May 8	June 12	July 6	W F Bogart	411 1/2 California st
Mint G & S M Co	Washoe	10	10	May 1	June 3	June 25	D A Jennings	401 California st
Newark S M Co	Ely District	7	200	April 20	May 29	June 19	D T Bagley	401 California st
New York Cons M Co	Washoe	9	100	May 12	June 12	June 30	H O Kibbe	419 California st
Page & Panosa S M Co	Ely District	6	100	April 13	May 20	June 10	C A Sankey	438 California st
Phoenix S M Co	Eureka, Nev	14	25	April 21	May 28	June 19	J Matuire	419 California st
Sierra Nevada S M Co	Washoe	10	25	April 20	May 23	June 10	S Phillips	408 California st
Portland S M Co	Ely District	4	25	April 13	May 20	June 15	J B Gray	438 California st
Rock Island G & S M Co	Washoe	3	100	May 13	June 16	July 9	J W Clark	419 California st
Savage M Co	Washoe	14	250	May 22	June 24	July 11	E E Holmes	419 California st
Sierra Nevada S M Co	Washoe	33	250	May 22	June 19	July 19	R Wessener	414 California st
Senator S M Co	Washoe	10	50	June 3	July 11	July 31	H Boyle	Stevenson's Building
St Lawrence M & M Co	Cal	6	50	April 27	June 1	June 23	R B Noyes	41 1/2 California st
Succor M & M Co	Washoe	8	10	April 10	May 15	June 6	W H Watson	302 Montgomery st
Tecumseh G & S M Co	Cal	8	25	April 25	June 6	June 23	F J Hermann	419 California st
Utah S M Co	Washoe	5	100	April 22	May 26	June 16	W E Dean	419 California st
War Eagle M Co	Idaho	5	100	May 17	May 22	June 12	L Kaplan	Merchants' Ex
State of Major & Creole M Co	Ely District	11	1	May 15	June 1	June 11	E T Barry	Merchants' Ex
Woodville M Co	Washoe	7	100	May 23	June 27	July 15	A Noel	419 California st

OTHER COMPANIES.—NOT ON THE LISTS OF THE BOARDS.

Amador Cons S M Co	Nevada	8	15	May 18	June 22	July 13	S E Bolcombe	422 Montgomery st
Atlantic & Pacific Cons G M Co	Cal	8	5	April 10	May 14	June 15	A Noel	419 California st
Cedarberg G M 1st S Extension Co	Cal	6	5	April 26	May 28	June 18	J N Webster	420 Montgomery st
Cherokee Flat Blue Gravel Co	Cal	32	5	May 18	June 23	July 10	H Pichoir	603 Wshington st
Dutch Flat Blue Gravel Co	Cal	3	25	May 18	May 28	June 22	W M Heiman	401 California st
Gold Mountain G M Co	Cal	3	25	May 18	May 28	June 22	J C Catron	401 California st
Gold Mountain G M Co Holcomb Valley	1	21	May 15	June 20	July 10	J P Cavalier	513 California st	
Gold Run M Co	Cal	6	25	May 22	June 29	July 20	O C Palmer	cor Market & Spear st
Great Eastern G M Co	Cal	5	100	May 5	June 29	July 20	E H Mosher	No 2 Turk st
Independence Cons M Co	Washoe	1	20	May 1	June 4	June 22	E E Hays	419 California st
Independence Cons M Co	Cal	15	May 7	July 3	July 3	F J Hermann	418 Kearny st	
Iowa M Co	Nev	10	April 13	May 11	June 8	D C Carpenter	885 Clay st	
Kelsey G S M Co	Cal	19	June 9	June 9	June 9	E H Sayre	331 California st	
Kelsey G S M Co	Utah	6	110	Mar 27	May 20	June 12	C S Hays	Merchan st
North Bloomfield Gravel M Co	Cal	31	100	April 13	May 20	June 12	Thomas Derby	379 Sansome st
North Fork M Co	Cal	3	125	June 1	July 1	July 1	A Martin	521 Washington st
North Fork Gravel & M Co Batte Co	Cal	10	May 13	June 13	June 13	F J Reilly	510 Washington st	
North Fork Gravel & M Co	Cal	10	May 13	June 13	June 13	F J Reilly	429 California st	
North Fork Hill Cons S M Co Eureka Nev	1	5	May 6	June 10	July 9	A Noel	418 Kearny st	
San Jose M Co	Nevada	4	50	Mar 30	May 5	June 2	A Carrigan	109 Front st
Soledad G S M Co	Cal	12	10	May 8	June 13	July 4	E Barry	415 Montgomery st
Soledad G S M Co & M Co	Cal	5	50	May 15	June 11	July 1	J M Hays	Merced st
Washington M Co	Cal	8	150	Mar 27	May 5	May 26	T B Winger	318 California st
Yarrowhough S M Co	Los Angeles Co	4	5	May 17	June 1	June 22	E Barry	415 Montgomery st

this rich ore was rapidly widening, and the thing was to be kept "dark."

WEST POINT DISTRICT.—Zacetero building mill. Large quantities of high grade ore are being taken from different portions of the mine. Mina Rica shaft is down 80 ft. Hoisting works will be put up immediately. Beyond don't this mine will give a splendid account of itself when once fairly opened. A 20-stamp mill is to be erected on the Woodhouse, the mother lode of Oalaveras county; preliminary work is being done. The Granite Crown, another enormous lode, containing, on the average, low grade ore, will also be put in working condition.

MORE GOLD—BIG CLEAN-UP.—Veith & Co., proprietors of the great hydraulic in Tunnel ridge, "cleaned up" \$2,400 Tuesday last, the result of 16 days' run. The yield of the mine increases with each clean-up, the gravel proving richer the farther back in the hill it is obtained. We are glad to know that all the hydraulics in this vicinity are paying handsome dividends, and that the field of operations is constantly being enlarged.

FURTHER RETURNS FROM SAN BRUNO.—About 100 tons of rock taken from the San Bruno mine at Mosquito, put through Garland's mill at that place, yielded 161 ounces of gold—nearly \$3,000.

ANOTHER NEW QUARTZ MILL.—Several quartz mills are now in progress of erection in this portion of the county, and we hear that preparations are being made for putting up still another. A ten-stamp battery is to be built on the Austrian mine near Whisky Slide, workmen being now employed getting out the timber. The motive power is to be water, and it is expected to have the battery in readiness for crushing in about a month.

COLUSA COUNTY.

QUICKSILVER EXCITEMENT.—*Sun*, May 30. The hills and mountains west of Bear valley are thronged with men who were formerly farmers, but who now are searching the hills for quicksilver. There are already six or seven claims located, but still they are searching for indications of the precious ore. It reminds one very much of the early times of California, when every one who could muster together money enough to purchase a pick, shovel and frying-pan, was marching for the land of gold, and it is certain to result as unsatisfactorily to some as the gold mines did to a great many. While some will find very profitable mines, others will spend their time and money without realizing any profit. We think that Colusa county can look ahead to the time when she will be noted for her mineral wealth as well as for her agricultural. She has already several paying mines. Among these are the Buckeye, Abbott and Elgin mines; and when these new mines become developed, she will stand among those counties which are mentioned as being famous for their mineral wealth.

QUICKSILVER.—Stewart Harris went out to the quicksilver region during the first of the week, jumped into a hole on the Lovelace claim, took out four pounds of dirt, retorted it in an old quicksilver tank, and brought in with him twelve ounces of pure quicksilver! He did all this with his own hands, in order to be certain about it.

EL DORADO COUNTY.

WHITE OAK ITEMS.—*Mountain Democrat*, May 23: A correspondent writes as follows from Wing's Precinct under date of May 26th: This has been an unusually busy season with our surface miners. But, as usual at this season of the year, the cry is "more water," and the inquiry is, "when will we have this great want of our miners supplied?" Our quartz interest is in course of active development and gives fine promise of good remuneration. Hon. George E. Williams has, I am informed, bonded the celebrated Gray mine, situated on Gray's Flat, and will immediately commence work. This is considered one of the best mines in the county. There is a shaft on the mine one hundred feet deep, and a twenty-five horsepower engine and all necessary hoisting machinery for the successful working of the same. Granger and brothers have been making rich discoveries on what is known as the old Shirley vein, situated about one mile south of the Gray mine, and it is reported that they have already taken out several thousand dollars. All the experienced miners who visit this section concede that there are few mining localities which will exceed this in richness when fully developed.

MINING ITEMS.—Bennett & Swift, of Georgetown, are working in a pay seam in their mine. There is a great deal of gold in their claim, and they are taking it out as fast as they can.

H. J. McKusick is Superintendent of the Cal. Water Co.'s mine at Georgetown.

The rock in the Taylor mine improves as the shaft gets deeper. The crushing machinery will soon be at work.

Work is still progressing at the Woodaide mine. The proprietors think the hoisting machinery will be at work by the first of June.

RICH STRIKE.—A letter from Garden Valley, dated May 29th, notifies us that in the Taylor mine, at the 400 feet level, a splendid development has just been made. They have made a cross-cut 9 feet in thickness, and not yet through the ledge, the rock showing gold freely as far as they have cut into the ledge. Our correspondent is jubilant, and says that "Any one thinking the quartz mines of El Dorado are played out, had better visit the St. Lawrence and Taylor to be convinced of their error. Depth is all that is wanted."

PETER CROSS, who has just sold his claim in Big Cañon for \$15,000, will soon be at work developing another, which he believes will

prove as good or better than the one he has disposed of. It is a pity we have not plenty of such preserving prospectors as gross.

LAKE COUNTY.

PINE FLAT MINES.—*Bee*, May 28: J. W. Mackall, who has just returned from a visit to Pine Flat, gives us the following information regarding the quicksilver mines of that region: The RattleSnake is owned by Parrott, Lightner & Co., of San Francisco. They have about 70 men employed, and will erect a furnace as soon as the new road to Hardsburg is completed. The Sonoma mine has struck a rich deposit of metal. They have a Knox & Osborn furnace of 13 tons capacity, and are producing about 60 flasks of quicksilver per month. Owned by Col. Dodge, of San Francisco. The Flagstaff contains very rich cinnabar, and it is stated that the proprietors will immediately erect furnaces. The Socrates is one of the oldest mines in the district, is well developed and shows rich mineral. It is owned by W. S. Bell, the Recorder of the District, and others. The Georgia has a great quantity of rich ore in sight. Is owned by Messrs. Thompson, Reynolds and others. They are working ten men. The Cedar, New York and Pacific mines are owned by Lakeport men, Messrs. Sleeper, Forbes, Parrish and Mackall. They are working 10 men, and the mine promise to be very valuable. The Fleetwood is prospecting well. It is owned by Mr. Williams, the proprietor of the town site of Pine Flat. The American mine was sold a few days ago to San Francisco capitalists for \$125,000. The Bacon mine is prospecting well; also the Oak Grove and the Sotoyome mines.

MENDOCINO COUNTY.

MINES AND MINING INTERESTS.—*Dispatch*, May 30: A rich deposit of cinnabar has been discovered near the Soda Spring between Ukiah and Anderson Valley, and a company has been organized for the purpose of opening the mine. The lucky parties are F. M. Hunt and brother, E. Morris and W. P. Owen. The surface rock has been assayed, and from two ounces of rock $\frac{1}{2}$ of an ounce of pure metal was extracted. Work was commenced on Monday last, and is being vigorously prosecuted. In Potter, also, important mineral discoveries have been made, quicksilver, and red oxide of iron, valuable for paint. The hills are full of eager and sanguine prospectors.

NAPA COUNTY.

FROM THE YELLOW JACKET.—*Register*, May 30: Mr. Wm. A. Stuart, of San Francisco, went down on Thursday morning from a visit to the Yellow Jacket and neighboring mines, and reports the prospects as most flattering. A new mine, called the Ida Clayton, is opening out splendidly, and in Mr. S's opinion, promise to be the best mine up there. A survey recently made locates the Yellow Jacket and others in Napa county, instead of Sonoma, as they have heretofore been supposed to be.

OUR SILVER MINES.—*Calistoga Free Press*, May 30: A little over a year ago the existence of a well-defined lode of gold and silver-bearing quartz was discovered about six miles from this place. The indications of the existence of ore in paying quantities were so encouraging that the proprietors of the mine have employed a large force of men for the past year, who have worked three shifts night and day up to the present time. The Calistoga Mining company, who now own the mine, will shortly commence the construction of a first-class mill for the reduction of the ore. On Thursday morning last an additional force of 20 men was sent up to this mine, together with three wagon loads of lumber, 46,500 feet.

NEVADA COUNTY.

GOLD HILL MINE.—*Union*, May 30: Supt. Crase has let a contract in this famous mine to drive a cross-cut tunnel to tap the ledge at a point about 250 ft. in the hill. The object of the new tunnel is to re-work the ground above the water level, taking out the pillars and waste dirt now in the old works. The mine was worked in earlier days, but with modern appliances it can be re-worked with profit. The men will soon be taking out the pay dirt, and may strike a continuation of the ledge and tap new strings, which, if we judge from the past, will prove very rich. There are a large number of just such ledges in Graas Valley township that need only energy and capital to develop and place on a paying basis. "If they were worked the town would become much livelier and the mines themselves be of value to the stockholders. Let them be worked by all means."

Tidings, May 30: Richer and more of it is the cheering news from New York Hill. The ledge in the lower tunnel, which has been split along back, is now solid and about two ft. thick. A bucket full we saw from yesterday shows splendidly in free gold and sulphurets, and the foreman tells us there is a good five-inch strata of pure sulphurets lying under the ledge.

PLACER COUNTY.

THE BELLEVUE.—*Argus*, May 30: We visited the Bellevue during the past week and found the continued body of good paying rock mentioned in our last still plentiful and every indication of its continuing so. About sixty-five tons of test ore was taken from all the different parts of the Bellevue mine, which averaged \$36.50 per ton for the whole mine, in coin, aside from the sulphurets saved for shipments, which yielded from \$800 to \$1,000 per ton.

HIDDEN TREASURE.—We again visited the Orleans mine, owned by Mr. Gordon, during the past week, and find the same flattering indications as presented in our last visit.

THE ORLEANS.—During the past week several mining sharps from different points through-

out the State and Nevada have visited the Orleans mine. They all appear pretty well pleased with the appearance of the surroundings both above and below the mine—in the drift and on the dump.

SIERRA COUNTY.

STRUCK IT.—*Mountain Messenger*, May 30: We are informed that the Independence Quartz Mine, under the careful and intelligent management of Capt. Davis, has struck good pay ore in one of the levels, and put on an increased force of miners.

Willhourn & Burton have also gone to Woodchuck ravine to commence work on their claim. Coover & Williams have also gone to the same locality to commence opening their diggings. The snow is very deep in that section.

INDIAN HILL.—The mine at this point are yielding an abundant supply of gold this season.

SONOMA COUNTY.

THE CADRE MINES.—*Democrat*, May 30: Among the mines in this county, recently sold to capitalists, we may mention the Carrie mine, two miles south of Cloverdale, now known as the Live Oak. It was located in February, 1873, by J. J. Morrison, Jos. Dougherty, E. Ray and J. A. Carrie. The locators prospected the mine, proved its value, and it was sold to I. P. Allen and others, of San Francisco, for the sum of \$12,000. An extension on the ledge, known as Live Oak No. 2, was sold to the Hercules Mining Company of San Francisco. The mine are now being worked by the owners. We visited the Live Oak and found considerable ore upon the dump. The formation of the mountain in which the mine is situated is very regular and the strata less disturbed than is usual in this section. The matrix is serpentine rock, through which the cinnabar is diffused. A tunnel has been run into the hill, and they are now sinking a shaft on the ledge, taking out good ore.

THE CLOVERDALE MINE.—The claim embraces a tract of 68 37-100 acres. From the Big Sulphur to the crest of the hill the distance is about half a mile. Parallel claims have been located to the water's edge, and the whole face of the hill, embracing about 160 acres, is probably controlled by this company. We hardly know how to describe this remarkable mine. From an out-crop on the side of the hill considerable good grade ore has been taken. The singular features of the mine are that cinnabar is found not only in the out-crop of the ledge but in many places on the claim where there is no out-crop. Just below the surface, covered with the roots of the wild oat, we found rich specimens of cinnabar. It is found in all kinds of rock, in quartz, in sandstone, in magnesia; the richest and most beautiful specimens were in a sedimentary formation. The whole hill, so far as the surface indicates, has been permeated with mercury. The Cloverdale is an anomaly, even in this region of remarkable formation. A road is being constructed to the site selected for a furnace; active work will immediately commence. The owners, mostly residents of Sacramento city, have abundant capital, and Mr. Hall is an able and experienced superintendent. He is now working the California mine in Lake county. Near the Cloverdale is the Mt. Vernon, owned by Bell, Walther & Co., of Sacramento.

THE LIVERMORE MINE.—About six miles below, on the south side of Sulphur creek, the Livermore mine is located. Twenty men are at work. They have at least 500 tons of ore on the dump. The cinnabar is found diffused through a serpentine rock; a great mass of this rock has been denuded of surface earth and is being blasted and broken.

Nevada.

WASHOE DISTRICT.

BECKER.—*Gold Hill News*, May 28: Sinking the main incline has been suspended, pending the opening of the 1,500-ft. station. The ore stopes on the 1,400-ft. level are now opened out three floors, or 21 ft. in height, the ore being of excellent quality an improving one southward. The winze from the 1,400 to the 1,500-ft. level is completed. This gives a good circulation of air to that depth, and as soon as the north and south drifts are connected on the 1,400-ft. level, will enable the prosecution of the main drift southward on the 1,500-ft. level to meet the north drift on the same level from the incline. A new airshaft for the better ventilation of the mine has been started 200 ft. from the north line. This, although intended for air purposes, will be made a good working shaft and will strike the ledge immediately over the ore stope on the 900-ft. level. The ore stopes on the 1,000, 1,200, 1,300 and 1,400-ft. levels are turning out more ore at present than the mills can crush.

SIERRA NEVADA.—Daily yield 60 tons of ore, keeping the mill steadily running. The flow of water at the bottom of the new shaft seems, if anything, to be increasing rather than diminishing; the boiling tanks are kept steadily running, hoisting the water to the surface. The station for the water tanks and pump 420 ft. from the surface is complete. A large force of workmen are employed upon the new machinery and hoisting works building, which will be ready for erection by the first of next week.

CROWN POINT.—Daily yield 550 tons of ore. The ore stopes throughout the entire mine are looking well and yielding splendidly, especially those opened out on the 1,400-ft. level, which are yielding ore of a high grade, with promise of a much greater extent than on the level above. The north winze from the 1,400-ft. level was started up again on Sunday last, and the bottom still continues in rich ore. The

south drift from the north winze is being pushed steadily ahead, the face in ore that assays from \$300 to \$500 per ton. The milla are all running, and the mine promising and prosperous throughout.

UTAH.—Sinking the main shaft is progressing $2\frac{1}{2}$ feet per day. It is now down 60 feet below the 400-ft. station. The east cross-cut, 200 feet south of the main west drift, has struck and is now passing through a fine, healthy, solid body of quartz and ore, which gives assays of \$12 to the ton. This body of ore is entirely free from the base metals found heretofore on the level above, and is just such a formation as often precedes richer ore bodies along the line of the Comstock.

CHOLLAR POTOMI.—Daily yield 120 tons of ore, assay value of which is \$30 per ton. The main south drift on the fifth station level is making good headway, cutting occasional bunches of ore, but finding nothing of a permanent nature as yet.

YELLOW JACKET.—Cross-cutting and prospecting on the 1,400 and 1,540-foot levels go steadily on, with no particular change to note, except a decided and very promising improvement in the quality of the quartz found in the east cross-cut near the north line on the 1,540 foot level.

GOULD AND CURRY.—The exploring drifts on the 1,500 and 1,700-ft. levels are steadily pushed forward into the vein.

CALIFORNIA.—The connection of the north drift on the 1,300-ft. level with the south drift on the same level from the Ophir has given a splendid ventilation to the 1,300-ft. level.

SOUTH STAR.—Total depth of main shaft is 125 ft.

FLORIDA.—New shaft down 65 ft. to-day. This shaft is located 130 ft. north of the mouth of the old tunnel. It consists of three compartments, neatly timbered, and will intersect the ledge at the depth of about 350 ft., when something rich and good will be found, judging from the developments in the old tunnel.

CONSOLIDATED VIRGINIA.—On all the different levels the various ore breasts are looking remarkably well. From the 1,300-ft. level upwards, to the 1,000-ft. level, the ore stopes are yielding ore of a quality superior to the average of any heretofore extracted from these levels. The different openings in the ore body on the 1,400-ft. level, show it to be one of greater width than at any point on the level above. A portion of the ore supply for the mills is now being taken from this level. The milla are all kept steadily running, and the future prospects of the mine grow more flattering every day.

BALTIMORE CONSOLIDATED.—Sinking the main shaft is making the usual progress; the flow of water at the bottom shows no abatement whatever, continuing about the same as heretofore reported.

HALE & NORCROSS.—The main incline is sunk to within a short distance of the 2,000-ft. level station. This level will be opened early in June, and strong hopes are entertained that the ore vein will prove remunerative at that depth. On the 1,900-ft. level the ore streaks pass through by the several cross-cuts now being worked. The ore in these seams is of excellent quality, and as the work is advanced on them their extent appears greater than was at first anticipated. The continuity of these ore stratas, and the increased width and softness of the ore vein on this level, encourage the belief in the existence of an ore body in close proximity below.

NEW YORK CONSOLIDATED.—All the buildings over the hoisting works are completed, and the four new boilers which lately arrived from San Francisco are in working order; also, the two new steam pumps, used for draining the shaft, are taking out 6,000 gallons of water per hour.

SILVER HILL.—The main south drift, at the third station, is in a distance of 203 feet, in fair running ground. Cross-cutting the ledge on this level will soon be commenced.

IMPERIAL EMPIRE.—The main south drift, on the 1,850-ft. level, is still driven vigorously ahead to make connection with the north winze from the 1,700-ft. level.

DATON.—The ore breasts throughout the entire mine are looking well and yielding the usual amount of good milling ore.

KNICKERBOCKER.—The face of the west drift, at the 450-ft. level, is still in fine, lively-looking quartz of a very favorable character.

TYLER.—The northwest drift, on the second station level, is still being pushed vigorously ahead, the rock in the face blasting quite hard, causing a slow rate of progress.

LEO.—The rich ore streak in the face of the main drift still continues. It is from a foot to a foot and a half wide, and assays very high in gold. All this ore is being very carefully saved.

JULIA.—Sinking the main shaft is progressing at the rate of three feet per day.

NEVADA.—Still prospecting the ore vein to the southward, with strong indications of soon striking another ore chimney.

MCMEANS.—The main west drift is in 693 feet, the face in quartz and low grade ore.

BULLION.—The north drift on the 1,700-ft. level is being driven steadily forward through very favorably looking vein matter, showing a steady improvement as the face of the drift advances.

DANEY.—Preparations are being made to again commence sinking the shaft for another level.

SAVAGE.—The 2,000-ft. station is completed and a drift started to tap and prospect the ledge on that level.

UNION CONSOLIDATED.—The north drift on the 1,300-ft. level is making good headway, the face in favorable looking vein material.

Quicksilver Mining in San Luis Obispo County—The Josephine.

We take the following from the San Luis Obispo *Tribune*, and hope the statements made will to some extent cool the excitement of some who think every hole in the ground, with a cinnabar boulder, is a quicksilver mine:

All is not gold that glitters. Mining has its perplexing drawbacks. A great many men run mad over the mere prospect of a mine and get into it so deeply that unless it realizes their expectations they become ruined. There is not one mine in twenty that ever pays a dividend, and not one prospect in five hundred that ever turns out to be a mine. The quicksilver lodes are no exception. Cinnabar is where you find it; now you see it and now you don't see it. It does not run in regular veins. It lies in deposits to a great extent, and in finding these it requires money as well as muscle. That we have vast mines of cinnabar right here at our doors is apparent to everybody. Their richness and extent are yet to be tested, and money and time will both be required in doing it.

The Josephine.

We wish we were able to give a favorable report of this mine, but are inclined to the opinion that the company is working in the wrong hill; from the way the mine looks at present, something is the matter. The mine is located about ten miles north of Cayucos landing, near the headwaters of the Santa Rosa creek, and about twenty miles southeast of the Pine Mountain district. It is among the earliest locations in the county, and as much solid labor has been expended on it as on nearly all the others put together. It has been opened ten years. It was taken up originally by a party of Spaniards, Barron & Co., of San Francisco, purchased it soon after its discovery and have been driving work on it ever since. This Barron & Co. have been engaged in mining for twenty-five years on this coast. They have control, and have had control of the New Almaden mine for many years. They are of course, very wealthy, and able to prospect extensively. Not until three years ago were the furnaces put up. The claim, (located under the old mining laws), consists of 5,000 feet, running northeast by southwest, dipping west on an angle of forty-five degrees. It has been average width of seven feet. The lode is well defined, being bounded by serpentine and talc. The formation is favorable. The company has expended \$100,000 in testing the value of the mine. The hill has been telescoped into a honeycomb, and no very extensive veins of honey have as yet flowed from it to reward them. The longest tunnel is 600 feet in length, extending through the hardest kind of rock. Every foot has been blasted, the material being very firm and flinty. This tunnel taps the ledge at a depth of 175 feet from the surface. Another tunnel 400 feet long, another 200, and one 128 feet long, tap it at different depths and angles. The rock in some places is a talco-elate, almost impenetrable. In going through the vein matter it has cost as high as \$60 per foot to drive drifts and tunnels. It is a joint stock company, but four fifths of the stock is owned by these quicksilver kings of the bay city.

Mr. A. Dennis, a very intelligent and efficiently practical miner, is now superintendent of the works. He is very reticent concerning the prospects, and does not appear anxious to talk with a newspaper man on the subject. He has been there in charge for two or three years and has accomplished a great deal of work. There are now twenty miners at work in and about the diggings. They are taking out ore from some croppings on top and from the lower drifts. The rock shows cinnabar, but there is not enough of it. Taken as a whole, the ledge matter would not average one per cent. Pieces of the rock will go as high as fifty per cent. You can get beautiful specimens from the breast of any drift in the mine, but the average is too small to even pay for working. In quicksilver lodes generally, the little lodes or veins of metal converge toward a center, and by tracing them up one finds rich and often extensive deposits. The company has been working along in hopes of obtaining the same results here, but so far, with one or two meager exceptions, they have not been able to find any extensive pockets. The metallic feeders seem to pinch out. The ore is very much scattered. Cinnabar is found where it does not naturally belong. Here seems to be a reverse of almost anything known in the history of cinnabar deposits. Some have thought that this company is playing a little game, and trying to deceive the public; that they have a good, rich mine and are laying low in order to get hold of other mines in the vicinity. This is all bosh. They have not the mine to justify an improvement in the furnaces, even. The furnace is a small and very defective concern, being built on the old plan. Its capacity is eight tons. They use wood exclusively in heating.

The Process.

The process of reducing this ore is very simple. There are four condensers to this one. The metal is dumped in at the top. The draft from the bottom plays through the charge passing through the ore-chambers. These condensers are kept cold by the application of water. The mercurial vapor is condensed principally in the first and second chambers. If any should escape all four of the condensers it is caught in the long flue leading to the chimney. Much care should be taken lest the heat become too intense, causing the mercury to escape. Mr. Dennis does not heat to a greater

degree of temperature than 250 deg. F. In this small furnace only good ore is worked, of course, but it is large enough to reduce all the good ore they find.

It must be regarded as rather unfortunate for this district that this wealthy company has been so deceived. Between the claims on Pine Mountain and the Josephine no comparison can be made, and yet this mine will give character, in some degree, to the whole region. Enquire naturally go to the oldest mines before looking at the newer discoveries. The Josephine showed pretty well on top, so do the others, and little is known with absolute certainty of the others except what outside appearances indicate.

If this mine were as rich as even the Keystone is known to be, it would be a great blessing and would encourage the rapid development of the country.

A Tropical Scene.

Luxuriance of vegetation and an apparent stillness and calm are attributes of all tropical scenery, as most people who have seen views of places in low latitudes well remember. Those who have resided in such localities vouch for the fact that this stillness is not apparent, but real, and applies to the people as well as the country. In most tropical countries the inhabitants are comparatively indolent, and a large proportion of their time is passed in idleness. We all know that the effect of a hot day in this country on most people is to cause them to seek some shady nook where they can lie and rest, and doze away the afternoon in contented



A TROPICAL SCENE.

laziness. Those of us who have experienced these feelings will excuse in a measure, the residents of Mexico, Central America or the south sea islands for their idleness, when we remember that a tropical climate, with its many days of warm weather is likely to influence those people as warm days do us. The tropical scene shown on this page is one taken in the interior of Tahiti, and the place looks like a pleasant one to pass a few idle hours.

NEW DISCOVERY FOR MAKING STEEL.—By using from 15 to 20 per cent. of an ore lately discovered in York county, ordinary pig-iron can be converted into steel in a reverberating furnace, with the usual setting or fix used to make good wrought-iron, at a cost not much over making good iron. This ore, used with pig metal, in the proportion of one to five, has been made into steel, and from this steel rails have been made. Some of the rails made at Baltimore and placed on the Baltimore and Ohio railroad, have been down 15 months, and have worn longer than three iron rails would have done, and are yet good. Those made at Lochiel were placed at the junction of the Pennsylvania Central and Lebanon Valley roads, have been on the road over a year, and have worn longer than two iron rails. These rails have been placed, as a test, at points where rails are harder worn than any other points on these roads.

WHAT IT DOES.—Gold is the articulation of commerce. It is the most potent agent of civilization. It is gold that has lifted the nations from barbarism. It has done more to organize society, to promote industry, to inspire progress, to encourage science and the arts, than gunpowder, steam and electricity. The use of gold had its origin in the necessities of mankind. The human heart is set upon it. It will command the proper services of everybody at all times and in all places. The necessities which compel its use are as inexorable to-day as they were at the beginning. So exact a measure is it of human effort that when it is exclusively used as money it teaches the very habit of honesty. It neither deals in nor tolerates false pretenses. It cannot lie. It keeps its promises.—[Extract from speech of J. P. Jones in U. S. Senate.]

Lixiviation.

As New Mexico is greatly interested in the mining and working of precious metals, a few words upon one of the many processes of beneficiating ores may not be entirely unwelcome. We wish to call the attention to the process known as lixiviation, for the extraction of silver. This is comparatively unknown and not employed in the United States. For many years, experiments have been made by different chemists and metallurgists, in endeavoring to perfect this process sufficiently to give it a command over the present modes of working ore; yet it is but lately, within the last two or three years, that its practical working has been such as to commend it as the most profitable. In Sonora, it was developed into its present high standing; and such is the estimate placed upon it there, that most of the mills are adopting it; and all acknowledge its superiority in working ores for silver alone. Where gold is found in the ore, it is extracted by the old methods. Lixiviation steps in and takes the place of quicksilver; otherwise the milling, etc., is just the same. Plans and settlers are done away with, and with them quicksilver. For a rough outline of this method, we have the following:

The ore is dry crushed by battery and roasted in a triple furnace. The roasted ore is placed in wooden boxes (about four feet wide, two feet high and eight feet long) which have false bottoms or a frame of lattice work covered with canvas in order to retain the ore while filtration takes place. Roasting is necessary in order to obtain soluble metallic salts in the ore.

Water is now run upon the ore in the boxes; the flow of water received being equal to the discharge—keeping the box always full. The salts of the base metals being soluble in water, we find that they are decomposed and carried off by the flow of water, leaving behind the silver. After four or five hours a test is made to know whether all the base salts have passed off. The test is either made by sulphate of lime or by tasting—the water being very sweet when bearing silver. Next the flow of water is turned off and the ore allowed time to become drained—occupying about an hour. Then a solution of bluestone and salt or chloride of copper is run on, which carries off the silver, is received in large tanks (wooden) where the sulphate of silver is precipitated by a solution of sulphate of calcium. About one part of lime to two of sulphur is used in making the latter solution. The clear liquor in the precipitating tanks is now run off and pumped into the reservoirs or tanks from which it originally came, to be used again. The precipitated silver is taken and placed in canvas drains, and washed to remove the hyposulphate of lime. It is then pressed and dried in a furnace (reverberatory)—the sulphur being disengaged by the heat.

From the furnace the silver is placed in crucibles with proper fluxes. Some suppose this process to be not applicable to refractory ores; yet 82 and 83 per cent. silver are obtained from ore which has considerable galena, zinc blende, some antimony, arsenic, iron pyrites, etc. About one day is necessary in this process. The number of boxes or tanks used should be regulated by the capacity of the mill. The cheapness of the method is notable; merely lumber for the boxes; some lime and sulphur; no expense in pans; entirely avoiding the monstrous expense of quicksilver. This subject is well worthy the attention of mill men and miners, as it greatly reduces the cost of beneficiating silver ores.—*New Mexican.*

The Senate has passed a bill granting to the Sierra Iron Company the right of way through the public lands for a railroad and telegraph line. Also, the bill granting the same privilege to the American Fork Railroad Company.

MINERS continue to prospect for cinnabar in the mountain ranges in Lake county.

River Mines in Montana.

The *New North-West* says: The recent discovery of river-bed mines on the Jefferson is important. Had the deposit of gold been light it would have attracted little attention, for there is scarcely a stream in Montana whose banks or bed will not pan out "colors." But the yield has been extraordinarily rich and prospecting along a distance of 20 miles shows them to be extensive. As yet work has only been prosecuted sufficiently in one locality to give actual results, but that has paid over an ounce a day to the hand with a rocker, and prospects equally good have since been obtained in other localities. Letters and persons from that section fully sustain the newspaper reports, and the judgment of miners is that the pay is big and extensive. If these concurring testimonies are correct the value of the discovery is of vast importance to Montana—important in the employment it will give when water has slackened in the smaller streams, in the gold it will yield, in the prosperity it will give that immediate region, in the attention it will direct to Montana, in the immigration it will encourage and in the incentive it will be to prospect other rivers with the strong probability that discoveries of equal value will be made on them. All recollect the wonderful richness of the California river mines of the early day; and latterly the finest placer mines of that State are being developed in the old river channels where water has not run for ages.

When gold was discovered in Montana a little attention was given to examining the rivers, but not being rewarded with immediate and great success, and Banquo, Alder and Last Chance diverting attention, the prospecting element sped to the gulches and it seemed to be taken for granted that there was no gold in the rivers, just as it was taken for granted for years that Montana was too cold for fruits, flowers and cereals that are now being successfully grown. A few weeks ago Mr. Hedges, apparently more as a caprice than with any expectation of getting pay, happened to wash a few pans of dirt on the bank of the Jefferson, happened to do it just where paying prospects rewarded the first effort, and to-day 20 miles of the river are taken up and results obtained which justify the belief that a great mining field has been struck. For ten years there has been settlement and occupation of that valley, but evidently no one ever before thought to prospect the river.

Now, if the Jefferson, with no extensive discovered placers or gold-bearing quartz in the immediate vicinity yields thus, is it not reasonable to believe that other rivers, and especially those to which gold-bearing channels are adjacent and tributary, afford a promising field for the prospector, and that attention might be profitably turned in that direction? There is illimitable area in Montana where color is distributed through the gravel, in fact to such an extent that in many localities it requires a considerable stretch of conscience to make non-mineral affidavit to take up agricultural lands in the valleys. Without going into details outside, it is a known fact that the gravel vein underlying this town yields prospects that would pay to sluice in a surface mine, and we know of localities, owing to the terms prescribed by the Land Office, where farmers would rather have good springs than sink wells before they get their patents. With this general diffusion of gold, it is fair to infer that there are paying channels on the river levels, and not improbable that some of them are in the present beds of the streams. The matter seems to be worthy of practical investigation; the field looks more inviting than the high gulches, for sufficient expense and inconvenience and impossibility have been experienced on account of cost, scarcity or lack of water in gulch mining to even render desirable diggings that require the turning of a river from its channel. That the Jefferson mines will pay and pay enormously perhaps before that can be demonstrated but it will be at a time when water will be comparatively exhausted elsewhere, and if they do pay the legitimate sequence of it will be the exploration of the other rivers of Montana, and we trust equally valuable results.

DISASTROUS MINING VENTURE.—The Eclipse gold mine, near Independence, Inyo county, was purchased and opened last year by an English company, who sent out an inexperienced officer to superintend the work. After an expenditure of \$720,000, with no actual or immediate prospective returns, the enterprise of the company subsided. Mr. Willett, a director of the company, has just been making an investigation of affairs, and started on his return to London by the overland train this morning, intending to return in November to reinaugurate active operations. The property includes a 30-stamp mill, and machinery valued at \$100,000. A shaft has been sunk 350 feet, and there are 20,000 tons of ore in sight, estimated to yield \$20 to the ton. Mr. Willett reports gross mismanagement in the working of the mine, and it is his expectation that a new company will be organized to take the enterprise in hand.

PRODUCTION OF LIGHT IN STONES.—When various kinds of hard stones are pressed by the workmen (with their hands) against quickly revolving grindstones, the transparent stones become pervaded throughout with a yellowish-red light, like that of red hot iron. Opaque stones give a red light, at the place of contact, with halo and epaulettes. Dr. Noggerath thinks the phenomenon worth studying by physicists.

USEFUL INFORMATION.

Testing for Metallic Poisons.

When food, portions of the body, or the contents of the stomach, are to be analyzed for the purpose of proving the presence or absence of metallic poisons, the first and most difficult part of this operation is the destruction of the organic matter without expelling the poison. Verriken proposes to accomplish this by oxidizing it in a combustion tube. Oxygen gas is purified by passing it through sulphuric acid and cotton or asbestos, and then conducted through the ordinary combustion tube containing the suspected substance. The tube is heated intensely throughout its whole length, except where the organic matter is placed, and the current of oxygen so regulated that the substance shall not take fire, and that no particles of matter are carried off by the gas. After burning, the tube is rinsed with boiling nitric acid, and then with boiling water. This liquid is clear and colorless, and can be used for making all the tests. Experiments made by Verriken prove that this method is delicate and satisfactory. In using the Marsh test for arsenic and antimony, the same chemist advises the use of a three-necked bottle as a generator, one neck being provided with a delivery tube, another with a funnel tube as usual, while the third allows a current of pure hydrogen to be passed into this generator from a gasometer. The advantage of this arrangement is that it permits a flame of the desired size to be kept up uninterruptedly as long as may be necessary.—*Journal of Ap. Chemistry.*

The immense trade in Australian canneds meats, now carried on, has had the effect of causing a great accumulation of bones in Melbourne, where this putting up is done. The sale of these bones is now growing into a remunerative branch of export trade as bone-dust manure, and an Australian paper, speaking of this subject, gives an account of the manner of its exportation. It says that a recent vessel, bound for London, had on board a shipment of 100 tons of bone-dust, prepared for exportation in an altogether novel manner, and one which promises to come into extensive use. To facilitate this trade, an apparatus has been contrived for compressing bone-dust into half its original compass, reducing it at the same time into a form very convenient for shipment. By means of strong pressure the crushed bones are moulded into cakes of 6 in. square and 3 in. thick, something like flooring tiles, each cake weighing a little over 4 lb. These bone-dust tiles are just adhesives enough to admit their being handled freely—thrown about like bricks, if necessary—and are yet firm, and when required for use they can readily be crushed or melted by this application of a little hot water. A ton weight of the manure measures 26 cubic feet, and contains 252 of the cakes.

PREVENTING INCrustATION IN BOILERS.—A patent was recently obtained by E. Field, London, England, for preventing incrustation in boilers. This first part of this invention consists in preventing or counteracting incrustation by the use or employment, within this boiler or heating vessel, of a piece or pieces of metal electro-negative to the metal of this boiler or heating vessel, such electro-negative metal being submerged or immersed in this water or liquid within the boiler or heating vessel, and connected to the metal forming the shell or body of the boiler or heating vessel by a suitable conducting wire or connection or connections, in such manner as to establish and maintain a voltaic current or currents from the shell or body of the boiler toward the submerged or immersed piece or pieces of electro-negative metal, a clean surface being maintained upon the said piece or pieces of electro-negative metal by the use in conjunction therewith of a loose or movable piece or pieces, or terminal or terminals, or cleaning device.

A SPRUCE CONE.—One of the prettiest objects I ever beheld is a spruce cone, filled with sand and grass-seed, which sprouted and grew out of the scales. It is now as large as a cocoanut with the husk on, and of the most vivid green color. The grass grows with a luxuriance that is remarkable. To produce this charming specimen, the cone was baked in a stove oven till the scales opened out equally. It was then carefully filled with equal parts of sand and grass-seed, a string tied to the top, and the whole suspended in the dark, in a jar, with water enough to come half way over the cone. In a week it was placed in the sunlight, when the seed sprouted rapidly, and in a month filled a gallon jar completely. It has been taken out and hung in the window exposed to the air of the room. Every morning it is thoroughly soaked in milk-warm water.—*N. Y. Tribune.*

IMPROVED MUCILAGE.—Ordinary mucilage, made from gum Arabic, does not fix paper to wood or pasteboard, or to metallic surfaces. These disadvantages are overcome by adding a solution of sulphate of aluminum, in ten times its quantity of water. Ten grains of aluminum sulphate are sufficient for 250 grains of mucilage. Prepared in this way it will not become mouldy. Again, according to Hirschberg, a few drops of strong sulphuric acid are added to the gum solution, and the precipitated sulphate of lime allowed to settle. Solutions prepared in this way a year and a half ago have neither become mouldy nor lost their adhesive power.—*Four. of Chem.*

TO DETERMINE THE HEIGHT OF WATER FALL ON A RUNNING STREAM.—According to Craik, the best method is as follows: The method is only applicable to still water with running streams. This must be obtained by making a small temporary dam, unless natural dams exist, which give a sufficiently still surface. Take two poles of sufficient length to reach from the bottom of the water to the height of required line level. Measure these poles from the upper end down to the length intended to stand above the water, and make a plain notch or mark upon both sticks at this point, by laying both together, to insure perfect equality of height. These may be marked in feet and inches, for convenience in showing or in varying this line of level. Now point or sharpen the lower ends of the poles, and stick them down through the water into the earth at the bottom, until the notch marks are both at the level surface of the water, taking care to have them stand plumb, and in the right lines, and at a convenient distance apart; then sight across the top of these two, and set a third rod fourth, or any number required to run this line of level to the desired point, ranging the tops accurately by this first two, and the tops of these poles will show a water level so many feet above that of the water from which it is taken. The author above referred to, maintains that this is a more accurate way than this use of an ordinary spirit level.

HARD LIME FLOORS.—It is said that the Mexicans make a floor on which a horse can trot without making an indentation, by the following method: A layer of broken limestone, three or four inches thick is laid evenly over the surface of the ground, and over this is spread to the thickness of two inches, a mortar composed of two parts sand to one of lime; this is allowed to stand twenty-four hours, or until the surface becomes quite dry. The floor is then thoroughly pounded all over, until it becomes as moist as when first laid, with a block of wood about a foot square and three inches thick, having a handle rising from the middle. The floor then dries, and this operation is repeated until very little moisture can be brought to the surface; a thin layer of red ochre is then sifted on. The floor is then thoroughly polished by a smooth, flat, water-worn stone. Roofs are made in the same manner, without the coloring matter, which is added merely to improve the tint, and they are unaffected by sun or rain.

NEW IMITATION MARBLE.—A new process is now employed for making slate assume the appearance of marble, for decorating interiors. After being properly cut and trimmed, it is scoured with pumice stone, then rubbed with powdered pumice stone and polished with felt. It is now ready to be transformed into marble. The slabs having been painted with the ground-work color, are ready to dip. A vat, containing water mixed with ox gall, on which the colors are floated, is at hand. A brush is dipped in the color and sprinkled on the surface, then the water is fanned with a palm leaf, and the brush drawn through several times. The mixed paint spreads on the surface of the water like veining in marble, and the slab is then lowered until it touches the surface, when the floating color adheres to it; it is then put to dry. After the application of colors, sundry bakings and polishings finish the work. This marbled slate is quite elegant, possessing sixteen times the strength of marbles, and scarcely distinguishable from it.

The continual rise of some lands, as Sweden and Norway, long since observed, has been found to extend to all the land around the north pole, and even evidences show that the rise is more rapid in proportion as we come nearer to the pole. Sir Charles Lyell found by careful gauging that while the rise is very slight in the south of Sweden, it amounts to four feet in a century in the northern parts of Norway. Further, the seal fishers testify that the sea bottom rises so much in Spitzbergen and the Polar sea of Siberia as to exclude this whale, which in their memory was abundant there in deep waters, and which now are shallow.

A CEMENT TO STOP CRACKS IN GLASS VESSELS TO RESIST MOISTURE AND HEAT.—Dissolve cassine in cold saturated solution of borax, and with this solution paste strips of hog's or bullock's bladder (softened in water) on the cracks of glass, and dry at a gentle heat; if the vessel is to be heated, coat the bladder on the outside, before it has become quite dry, with a paste of a rather concentrated solution of silicate of soda and quicklime or plaster of Paris.

SOLDER FOR UNITING BRASS AND STEEL.—This difficulty of fusing a material suitable for permanently joining brass with steel or iron, on account of the unequal expansion of the two metals, is well known, on which account it may be of service to note that Dr. Dingler recommends the following alloy possessing the properties necessary to insure a permanent adhesion: tin, 3 parts; copper, 39½ parts; and zinc, 7½ parts.

IMITATION OF TORTOISE SHELL.—A mixture of equal quantities of glue, lime and red lead, with strong soap lyes, is used to attain horn in imitation of tortoise shell. The mixture may be laid on with a brush. It requires a little skill to lay it on in such a way as to make the mottling appear natural. The operation should be repeated two or three times, each time allowing the mixture to dry before another application.—*Artisan.*

Good Health.

Principles of Ventilation.

Lewis Leeds says, in the *Sanitarian*: Ventilation is based upon the movements of air at different temperatures, but we cannot get rid of foul air, or supply fresh air in the same manner as we would free a house of foul water or supply it with that which is pure by exact measures, allowing just so many cubic inches for each occupant.

The conditions are entirely different. In studying the movements of the air, if we would compare them with the movements of water, we must imagine ourselves at the bottom of the ocean with the ground underneath us heated as a fire would heat the bottom of a pot. By watching the motion of the water in a glass globe with a fire under it we can form some idea of the immense agitation of the external atmosphere.

Inaccurate, unscientific, and even repulsive as the idea may be to the mathematical mind of the architect, that we should depend in a great measure upon this mere agitation or the mixing up of the fresh and foul air, for our chances of getting pure air, I think, notwithstanding, this is just what we have to submit to. This is what nature teaches us, and although we may be to a certain extent artificial beings, and live in artificial houses, half of a lifetime spent in trying to work in a more precise and accurate manner than Old Madame Nature does, has about worn out my patience in that direction; and I confess that her hurly-burly way of mixing the oxygen, nitrogen, hydrogen and carbonic acid, and all other gases together in one grand mass, and scattering them around promiscuously, is better than any arrangement I have ever been able to devise. The more we study the subject the more evident it becomes that agitation is the natural method of ventilation—it is Nature's great purifier.

Now, if we accept agitation as the true principle of ventilation, we find ourselves far more likely to get our share of pure air by it than by the mathematical cubic-inch programmes. Nature does not do us out pure air by the cubic inch, but if unrestrained, supplies every living thing abundantly. She scorns every attempt to measure it, and if we adopt her method of warming, it will be about as easy to supply a hundred cubic feet of cold invigorating air per minute to every individual, as we now find it to be to dole out a pittance of ten cubic feet per minute of warmed, debilitating, nauseating, hot air. I have spent a great deal of time and money in getting up patterns and taking out patents for warming contrivances. But I have done with them. We have been running air-heating to such extremes that I have become perfectly disgusted with it. If we inhale air at the same temperature as the blood it quickly kills us. Nature never ruins the air for breathing purposes by overheating it—she leaves such miserable business to the managers and warmers of railroad cars, asylums, hospitals, and not unfrequently, our homes.

Agreeable Emotions and Health.

Professor Tyndall while in this country last year visited the Falls of Niagara, and on reaching the Caves of the Winds by descending Biddis's stairs he conceived the idea of attempting to pass under the blue waters of Horseshoe Falls from that point. He found a guide who was willing to make the attempt with him, and together the next day they passed through the mist and foam of the roaring cataract, reached the desired point, and returned in safety. In describing his emotions at one point in his perilous journey, he remarks as follows:

Here my guide sheltered me again and desired me to look up; I did so, and could see as before, the green gleam of the mighty curve sweeping over the upper ledge, and the fitful plunge of the water as the spray between us and it alternately gathered and disappeared. An eminent friend of mine often speaks to me of the mistake of those physicians who regard man's ailments as purely chemical, to be met by chemical remedies only. He contends for the psychological element of cure. By agreeable emotions nervous currents are liberated which stimulate blood, brain and viscera. The influence rained from ladies' eyes enables my friend to thrive on dishes which would kill him if eaten alone. A sanative effect of the same order I experienced amid the spray and thunder of Niagara. Quickened by the emotions there aroused this blood sped healthily through the arteries, abolishing introspection, clearing the heart of all bitterness, and enabling one to think with tolerance, if not with tenderness, of the most relentless and unreasonable foe. Apart from its scientific value and purely as a moral agent, this play, I submit, is worth the candle.

ECONOMY OF ANIMAL HEAT.—Professors Voit, Recknagel and Pottenkoffer are just now occupied in investigating the economy of animal heat, and have found that after six hours' hard work the person leaves the apparatus in a cooler condition than when he went in, or after he had been at rest in the apparatus for the same space of time. Of course the ventilation of the apparatus must work well and send per hour about 11,100 gallons, or 1,800 cubic feet of air through the chamber, else less water and less heat depart by evaporation.

The Suppressed Member Again.

Not long since we noticed some of the natural evils resulting from the customary repression of the left hand, and advocated, on physical grounds, its culture equally with that of the right hand. It seems that there are not less cogent mental reasons for developing the two sides of the body impartially.

It is coming to be well known that mental development is the result of properly directed physical training; that this brain grows in size and power by this varied exercise of the senses and the will in mechanical employments quite as rapidly as by purely intellectual efforts in study or otherwise. It is squally known to physiologists that most men are one-sided in heads as in their bodies. The two halves of the brain are rarely developed symmetrically, as may be readily seen in the "conforms" or head measures accumulated by hat-makers applying individual customers. To some extent, the difference in the contour of the two sides of the head may be due to unequal pressure on the nurse's arm, or to the habit of lying chiefly on the one side while sleeping, thus causing a permanent displacement of the walls of the skull; but the main reason appears to be our one-sided habit in education.

Dr. Brown Sequard observes that the study of the facts relating to the brain has led him to believe that "each half of the brain—paradoxical as it may seem—is a whole brain," each lobe being normally competent to perform all the functions of both, not so vigorously, of course, as the two acting together, yet with apparent completeness. Unfortunately, however, the most of us are single brained, as we are single handed, and for the same reason. We fail to do what is really needed to give us two working brains. "There is no question," concludes this skillful observer, "that it is our habit of making use of only one side of this body that consigns to one-half of the brain—the right side—the faculty of expressing ideas by speech. If we developed both sides of our body equally, not only would there be a benefit that we would write or work with this left hand as well as with the right, but we should have two brains, instead of one, and would not be deprived of the power of speech through disease of one side of the brain."—*Scientific Am.*

Moist and Dry Air.

A comparison of the losses of heat by the respiration of an absolutely dry and absolutely saturated air at 32° and 86° F. is highly instructive. At 32° and dry we lose 1,172 caloric units; at 86° and dry we lose 1,096 caloric units—difference only 76 caloric units. At 32° and saturated we lose 1,060 caloric units; at 86° and saturated, 420 caloric units—difference as much as 640 caloric units.

The different states of dryness of the air appear thus to be of a greater moment than the difference of temperatures, and this is the reason why our sensations do not always coincide with the thermometer. You readily understand how much more difficult it is to manage one's heat-household in a hot than in a cold climate. Our means of warming ourselves are better than those for carrying off our heat. Therefore the European races has had a hard fight under the equator. The working power of the body depends upon a certain amount of consumption, by which a certain amount of heat is necessarily created, which has to leave this body in a regular way. This Hindoo who has to draw the European's plank, bears the heat better in proportion as he takes less food and creates less heat in himself, but then his working power is quite proportionate to the total of his consumption.

The European's struggle in a hot climate and his dangers of a degeneracy will remain as long as he has no better means of cooling himself by some or all of the known three routes. Houses with thick stone walls are tolerably efficacious. These walls rarely get warmer than the average temperature of the year. They cool the air which comes into the house, and act on the inmates in the way we have seen when speaking of the room which is not warmed through and through. A good means would be some contrivance by which the air in the house could be deprived of water.—*Pettenkoffer.*

DYSPEPSIA REMEDY.—The following remedy for dyspepsia is said to be very effective in some cases: "Sweet cream or sweet milk, the richer the better; use as often as convenient. Whenever any burning or sour sensation at the stomach appears, drink half a pint of sweet cream or milk, and relief is evident. Make free use of it at meals. Total abstinence from the use of tobacco, coffee, strong drink, or anything very sour, must be strictly adhered to. Coffee being the worst of all things for dyspeptics must be entirely avoided." Dyspeptics should also remember that as their troubles come from over-eating, or eating irregularly, or some abuse of the stomach, the matter of a limited diet of nourishing food, taken regularly, is quite as important as anything in the shape of medicines.—*Herald of Health.*

Rest, content, peace, such words as these belong not in our vocabulary; we retain them, indeed, in our dictionaries as mementoes of what were once the possession of our fathers on the far side of the water; but the sweet thoughts for which they stand, like some timorous bird that has wandered from its native zone, fluttered and startled by our fretful turmoil, have spread their pinions and flown back to their original seats.



W. B. EWE, SENIOR EDITOR.

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San Francisco:

Saturday Morning, June 6, 1874.

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Society of Engineers of California.

The regular monthly meeting of the Society of Engineers of California was held on Monday evening last at their rooms in the Mechanics' Institute building. The members present were W. A. Goodyear, J. Birmingham, J. R. Smedberg, George W. Dickie, James Spiers, David Stoddart, W. A. Phillips, Samuel H. Wheeler and W. J. Lewis. There were about 40 guests present. The meeting was called to order by W. A. Goodyear, Vice-President. Minutes of previous meeting were read and approved.

Mr. Smedberg announced that he would read before the meeting of July 7th, his paper "On True Condensation, based upon the Vesicular Theory of Vapors. No subsequent papers were announced other than those previously spoken of. These are "On Quartz Mining Machinery," by Irving M. Scott, of the Union Iron Works; "On Submarine Exploration," by C. H. Longee.

Candidates for membership were notified that proposal forms may be obtained from the Secretary at any time after June 10th, and that the names of candidates must be sent in by June 25th. Messrs. Spiers and Lewis were requested to forward the papers read by them, to the managers, who will decide as to their publication. Notice was given that the inaugural address by the President, G. F. Allard, would be published in the SCIENTIFIC PRESS of June 6th, and that members could obtain copies from the Secretary.

Mr. G. W. Dickie, mechanical engineer, read an interesting paper "On Compound Engines," after which some discussion ensued, in which Messrs. Dickie, Spiers, Phillips, and Smedberg took part.

On motion of Mr. Spiers, seconded by Mr. Phillips, the thanks of the society were voted to Mr. Dickie for his valuable paper.

If possible we will obtain Mr. Dickie's paper and publish it in a future issue of the PRESS.

Mining Affairs in Trinity County.

Never has the business of mining been more active or prosperous in this county than at the present time. With minea less depleted than in most parts of the State, with water in full supply, and many claims better outfitted than ever before, there will be more gold dust gathered this year, for the number of hands employed, than during any other season in the history of the county. It is true this money is not now distributed amongst so large a number of persons as was formerly the case; the minea, aggregated into extensive claims and owned by fewer men, being now operated by means that largely supersede the use of manual labor. This aggregating process has not, however, been carried in Trinity to the extent practiced in the more central and southerly counties; wherefore, they have still a numerous, self-employing population, insuring for the product of the placera a wider diffusion than is common elsewhere. Already the animating effects of the gold harvest the miners are beginning to gather are being felt in other branches of business, old scores having been paid off or assurance given of their early liquidation. Money matters are getting easy all round. The merchants have already replenished their stores, getting in their goods earlier than usual. Much building is going on in Weaverville, and a variety of improvements are in progress elsewhere throughout the county.

Mining Properties Sold and New Enterprises Inaugurated.

Several heavy mining enterprises have this spring been set on foot, and the sale of some gravel ground and water rights consummated. Among the latter is the McGillivray estate, situated 15 miles below Weaverville, on the main Trinity. This consists of extensive river bars, farming lands, highly improved, water franchises, ditches, etc.; and, if bought for the sum reported (\$130,000), was got at a bargain, as the clean-up of the present season is estimated at \$75,000, two thirds of it net profit, and this production could, without any very great expenditure, be nearly doubled. A similar estate, belonging to Dr. Waite, located one mile above Weaverville, has also been disposed of this spring, the purchasers being mostly resident miners. A ditch has recently been completed carrying a portion of the water appurtenant to this estate, upon Oregon Gulch mountain, where it is now being used for piping off a deposit of rich gravel owned by the company. This ditch, which is four miles long and carries 2,500 inches of water, has been built during the past three months; a feat that speaks well for the energy of the builders, the weather having been much of the time very unfavorable for out door operations. It is believed that the clean-ups of this company will exceed anything ever before made in that section of the country for the quantity of water run.

A sale of the estate belonging to the Stewart's Fork and Buckeye Hill Water and Mining Company is said to have just been effected to parties in San Francisco. The price paid for this estate has not transpired. What do our readers think of 5,000 inches of water, increased at times to 10,000, played under any pressure desired, upon a thousand acre tract of friable gravel, having an average depth of 800 feet, free from every manner of obstruction, with ample fall for tailings and composed of pay material throughout? And yet such are the conditions of this deposit; nor will the cost of conducting the water upon, and outfitting this ground be large, as the former can be accomplished through the construction of a ditch less than 20 miles long, traversing a country of the most favorable kind, while the deep ravines that border or intersect the tract furnish natural faces and outlets on every hand. The purchasers, it is said, will proceed with diligence to put this property in shape for productive operations, and if wisely handled something immense may be expected to result from the enterprise in good time. At least a dozen of eels of less importance were effected here within the past six weeks, showing an active condition of the mining estate market. The advent of strangers, seeking good opportunities for investing in this class of property, is noticeable, and there is little doubt but many more sales will be made before the season is over.

The Davidson Flume.

Besides the outfitting and starting up of work on many new mines, it is gratifying to have reason to record a great improvement in the prospects of an old and extensive project, in the success of which the residents of Weaverville and the mine owners about it are deeply interested. We allude to the Davidson flume, a large and costly structure laid down along Weaver creek for the purpose of running off and discharging into Trinity river the tailings that for more than twenty years have been collecting in Weaver basin, and which have so accumulated as to seriously interfere with mining operations there. Nearly a mile of this flume has been completed, at a cost of about \$30,000, leaving five miles yet to be built. It is 16 feet wide and 12 feet high, constructed of heavy lumber and anchored with iron bolts into the bed-rock. The winter before last being dry, there was not enough water to carry off any great amount of tailings, and it was feared the work would prove a failure. With the present abundance of water, however, it is accomplishing a great deal of good, relieving many of the overcharged claims,

and promising the proprietors a rich harvest of gold. This structure is divided into two compartments, the one ten and the other six feet wide. When there is plenty of water both are kept running at the same time. When the water diminishes it is all turned into one, and the other cleaned up. This operation will not be performed the present season until July, when the prospects, some of which run as high as an ounce to the pan, indicate a capital result.

The final success of this flume should encourage the projectors of these tailing operations elsewhere in the State to perseverance, as only a bountiful supply of water seems necessary to insure good results; and this can in most cases be readily commanded. If \$40,000 or \$50,000 and, possibly, \$60,000 or \$80,000, can be extracted from these tailings in the course of three or four months, worked on such a comparatively limited scale, what may be expected from the steady operations of an enterprise like that designed to re-wash the tailings of Bear river?

From 1851 to 1858 Trinity county had a population of working miners of about 4,000, whose earnings aggregated scarcely \$2,000,000 per year. The miners now there do not exceed one-third of that number, and yet it is estimated that their gross earnings will this year amount to more than a million dollars, and may even reach a million and a quarter, making yearly average wages of nearly nine hundred dollars to the men; while it can hardly be said that they work more than half, certainly not over two-thirds, of the time.

The Cienega Placers.

A company has recently been formed in this city to work the placer mines of La Cienega and Los Llanos, in Altar District, State of Sonora, Mexico. These mines will very shortly be opened and worked in accordance with the method employed in the California gravel mines. We have seen some specimens of coarse heavy gold from these mines, obtained a short time since by "dry washing." The property is 60 miles east of the port of Libertad, on the Gulf of California, and comprises 132,880 acres, for which the company recently formed have secured the Government title, including all the wood and water rights.

These placers were discovered 80 years ago, and for a period of 30 years were worked by the dry method, and are said to have produced fabulous amounts in this rude way. They have not been worked for 50 years; but parties in the interest of the company recently examined the ground, and report that nearly every portion of the placers will give a heavy yield, which with water may be materially increased. The ground to the bed rock gives an average depth of from 10 to 50 feet. The earth is a sandy loam, containing a great deal of decomposed quartz, mica, and black oxide, with gravel sufficient to facilitate washing. There is a splendid fall from the placers, but unfortunately the nearest water is all below the placers, and will have to be forced up to where it is to be used. The company are now purchasing the necessary machinery, pumps, pipes, lumber and supplies for operating six lines of sluices on the ground of La Cienega, with a view of further extending their works, and carrying them to the adjoining placers of Los Llanos.

Capt. Samuel Tyler, the Superintendent of the company, a gentleman well known in mining circles on this coast, recently visited the property, and is very enthusiastic and hopeful on the subject. He says he can get all the hende he wants for fifty cents a day, and that when he once has the water on the tract, he expects to surprise even those well acquainted with the richness of some of the richest of California hydraulic minea. The fact that the mines have been so productive when worked by a rude "dry process," encourages him to look for a marvelous yield when he has a supply of water. With the proper machinery and appliances he apprehends no difficulty in supplying the land with an abundance of water, after which he has no fear for the result.

The Kohler Reduction Works formally opened their offices in this city this week. The company have purchased Damon's Landing, six miles south-east of Oakland, on which to erect buildings. A switch track will be run from Oakland, and a station erected at the works. Some 40 or more laborers are now at work on the ground, and by September everything will be ready for the reduction of ores. It is estimated that the cost of putting the works in operation amounts to \$150,000; over \$30,000 having already been expended. We will shortly have a detailed description of these works and the manner of operating. The company propose to purchase ore and work it themselves, doing no custom work.

COMMISSIONER Drummond, of the General Land Office, formally gave up his office to his successor, Mr. Burdett, on the 1st inst. How rejoiced he must be in being able to get away from that interminable mining law. He has spent so many years explaining to the people what the law means, that we should think he would immediately commence earnestly to forget everything he knows about it, in order to relieve his mind. We shall miss his signature to the frequent "mining decisions" issued from the Land Office, and hope that he will no longer be harassed by inquisitive miners and lawyers to learn his construction of the law.

Placer Mines Exempt From Annual Expenditure.

There has been some indecision among our placer miners as to whether the placer mines were affected by the section of the Law of May 10th, 1872, which provides for an annual expenditure in order to hold claims. In some localities the work has been done on gravel claims for fear that the Law required work to be done on them as well as on quartz. In response to an inquiry from owners of placer ground in Nevada county, the Acting Commissioner of the General Land Office has given it as his opinion that gravel mines are not affected by the 5th Section of the new Law. Although, as elsewhere mentioned, the time for the first annual expenditure has been extended, owners of placer ground will feel relieved to know that they are exempt. The opinion or decision is as follows:

DEPARTMENT OF THE INTERIOR,
GENERAL LAND OFFICE,
WASHINGTON, D. C., April 25th, 1874.

DEAR SIR:—In your letter of the 31st ultimo, you inquire whether or not the mining acts of Congress require certain annual expenditures upon placer mines to entitle parties to hold the same.

In reply I would state that the first general act of Congress regulating the disposal of mineral lands, was that of July 26th, 1836, which only applied to veins or lodes of quartz or other rock in place bearing gold, silver, cinnabar or copper. The Act of July 26th, 1866, was amended by Act of July 9th, 1870, and provision made for the disposal of "claims usually called 'placers,' including all forms of deposit, excepting veins of quartz or other rock in place."

Neither of these acts prescribed the amount of work or expenditures which should be made annually upon mining claims, to enable parties to hold the same, but left this matter to be determined by the local laws, rules, regulations and customs.

The Act of May 10, 1872, repealed certain portions of the mining acts then in force, and among other things prescribed a new mode of procedure for obtaining patents to mining claims.

The fifth section of the act last referred to, provides that the "miners of each mining district may make rules and regulations not in conflict with the laws of the United States or with the laws of State or Territory in which the district is situated, governing the location, manner of recording, amount of work necessary to hold possession of a mining claim subject to the following requirements:—"

"On each claim located after the passage of this act, and until a patent has been issued therefor, not less than one hundred dollars' worth of labor shall be performed or improvement made during each year. On all claims located prior to the passage of this act, ten dollars' worth of labor shall be performed or improvement made each year, for each one hundred feet in length, along the vein until a patent shall have been issued therefor."

The only reference made to the subject of annual expenditures upon mining claims, is found in said 5th section, which provides that on each claim located since May 10th, 1872, one hundred dollars shall be annually expended, and on all claims located prior to said date, ten dollars' worth of labor shall be performed, or improvements made each year, for each one hundred feet in length along the vein.

The 10th section of said Act of May 10, 1872, provides that the Act of July 9th, 1870, "shall be and remain in full force except so to the proceedings to obtain a patent, which shall be similar to the proceedings prescribed in sections six and seven of this act for obtaining patents to vein or lode claims."

The 10th section taken into connection with the 5th section of the Act of May 10th, 1872, makes it clear to my mind that it was the intention of Congress to require annual expenditures only upon veins or lode claims, leaving placer claims as they had been previous to the passage of said act, subject to the operation of the local laws, rules, regulations and customs.

Very respectfully your obedient servant,
W. W. CURTIS,
Acting Commissioner.

The Railroad Companies and the Centennial Exposition.

The Central Pacific and Southern Pacific Railroad Companies have instructed their agents to forward free such articles or samples as they may collect on this coast, for the coming Centennial Exhibition at Philadelphia, in 1876. As showing what these companies propose doing in regard to the Exhibition, we append the following circular, which has been handed to us for publication and which explains itself:

LAND OFFICE
C. P. and S. P. R. R. COMPANIES,
SAN FRANCISCO.

The Land Department of the Central and Southern Pacific Railroad Companies is preparing to place on exhibition at the Philadelphia Centennial Exposition, specimens that will illustrate the products of the railroad land and other lands on this Coast. Agents for the company are requested to forward such specimens as they can conveniently obtain.

Contributions from farmers, mine superintendents, and others will be gladly received; and due credit will be given for all articles so furnished, which are placed on exhibition. Samples of articles enumerated below will be of especial interest.

Grains of all kinds; both the kernel, and the sheaf with stalks of full length, including roots. Fruits of all kinds, fresh, preserved in alcohol, or dried. All kinds of vegetables will be required in due time, of the crop of 1874. Almonds, walnuts, etc., giving size of the tree, and kind of soil. Oats, beans, and olives; with specimens of the oils. Hemp, cotton, ramie, soap root and jute. Tobacco and hops. Wool, goats' hair, furs and skins. Specimens of soil; with the description of the locality from which they were taken; and remarks on their adaptability to different products.

Minerals, ores, coal, peat, clay, borax, salt, etc. Building stones, brick, cement, etc. Samples of wood of native growth, in the rough or manufactured. Wines, brandies, etc. Shells, fossils and antiquities.

All specimens should be marked with the name of the locality, and full address of the donor; and should be accompanied if possible by a short description. It would be of especial interest if with specimens of grain or other agricultural products, there be sent a description of the kind of soil where the same was grown, the mode of cultivation, the time of planting and harvesting, the yield per acre, etc.

The co-operation of all who feel interested in making a successful exhibition of this kind is respectfully requested.
B. B. RENDING, Land Agent.

NOTICE.—The attention of agents is called to the above circular, and their co-operation in the objects set forth is expected. They are hereby authorized to forward free such articles or samples as they may collect, consigning the same to C. P. R. R. Co., care B. B. Rending, Land Agent, San Francisco.
A. N. Towne, General Supt.

The Emma Mine.

We have received the Annual Report of the famous Emma mine, Little Cottonwood Cañon, Utah, which, although it contains many discouraging statements, is an interesting document. The report was presented at the meeting of the company held in London, on the 15th ult., but no report of the meeting has yet come to hand. We condense from the report the following items of general interest, reserving for another issue the remarks of the managers on the concentrating works and the geological features of the mine:

The directors in presenting their accounts for the past year, express regret at their unsatisfactory character. The accounts show that an enormous outlay was necessary on the mine; the ore production has been smaller and the ore account shows only a surplus of £17,000. The directors believe that Mr. Attwood's services have been of great value to the company, and they have confidence in his management. By adopting a

system of ore dressing, arranged by himself, he has utilized the ore on the second-class dump, as detailed in his report, and the directors propose that he should return to carry out the suggestions he has made; and they also are of the opinion that so long as the mine yields sufficient money to pay the costs, the only course which gives any chance of retrieval is to push explorations.

The agent, George Attwood, reports that in the mine a large amount of work has been done during the past 12 months, and explorations have been carried on in many directions with the utmost possible speed, and at the same time under great disadvantages. I have had to contend against a heavy influx of water, with the most imperfect appliances, in the shape of pumping machinery, and I had to re-timber nearly all the most important portions of the mine, owing chiefly to former defective timbering, etc., therefore the explorations have not been as extensive as they would have been under more favorable conditions. Notwithstanding the above drawbacks I have run about 1,000 ft. in length of drifts and cross-cuts, and also sunk in shafts and winzes, etc., about 500 ft., besides carrying on the stopes and other ordinary work connected with the mine during the past year. The engine-shaft has been sunk to a depth of 60 ft. on the angle below level No. 4, and for the last 40 ft. it is in hard limestone, and shows no ore. Explorations have been made on all sides of the ore deposit, and the extent and results of the same have been reported regularly in my daily letters to your secretary. I, therefore, consider it unnecessary to reiterate the full details of the same, but merely state that the results of all exploring work done during the past year, and extending to the present time, have proved most unsatisfactory as regards the future prospects of the mine.

Mr. Attwood then goes on to say that in the center of the ore deposit cut in level No. 4, a winze has been sunk to the depth of 95 feet vertical, or about 120 feet on the angle, and called the Attwood winze. The lower portion of the above winze has now been sunk about 50 feet in limestone, all ore having disappeared in the bottom and sides of same. By referring to the accompanying figure the situation of the winze is shown. The figures also show the size and shape of the great ore body of the Emma. It will be seen that the ore deposit is surrounded on all sides by "limestone," and especially so in the bottom of the lowest workings. I have run numerous small "drifts" and "cross-cuts" which are not yet marked on the maps before you, but the results have nearly always turned out the same; that is, we have run into hard limestone showing no ore. Several "cross-cuts" made in the hanging wall above level No. 1, and below the same as deep as level No. 3, have offered a fair supply of ore, and by a most careful selection have been mined to a good profit.

I found it impossible to sink on your mine under the above conditions; and to construct a Cornish mining pump of sufficient capacity would have entailed a heavy expenditure of money—say £30,000, and which sum the mine could ill afford to pay. I met the difficulty by constructing a new mining pump, the invention

of Mr. W. J. Silver (of Salt Lake) and myself, which combines the essential qualifications of a Cornish as well as the most improved steam mining pumps, with other new improvements, consisting of rotary valves adjustable to any angle, and at the same time so constructed that mud, sand and gravel do not interfere with its successful working. The pump can also be lowered in a few moments, and the valves changed to work at any required angle. The pump now in use performs the work of a Cornish 6-inch pump, and cost, made in Salt

the mine, which, after concentration, ought to yield about 400 tons of ore, assaying (say) 35 per cent. lead and 70 ozs. of silver to the ton, and, with what you have now on the dump, ought to supply your concentrating works all this summer. The estimated quantity of mine fillings extracted during the last four months, and now on the dump ready for concentration, will foot up about 1,500 tons, and will probably yield about 120 tons of concentrated ore, assaying about 35 per cent. lead and 70 ozs. per ton in silver. The quantity and value of ore re-

weather permitted I constructed concentration works on a new plan of my own, built water ditches, sluices, etc., to apply the same, all of which work was done in a very short space of time, and at a very small outlay of money, and has afforded most satisfactory results and paid large profits.

In regard to finances the manager says: In selling your ores I have found that American smelting companies have given a much better price (even for high grade ores) than could be obtained by shipping them to England and then selling; and all sales for the past year have consequently been made to smelters in America. The full details of the same you have been regularly advised. The net return resulting from the working of your mine from March 1873, to March 1874, (that is during my time of management), may be considered to be at least \$131,000, after paying all expenses, also paying numerous old debts, one of the principal of the latter being a county tax bill of \$10,000, and that long overdue when I took charge of your property. The absolutely necessary expenses of re-timbering, construction of new plant, etc., per-

forming a large amount of exploring work, as well as laying in and paying for a large stock of supplies, have, of course, reduced the profit most materially.

Mr. Attwood then gives extracts from reports of E. S. Blackwell, Clarence King and Andrew Murray, and also from his own report on the mine dated May 14, 1873, all of which agree that the future of the mine must entirely depend on new developments. These reports were all made in 1873, and although we gave them in our last week's issue, we reproduce the extracts from the reports of the three experts, which corroborate the views of the manager of the mine.

June 7.—Report by Mr. E. S. Blackwell, Manager, Ophir Mining and Smelting Company of Utah (Limited): The future of the mine depends entirely upon the virgin ground, and to explore this you must be prepared to wait some time, and spend a large amount of money in developments.

June 11.—Report by Mr. Clarence King, Director of the United States Geological Survey of the 40th parallel:—In conclusion, I can only reiterate that the great Emma bonanza, the object of such wide celebrity, the basis of such extravagant promises, is with insignificant exceptions worked out, and the future of your company is hung on a mere geological chance, which may be eternally against you, and if in your favor may only be secured by the wise expenditure of much time and money.

August 5.—Report by Mr. Andrew Murray, F.L.S., etc.:—In my opinion the famous Emma mine is exhausted, and nothing more is to be expected from it but the leavings of the old workings, the scraping of the walls, the ore which may have been entombed by the cave, the old fillings, and the second-class ore on the dump.

In concluding the report Mr. Attwood has the following to say of future explorations:

I have now found it necessary to abandon work in the bottom of the Attwood winze, partly on account of the great expense incurred in sinking it below its present depth (being 120 feet deep on the angle, and requiring two hand windlasses to hoist the water to level No. 4, owing to a sharp turn or set-off in the winze), and because I consider the engine-shaft the better, as well as the most economical place to continue exploring. I am now moving the pump, and placing it in the bottom of the engine-shaft, and propose to continue the same down to the deep at the present angle, as it will then cut the lines of bedding, and if the deposit is continuous, and shaft continued deep enough, it will again. The exact height of the throw is a most difficult matter to estimate, and I have in plan No. 1 roughly estimated it at 300 feet, but that, of course, is merely a theory based on what data I have been able to collect about the matter. I consider it advisable when the engine-shaft reaches the level of the Attwood winze to connect them together by a drift; also, would strongly advise in sinking or drifting to follow every indication of ore or vein matter that may be discovered, in hopes of its leading to a new deposit of ore. I would also recommend that a cross cut should be run in a

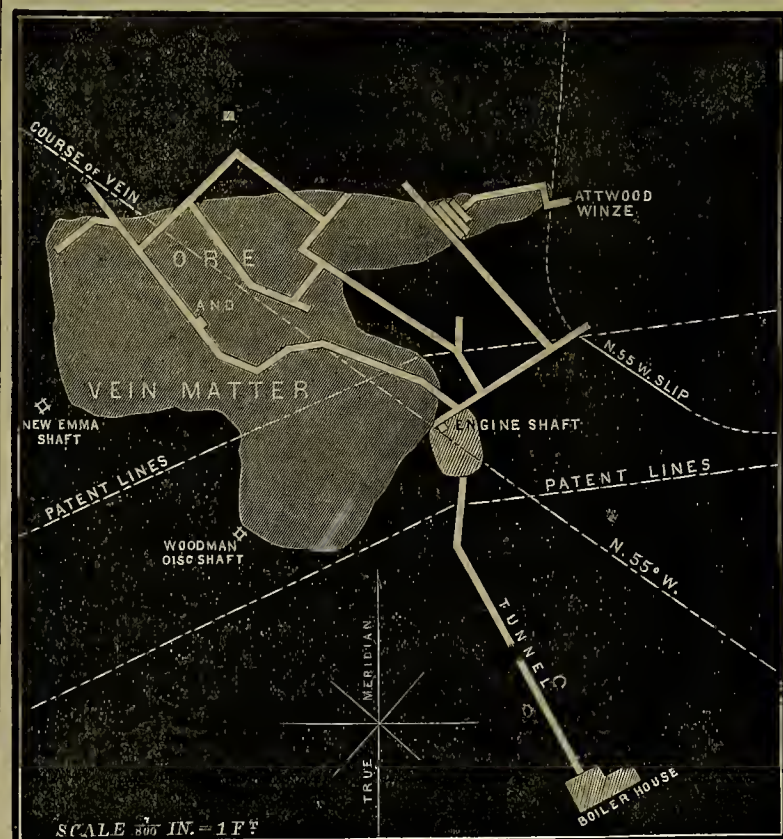
(Continued on Page 364.)



VERTICAL PLAN OF EMMA MINE, SHOWING ORE BODY, ETC.

Lake City, less than \$800, and has been worked in your mine in horizontal and vertical positions, as well as at an angle of 30°. The results of its working have been most satisfactory, and I have now nearly completed a much

serves in sight are very small, and I cannot estimate the amount to be more than 100 tons, which will probably assay 35 per cent. in lead and 100 ozs. of silver per ton. These "reserves" extend from just below level No. 2, to



Ground Plan Showing Position of Ore Deposit with Reference to Porphyritic Dike.

larger one, with a capacity of raising to the surface from your lowest workings over 400 gallons of water per minute, to meet the large amount of water which the mine will undoubtedly have during the coming summer. This new pump will be built for about one-tenth of the cost of a Cornish pump of equal capacity, and enable explorations to be carried on vigorously "to the deep," as well as the extraction of all the mine fillings for concentration, the latter being a most important consideration. The quantity and value of the fillings now in the mine is a most difficult matter to determine with accuracy, but from all measurements and assays that I have been able to make, I should think you have probably about 5,000 tons in

level No. 4, and also to the upper portions of the Attwood winze.

Mr. Attwood gives an account of the concentration works, of which we shall have more to say hereafter. Referring to these works, Mr. Attwood says: Upon taking the management of your property, I soon found it was an absolute financial necessity to adopt some new plan to the one formerly applied in working your ores, as the greater portion of the same consisted of a large mass of very poor material, in which the lead was combined chiefly as carbonate, oxide and sulphate, and at the same time contained such a small percentage of lead and silver that it was much too poor to ship direct, or even select by hand. As soon as the

Change, a Law of Nature.

The law of perpetual variety is well illustrated by Prof. Babbage's calculating machine.

Geology proves that this earth is ever changing. Mountains are being worn away and carried as mud to the plains below. Rivers are daily forming new land at their mouths. Coral insects, in infinite variety, are building up islands, and gradually grooping them into new continents. Submarine forests are raising their little by little, imperceptibly, till central chains of mountains, filled with water, make them habitable and healthful. Marine shells on their annals make everlasting record of this circuit in geologic movement. Volcano and earthquake forces attest internal evolution in the very bowels of the earth.

Not a plant now growing, not an animal nor a race of men now on this planet, is the same as lived here long ages ago. The climates are changed by oscillations of the axis of this revolving globe; and this compels revolutionary changes, or evolutions, by which new animals and plants are evolved by easy gradations from the old; and thus existing races become fitted to the altered conditions of the laws of life.

Astronomy presents like evidence. Our sun and all its revolving worlds, so apparently vast to our conceits, is but an atom in the universe. Tens and hundreds of thousands of similar suns, each with like worlds revolving around it, and each distinct with life vastly differing from ours, in infinite variety, are spread out through measureless space. These know no rest; their very life depends on everlasting movement; not simple, but compound. Each has its rotation on its own axis, and all its worlds have their orbits. Besides, every sun is sweeping through space with wondrous velocity, not in a straight line, but in a vast circuit around some center of powerful attraction and proportion, to us inconceivable.

Everything impresses the astronomer with the probability that suns themselves wear out from unceasing motion, are disintegrated into bright nebulous atoms, and new suns are being re-created. Of course, previously to this, every world becomes disintegrated and falls back upon the sun, from whose substance it originally came. Such a catastrophe will be the end of our world.

Thus, nothing in the universe has immortality of form, while the constituent elements are indestructible and everlasting.

We propose to give a curious and inexplicable illustration of the repugnance of nature to repetition without limitation.

The calculating machine of Prof. Babbage belongs to the British Government. By the laws of its construction, when it is set to produce a series of numbers in succession, it appears that it must continue to produce the same series till it is worn out. For instance, 1, 2, 3, etc., or 2, 4, 6, or 3, 6, 9, etc. But an indefinite repetition of that kind is not permitted by the law of evolution. The machine will go on producing figures in the same order—1, 2, 3, etc., till it reaches 100,000,001. But, without known cause, the machine tires of this repetition, and the next turn of the handle shows on the rim

100,010,002
100,030,003
100,050,004
100,100,005

being a series of triangular numbers, each multiplied by 10,000. Triangular numbers are thus:

	0	0	00	000	0000
0	0	00	000	0000	00000
1	3	6	10	15	

The machine will now continue this series 2,761 times, when it makes another evolution, involving new relationship to numbers still triangular. These changes have been traced through many such evolutions; they are evidently due to some law that is not traceable. It seems to favor Dr. Darwin's law of evolution, not that man was made from monkey, but that by transition, man came, in his turn, by a change in the circuit of creative movement. In our own age we see the process of evolution going on. The grand sequoias of California, the acacias of the Atlantic States, the dogo and the Bushman of Australia, the buffalo and the Indian of North America, the whale of the Arctic seas, etc., are examples. Races of men are undergoing changes equally conspicuous, through intermarriages and removals to new climates, producing constitutional and physiological evolutions.

The inventive Yankee is a new manner of man; and universal education, combined with luxury and the changes of machinery, is working in the mental and physical amelioration and elevation of men, and cannot fail to evolve from existing peoples greatly improved races of men upon the earth.

RAMSHORN GULCH has taken a new lease of life. In 1863-4 it was supposed to have been prospected thoroughly and abandoned as not having anything in it; but recent prospecting has discovered the "pay-streak," and shows it to be very rich; one of the best gulches in the Territory. Water has been brought in; the yield this season promises to be very large. Messrs. Ramsey & Boatman have in a bedrock flume on very rich ground, and are sure of big pay. Messrs. Sedman, Davis & Johnson are putting in a ditch to develop their ground, which prospects very rich, and will in a few days be taking out the dust. Ramshorn will be one of the best camps in the Territory this season. This is a good year for abandoned mining camps.—*Montanian*.

Quicksilver Near Vallejo.

The Vallejo *Chronicle* says: Since the development of the St. John mine, and the demonstration of its richness and extent, the disposition to prospect the hills in this vicinity for further deposits of this valuable metal has received a strong impetus. The hammer and pick of the sanguine prospector have been resonant upon the flanks of Sulphur Spring mountain, and places which centuries had left undisturbed, were turned over and explored by the cinnabar seekers. The results of the numerous prospects are such as will convince anyone that the vicinity of which we speak is the repository of vast and rich bodies of this metal.

Among the new prospects, one by John Wilson is very favorable. This deposit is about two miles northwest of the St. John mine. This place shows a fine cropping of cinnabar of a good quality, with indications of an extensive body of ore. A few miners have been at work for a short time past upon this lead, and it was day before yesterday that they struck the ore.

About half a mile from the St. John furnace, in a northwesterly direction, and not over five hundred yards from some of the drifts of that mine, is one of the most promising developments in the whole range. This is upon the place of Berry Shouse, who is the proprietor of the claim, and is working it. The deposits are found upon a hill embracing about fifty acres, in one corner of his ranch. There is hardly a spot upon this elevation where outcroppings of cinnabar or pieces of the ore cannot be found. A number of men have been employed the past few weeks in prospecting the numerous veins and seams. On one of the principal croppings a shaft has been sunk about 30 feet; showing a wide vein of cinnabar the whole distance. A tunnel is now being run to strike the vein opened by the shaft, and is now in about forty feet. Several tons of ore worth several thousands of dollars, have already been taken out by Mr. Shouse. This tract, which is now proving so rich in cinnabar, has been in Berry's possession since 1858, and is just adjoining his door. Nevertheless, he has little dreamed of its value during the long time; looking upon it rather, by reason of its hilly surface and barren, rocky nature, as a worthless appendage to his farm. Mr. Shouse has already been offered large sums of money for the mine.

J. F. Tobin & D. Williamson commence today to prospect the cinnabar developments upon their ranch. The location is about halfway between the St. John and the Brownlie mines, and there are excellent outcroppings of the metal in sight.

One thing, however, which is almost peculiar to the mines in the Sulphur Spring mountain range, is that they can be opened without any previous outlay of capital. No preliminary shafts and tunnels to determine the existence of the ore are required. The cinnabar is in sight from the surface and can be taken out from the first stroke of the pick until the mine is developed. Consequently, the prospector is not dependent upon capital, and the man who has capital is not required to risk it, as the mine pays for its development from the commencement. We are satisfied that the mines of Pine Flat and the other sections of Napa and Lake, where the excitement about cinnabar is so intense, have none of them the flattering prospects found in the Sulphur range. If, like those localities, moreover, the latter was located upon public lands, open to pre-emption by the prospector, there would be an army of excited prospectors also scattered over its extent.

A NEW MINING INVENTION.—A new style of mining cage yesterday went into use in the Consolidated Virginia mine. The new cage is a three-decker; that is, it hoists three cars at once. Double-deckers have been in use at the leading mines on the Comstock for some years, but this is the first three-decker ever put into any shaft on the lode. Although it holds three cars, it is not as long as those which hold but two; the compartments being only sufficiently high to admit a loaded car, whereas the compartments of the double-deckers are of sufficient height to permit of the tallest men standing in them. Owing to the shortness of the new three-decker, the miners have christened it the "Pup." It is constructed wholly of iron, and is the handiwork of John Holden, head blacksmith of the company, and formerly blacksmith of the Gould & Curry company. The new cage has been placed in the middle compartment of the shaft, and is found to work to perfection. The advantage in the use of the new cage is that it does one-third more work in a given time than the double-deckers. Orders were issued by the foreman the moment the "Pup" was launched in the shaft, that none of the miners were to attempt to either ascend or descend the shaft upon it. As the men would be unable to stand upright in its compartments, it would be unsafe for them to hoard it.—*Enterprise*.

ARIZONA MINES.—A letter from Cedar valley district, Mohave county, Arizona, to the *Citizen*, states that the mines are looking exceedingly well, and new lodes are being discovered almost every week. "Mr. Dave Buell, the great mining man of Nevada, paid us a visit lately, and seemed greatly pleased with our prospects. He says he will put up a mill here very soon. In fact, he located a mill-site on the Big Sandy, and has already built a house on it, and has two or three men at work making other improvements. The boys have great faith in him, and think he really intends doing something.

The Stickeen Mines a Failure.

The Yamhill, Oregon, *Reporter* of the 22d instant publishes the following:

Last Sunday evening a gentleman passed through this place, on the Amity stage, who had just arrived from the Stickeen mines. His name is George Goldy, and he was for some time an employe on the West Side Railroad, between St. Joe and Portland. During the few minutes the stage was in waiting we caught a few items of the gentleman's conversation with acquaintances, regarding that great El Dorado from whence he had just returned. It is very evident he will not go back. He says men are leaving there by the hundred, as fast as they can get away. There were nearly five hundred men at the mines, and a great many between the mines and Wrangle. The weather has been severe, and the men have suffered a great deal on that account, while a number have been drowned on the way up the Stickeen river, by breaking through the ice, and where the river was clear, by the capsizing of canoes. The high-sounding reports in reference to the large yields of gold are greatly exaggerated, and many of them untrue. Produce is very high. Flour is worth \$125 per hundred, and other things in proportion. Transportation is very scarce, and cannot be had at all for less than one dollar per pound. The carrying trade seems to be mostly in the hands of the Indians. We are not very much surprised to hear such a story as this from the "Wonderful Stickeen." It will be a benefit—perhaps the salvation of some of our young friends who are contemplating a trip to Stickeen, to see Mr. Goldy, and receive the information he can impart, and act according to his advice. We are aware that there have been high-colored descriptions of the new "golden land," and its prospects pictured out in the most flattering style; that these glowing accounts have been published far and wide by certain parties, and the utmost done to create a sensation; and all this has had the effect to load certain steamships with the rush of men which those publications have created. Those who keep the flattery stirring are interested parties, and even after it is known from other sources that the mines are not all they are reported to be, these same parties continue to throw out the alluring bait, to lads who may be led by it to go to Stickeen.

The Prospector's Friend.

The San Juan *Prospector* says: The busy notes of preparation have been heard among the miners during the whole of the past week. Many have already started, and many others are busy making the necessary preparations. Everything needed for a trip to the mines, including grub, mining tools, powder, fuse, etc., are being collected together, and the indispensable burro, the miner's pack animal, is of course in demand. This faithful animal is as indispensable to the miner as his butcher-knife and pistol. Like Justice, he is sometimes slow, but is sure. He is of light weight, too, so that in case a difficult mountain road is reached a stout man can take him on his shoulders and safely transport him over the obstacle intervening. He is a very domestic animal, and is always disposed to be on very intimate terms with his master. In fact he carries his friendliness so far that, as we are informed by old prospectors, he sometimes attempts to locate in the same bed with his owner. The expense of keeping him, too, is not great, as he is not an epicure, and will eat anything from a piece of bacon rind, or a pound or two of chili Colorado, to a keg of powder. He is a good companion in the mountains, with the exception that one has to be careful to securely fasten the cabin door, when leaving for work, or the probabilities are that when he returns he will find that a summer grab-stake has vanished.

EBERHARDT & AUORA.—Miners from the hill represent the mines of this company to be looking splendidly, and a noticeable improvement is manifest as depth is attained. The famous Peerless chamber, since its discovery a year ago, has yielded many hundred tons of magnificent pay ore, and the supply seems even now to be inexhaustible. In the Ward Beecher (the English Ward Beecher) work is being vigorously prosecuted, resulting in finding large bodies of pay ore. The mines are producing sufficient quantities of rock to keep the mill at Eberhardt in motion constantly, and leave a reserve for accidents, etc. Mill superintendent Robinson comes up once in a while with silver bricks, the result of the workings of the mill. Being the only live institution in the county just now, we have to look to its disbursements for the actual support of our county. The managers deserve great credit for the energy displayed under a variety of adverse circumstances, in keeping the works running during the past terrible winter.—*White Pine News*.

HEAT AND COLD.—As an instance of the effect of heat and cold in expanding and contracting the iron of the dome of the National Capitol, it is stated that the colossal statue surmounting it inclines $4\frac{1}{2}$ inches to the west in the forenoon, and the same distance to the east in the afternoon. This fact has been ascertained by fixing a plumb line to the statue and dropping it to the rotunda below. As the morning sun upon the east side of the dome heated the iron and caused an expansion on the side of the statue, it was thrown westward $4\frac{1}{2}$ inches. In the afternoon, when the sun upon the west side heated and expanded that side of the dome, the statue inclined to the east a similar distance.

Montana Placer Mines.

A correspondent of the Helena (M. T.) *Independent* writes as follows from Blackfoot: The prospect for a plentiful supply of water in this camp for the entire mining season looks very discouraging indeed. The snow has all disappeared along the foothills, and no perceptible rise in water is observable—a very unusual thing for this country. Even now the high mountains at the head of Three-Mile creek and Ophir gulch are nearly bare. However, at the present time the Ohio ditch, taken out of Three-Mile creek, and owned by Pounda and Green, of Carpenter's bar, is carrying its full capacity of water. The Tiger ditch, taken out of Ophir, and owned by Bratton & Pemberton, is also carrying its full capacity. This ditch is mainly supplied by spring, and it is believed will furnish a good supply of water the entire season. The boys are determined to economize and make the best of it; and while the water lasts will make times lively. On Ophir bar mining commenced some time since, and some satisfactory clean-ups have been made. Several companies are still ground-slicing, not having made a clean-up yet.

Illinois Gulch is now owned by two companies who are working it by means of bed-rock flumes. Work commenced a month ago, and some good clean-ups have been made.

In Balsara Gulch, west of Blackfoot, mining commenced a month ago. Last year some good paying ground was developed in different parts of this gulch, and if the supply of water was sufficient, would give employment to a large number of men. On Ohio Bar, also, some good paying ground has been found and developed, a scarcity of water being the only drawback.

During the last winter, Bratton & Pemberton have had men engaged in constructing a ditch from Ophir gulch to Nelson hill, and by the 1st of June will have it completed. The line of this ditch is about seventy-five feet higher than any previously constructed, and will cover a large area of valuable mining ground. It will in every way double the importance of this place as a mining camp.

At Carpenter's Bar mining has commenced generally. No clean-ups have been made yet.

At Snow Shoe the miners commenced work a month since. Considerable was done during the past winter with good result. Water will be plenty the entire mining season.

The miners in Gold Cañon took out immense dumps during the past winter, and as yet have not finished washing up, but so far good clean-ups have been made.

SAPPHIRES IN COLORADO.—The Denver, Col., *News*, says: "A miner, who has been engaged, some months past, working in the bars along the Platte for five or six miles above Denver, had the good fortune to find several sapphires, which he saved, without knowing anything about their value. One day last week a stranger, who was prospecting down the river [was shown the stones, when he bought the largest for two dollars. He brought it to town, and upon a test it was pronounced a sapphire, and a very fine one. It was placed in the hands of I. Haber, lapidary, to be cut. The rough stone weighed nineteen and a half carats, and was valued at \$500. The miner was also in town yesterday, and became very much astonished upon learning the value of the pebble he had parted with for a two-dollar greasack. He left two more with Mr. Haber, and proposes to enjoy himself, some of the profits of their polishing. The gentleman who bought the first mentioned stone is experienced in such things, though a comparative stranger in this region. In the past week he has himself found, within two miles of Denver, an emerald, which he believes more valuable than the sapphire, and a very fine water agate, which will produce a beautiful gem of strawberry color. He has sent the emerald East. Three diamonds have been exhibited in Denver, in the past week, that the owner said were found in Colorado, and east of the range. We cannot vouch for the truth of this report, but there is no question as to the fact that the others were all found within less than six miles of the Denver post-office."

GOOD YIELD.—Mr. E. Fender informs us that Frederick's 5-stamp quartz mill, over on the Haasayampa, is a success. It grinds on an average, about six tons of hard gold rock every day. The last ran was upon $3\frac{1}{2}$ tons of rock from the Crossins mine, which yielded as well as could be expected; the run having been made on second-class ore. The clean-up had not been completed when Mr. Fender left, but from the battery and plates 144 ounces of amalgam had been taken, with the arrastras yet to "hear from." One after another these evidences of the wealth of the surrounding country, and the ease with which it can be extracted, are thrust upon us, and we look back with regret upon the concern which, through ill-management, not only bankrupt their owners but detracted from the merit of Arizona, thereby robbing us of the assistance we so much needed and now need—the wherewith to develop.—*Arizona Miner*.

ARIZONA MILL.—The improvements in the Arizona mill are rapidly nearing completion. A few weeks more and the machinery will all be in place and the mill ready to commence crushing ore from the Arizona mine.—*Silver State*.

It is said there is a marked falling off in the yield of the South African diamond mines, and diggers who remain are much discouraged.

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To be held under the auspices of the

MECHANICS' INSTITUTE

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Opening on August 18th, 1874.

The Board of Managers herewith announce that a grand Industrial Fair will be held in the city of San Francisco for 30 days, opening on August 18, 1874.

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The building will be open day and evening, and every facility will be extended to exhibitors and visitors.

Application for space must be made without delay to the Secretary of the Board of Managers, 27 Post street, San Francisco, and all inquiries will be answered and information extended promptly.

No space can be secured unless applied for before the 20th of July next.

A. S. HALLIDIE, Pres.

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19v28-3m

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Notice is hereby given that a meeting of the stockholders of the above named Company will be held at the office of the Company, No. 7 Montgomery Avenue, San Francisco, on Monday, June 8th, 1874, at 4 1/2 o'clock P.M., for the purpose of adopting by-laws and for the transaction of such other business as may properly come before the meeting.

By order of the President.

2t-m23

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m16-1m

(Continued from Page 361).

northerly direction through the slide, where the last ore was discovered in the Attwood winze. The future chances of finding a new deposit of ore rest most undoubtedly on a geological problem; but as long as you have any funds in hand I do not think your property should be abandoned, but exploration carried on as I have just advised—and that, too, in a careful and economical manner. Your mine superintendent, Mr. Hannibal Williams, has been most unceasing in his efforts during my term of management, and deserves great praise at your hands, for the able manner in which he has carried out my instructions. The same can also be most justly said about our mining captain, Mr. John Raby. Mr. Charles Smith, the cashier and clerk, has been of great service to the company, and I have found him to be a most competent clerk, as well as a trustworthy cashier and servant.

We give the statement of accounts, which show some interesting figures:

ORE ACCOUNT.	
Dr.—To expenses at Salt Lake.....	£65,662 16 8
Suspense account.....	1,711 19 3
Balance to revenue account.....	16,990 10 6
Total.....	£74,365 5 5
Cr.—By 6,597 tons of ore at Salt Lake City and St. Louis, less 540 tons raised ore on hand, Dec. 31, 1872.....	£67,427 15 5
214 tons raised ore on hand, estimated at.....	6,337 10 0
Total.....	£74,365 5 5

In the foregoing the expenses at Salt Lake are included—24,632, as salaries and wages; 11,105, for hauling ore from mine to rail; 3,232, for assaying and sampling; and 4,632, for timber and expenses of sawing and hauling. The suspense account includes 1,133, for law charges in the Illinois suit.

REVENUE ACCOUNT.	
Dr.—To London management expenses.....	£2,462 19 6
Interest account balance.....	2,223 2 6
Telegrams.....	124 9 2
Traveling expenses.....	309 6 0
Law charges in England.....	172 6 3
Anditors' fees to Dec. 31, 1872.....	100 0 0
Bad debts (Salt Lake).....	733 18 5
Dividend account balance (Dec. 72).....	7,874 5 7
Balance.....	3,698 10 4
Total.....	£17,698 19 2

By ORE ACCOUNT.	
Cr.—Net profit transferred.....	£16,990 10 6
Transfer fees.....	620 13 4
Exchange.....	19 1 7
Insurance account—premiums returned.....	58 13 9
Total.....	£17,698 19 2

BALANCE SHEET FROM DEC. 31, 1872, TO DEC. 31, 1873.	
Dr.—To shareholders' capital account.....	£1,000,000 0 0
T. W. Park.....	23,106 11 0
Salt Lake office.....	3,193 13 4
Sundry creditors.....	752 5 6
Illinois Tunnel Company, amount due to date.....	19,391 0 0
Balance from revenue account.....	3,698 10 4
Total.....	£1,050,141 0 2
Cr.—By purchase of mine.....	£1,000,000 0 0
The cash at bank and in hand.....	1,178 1 9
Sundry debtors in America.....	12,652 11 0
Stores, plant and machinery.....	10,625 10 0
Office furniture (London and Salt Lake).....	650 7 6
Suspense account.....	1,712 3 2
Raised ore on hand.....	6,337 10 0
Illinois tunnel purchase account.....	17,176 0 0
Total.....	£1,050,141 0 2

The debtor account does not include £1,770 16s 8d director's fees, due at December 31, and yet unpaid.

Academy of Sciences.

The regular semi-monthly meeting of the California Academy of Sciences was held on Monday evening last, Vice-President Hewston in the chair. The following new members were elected: William Ditch, G. Parker Cummings and John H. Saunders. The donations to the museum were not extensive. A collection of ancient pottery, the specimens artistically wrought and perfectly preserved, were exhibited on the table. General Hewston stated that the collection had lately been consigned to him for the Academy, but no communication in reference thereto had yet reached him. It was believed that the specimens came from Peru, and had been sent by Benjamin Smith or James Freeborn, two members of the Academy who are now traveling in South America. W. H. Turner presented the pupa of a large species of beetle, native of Mexico. A fine specimen of Suisun marble, with a polished surface, was presented by a member.

D. W. C. Gaskell, of Forbestown, left on exhibition remarkably well-preserved teeth and a tusk of the mastodon and of the fossil elephant, found at New York Flat, Yuba county, deposited in auriferous gravel, on the bedrock, 15 feet below the surface.

George C. Hickox presented to the library a well preserved antique volume, entitled, "A Catalogue and Description of the Natural and Artificial Rarities Belonging to the Royal Society, and Preserved at Gresham College," by Nehemiah Grew, M.D., Fellow of the Royal Society and of the College of Physicians, London. Printed by W. Rawlins for the author, 1681. The usual variety of fresh scientific publications were laid on the table.

T. J. Lowry, of the U. S. Coast Survey, read a paper descriptive of an improved method of observing the sun at sea. The improvement consists of a method by which both the upper and lower limbs of the sun can be observed at the same time by duplicating the image of the object by means of the instrument. We will describe the operation in detail in a future issue.

James Lick's Generosity.

San Francisco is honored by having as one of its residents a man, who, having accumulated large wealth, possesses the moral courage which allows him to distribute that wealth among public institutions, before his death. Such a man is James Lick, of whose liberality we have spoken frequently, and who has just given his immense fortune to the services of his fellow men. A deed was recorded on Wednesday in the office of the County Recorder, in which Mr. Lick deeds all of his property to certain gentlemen in trust, for the purposes hereafter mentioned. The Trustees are Thos. H. Selby, D. O. Mills, H. M. Newhall, William Alvord, George H. Howard, James Otis and John O. Earl.

These trustees are empowered to sell certain property when and on what terms they may think best, so as to convert it into money for the purposes detailed below. The first item mentioned the proposed observatory, of which we have frequently spoken. Out of the proceeds of the sale and disposition of the property hereby conveyed and transferred, and intended to be, to pay the sum of \$700,000, for the purpose of constructing on the lands heretofore deeded to James Lick, by H. M. Yerriington and others, the said lands being situated on the borders of Lake Tahoe, State of California, a powerful telescope, superior to and more powerful than any telescope yet made, with all the machinery appertaining thereto and appropriately connected therewith, or that is necessary and convenient to the most powerful telescope now in use, or suited to one more powerful than any yet constructed; and if, after the construction of said telescope, there shall remain of the said \$700,000 any surplus, then the said parties of the second part shall invest the same in United States, California, or City and County of San Francisco bonds bearing interest, and donate the income thereof to the maintenance of said telescope and the observatory connected therewith and make the same useful in promoting sciences.

Any vacancy occurring in the Trustees, by death or otherwise, shall be filled by a majority of the remaining Trustees, selecting some well known citizen or citizens, residents of the State of California, so that science may lose nothing by their incapacity, inattention or otherwise.

Said parties of the second part to provide said sum of \$700,000, and apply it to the erection of said telescope and observatory and the adornment and improvement of the grounds selected for a site, as rapidly as judicious construction will permit. Said parties of the second part being prohibited from mortgaging such site, or the appurtenances to be connected therewith, and from contracting any debt in connection therewith.

The deed then gives \$25,000 in gold coin to the Protestant Orphan Asylum in San Francisco. The city of San José, Santa Clara county, Cal., is to have \$25,000 to build an orphan asylum. The Ladies' Protection and Relief Society, \$25,000. To the Mechanics' Institute Library, \$10,000, to be applied to the purchase of scientific and mechanical works. To the Society for the Prevention of Cruelty to Animals, \$10,000, accompanied with a hope that the Trustees of said Society may organize such a system as will result in establishing a similar society in every important town in California; to the end that the rising generation may not witness or be impressed with the everyday occurrences of cruelty and brutality, as hee often taken place in this State.

He orders \$5,000 to be devoted to the erection of a monument to the memory of his mother, Sarah Lick, who died at Fredericksburg, Pa., in 1812; and also \$5,000 to the memory of his father, James Lick, who died at the same place in 1831. The sum of \$5,000 is devoted to the erection of a marble monument to the memory of his grandfather, William Lick, who died near Norristown, Pa., at the age of one hundred and four years, to commemorate the services rendered by him in the American struggle for independence, and the hardships he suffered at Valley Forge and other places during said struggle; all of said monuments to be erected at Fredericksburg aforesaid. He also gives \$5,000 for the erection of a monument to his sister Catherine.

The trustees are authorized to expend \$100,000 to found an institute to be called the "Old Ladies' Home," to be located in San Francisco; as a retreat for women who are unable to support themselves and who have no resources of their own; the right of admission to be prescribed by A. B. Forbes, J. R. Roberts, Ira P. Rankin, Robert McElroy, and H. M. Newhall.

They are also to expend \$150,000, under the direction of H. M. Newhall, Ira P. Rankin, J. D. B. Stillman, John O. Earl and W. C. Ralston, and the survivors of them and others, in the erection and maintaining in San Francisco of free baths, the sites thereof to be acquired and held by the persons last named, in trust, to for ever maintain such baths for the free use of the public.

The sum of \$150,000 is devoted to the erection of a bronze monument to the memory of Francis Scott Key, author of the song "Star Spangled Banner."

Mr. Lick's love for California is shown in the following, as well as the other gifts: To erect, under the supervision of W. C. Ralston, John O. Earl, Dr. J. D. B. Stillman, H. M. Newhall and Ira P. Rankin, and their survivors, in the State Capitol grounds, at such places as shall

be selected by the Governor, Attorney-General and Chief Justice of the Supreme Court, a group of statuary, well worth \$250,000, which shall represent by proper figures and designs the history of California, from the early settlement of the same by the United States, and the style of architecture illustrating the same from the acquisition of California by the United States to the time when agriculture became the leading interest of the State; also, illustrative of the progress in mining, manufacturing, mercantile pursuits; the gradual development of agriculture, and also its history from the last mentioned period to January 1, 1874; illustrating the progress of the State in education; the parties to advertise for one year a reward of \$10,000 for the best design of the same, and \$5,000 for the second best design, the rewards to be paid out of the \$250,000.

The sum of \$300,000 is to be applied to the endowment of "The California School for Mechanic Arts," the object of which shall be to educate males and females in the practical arts of life—such as works in wood, iron, stone or any of the metals, and in whatever industry intelligent mechanical skill now is or can hereafter be applied, said institution to be open to all youths born in California; the institution to be under the direction of J. D. B. Stillman, Horace Davis, A. S. Hallidie, Joseph Eldridge, John O. Earl, W. C. Ralston and Hon. Lorenzo Sawyer, who are to acquire the site, form a corporation and erect the buildings, and have power to fill vacancies.

The Trustees are authorized after discharging the above named trusts to deed the remainder of his property to the California Academy of Sciences and the Society of California Pioneers, to be expended under the direction of a majority of the parties of the second part, in the erection of the buildings mentioned in the deeds to said societies respectively, dated October 3, 1873, and in the purchase, after the erection of such buildings, of a suitable library, national specimens, chemical and philosophical apparatus, and rare and curious things useful in the advancement of science.

Mr. Lick then gives the sum of \$26,000 to various relations mentioned; and reserves for his own use during his lifetime the management of said homestead property, the furniture, books, tools and implements thereof, and the rents, issues and profits thereof. As some of the real estate is encumbered, the parties of the second part are charged with paying the debts due.

The trustees are to make over to the Academy of Sciences and Society of Pioneers, after Mr. Lick's death, his homestead in San José and all personal property in his business office in this city. In consideration the trustees are directed to pay to Mr. Lick from week to week, such sums as he desires, not to exceed \$25,000 per year, until his death.

It will be seen that Mr. Lick has given away all his immense property; and most of the purposes to which it is to be applied, are most deserving ones. It is very seldom a man is to be found who will give up his property in this manner. He gives it out of his own control entirely. Exclusive of the gifts to the Academy of Sciences and Pioneer Society, these magnificent gifts amount to \$1,780,000. The property already given to the Academy amounts to some \$250,000, and the building which he has planned for it, and now desired built, will cost \$250,000 more. Whatever remains, will go towards an endowment.

This generosity is unparalleled; and few will cavil at the manner of distribution of the money. The purposes to which it is applied will redound to the honor of this State as well as to that of Mr. Lick, and his name will be handed down to future generations as a benefactor of mankind. It will be a credit to this State abroad and at home, that there is within its boundaries a man who is willing to give such immense wealth for the purposes named.

MECHANICS' INSTITUTE.—The annual election or Trustees of the Institute was held on the 1st inst., and resulted as follows: Total number of votes cast, 151, of which A. S. Hallidie, manufacturer of wire rope, received 141; Asa R. Welle, millman, 141; R. B. Woodward, proprietor of Woodward's Gardens, 143; W. P. Stont, attorney-at-law, 151; Henry L. Davis, banker, 141; George Spaulding, painter, 143; James Spiers, machinist, 142.

AMERICAN MUSEUM OF NATURAL HISTORY.—The corner stone of the new American Museum of Natural History was formerly laid in Manhattan Square, New York, on the 2d inst. The building was begun last fall and will be completed eighteen months hence, and will be twenty-five feet longer than the Capitol at Washington. The museum will cost \$6,000,000.

The St. John's mine, of Solano county, shipped sixty-three flasks of quicksilver on Monday, being the last lot of 149 flasks for the month of May.

DONNER LAKE is said to be higher now than it has ever been known to be before, and it is still rapidly rising.

ANOTHER vein of coal has been struck by the Bellingham Bay Coal Company, at a depth of seventy-seven feet.

A NEW city is springing up on the Jefferson river, Montana, consequent on the recent mining developments there.

Mr. Knighton, Deer Valley, El Dorado, recently picked up a nugget of gold weighing twelve ounces.

The forty-niners of North San Juan and adjacent towns contemplate a reunion on the fourth of July.

A LINE of stages has been put on the route between Battle Mountain and the Jersey mining district.

THE Idaho mine, Grass Valley, turns out gold bricks worth from \$20,000 to \$25,000 weekly.

THE shaft on the New York Consolidated mine, Washoe, is now drained within 200 feet of the bottom.

THE Idaho (Grass Valley) mine cleaned up \$21,000 one day last week, after a five days' run.

THERE will be more prospecting in quartz mines about Columbia this season than ever before.

THE Consolidated Virginia produced \$413,400 in bullion during the month of May.

THE Grass Valley Eureka mine cleaned up 525 ounces of gold amalgam last week.

THE Missouri cinabar mine, Leake county, produces 30 flasks of quicksilver a month.

SEVERAL new quartz mills are in course of erection in Calaveras county.

THERE are 9,000 Chinamen to 1,000 whites in and around Oroville.

THE Plumas Ditch Company, on Badger Hill, are running night and day.

PATENTS & INVENTIONS

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., June 2, 1874.

FOR WEEK ENDING May 19, 1874.

TICKET CLASP.—Hiram N. Rucker, Plainsburg, Cal.

MOLN-BORN FOR PLOWS.—Don Carlos Matteson and Truman P. Williamson, Stockton, Cal.

RE-ISSUE.

VALVE FOR PUMPS.—Wm. D. Hooker, S. F., Cal.

"The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest time possible.

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CHAS. T. BELL—Alameda, Santa Clara and Santa Cruz Counties.
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NUMBERS.	0	1	2	3	4	5	6	7	8
Diameter of Steam Cylinder, in inches.....	4	6	8	10	12	14	16	18	20
Stroke of Piston, in inches.....	6	8	10	12	14	16	18	20	22
Stroke of Piston, in feet.....	1-6	1-8	1-10	1-12	1-14	1-16	1-18	1-20	1-22
Capacity per Stroke, in gallons.....	15	25	40	60	90	120	150	180	210
Maximum Capacity, in gallons per minute.....	30	50	80	120	180	240	300	360	420
Belts in horse power they will supply.....	25	40	60	90	120	150	180	210	240
Size of Exhaust Pipe, in inches.....	3	4	5	6	8	10	12	14	16
Size of Discharge Pipe, in inches.....	3	4	5	6	8	10	12	14	16
Weight of Pump, in pounds.....	180	235	300	380	480	600	750	900	1080
Height over all, in feet and inches.....	1-6	1-8	1-10	1-12	1-14	1-16	1-18	1-20	1-22
Width over all, in feet and inches.....	1-6	1-8	1-10	1-12	1-14	1-16	1-18	1-20	1-22
PRICE	\$100	\$150	\$200	\$250	\$300	\$350	\$400	\$450	\$500
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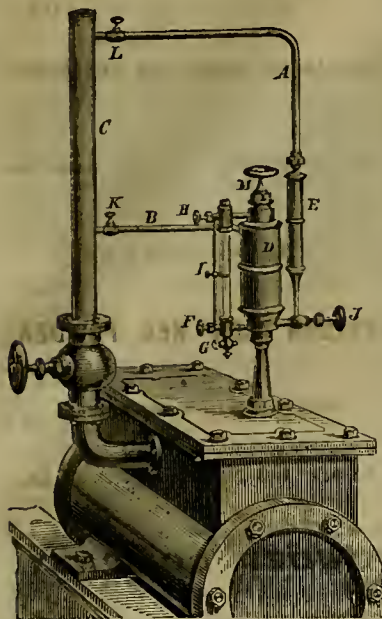
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These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used, per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stops; H, F, valves to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Made by California Brass Works, 125 First Street, S. F. 24v23tf

TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

All persons infringing on either of these patents

WILL BE PROMPTLY PROSECUTED.

I am sole LICENSEE to sell Machines manufactured under Craig's, Rice's, Macey's and Hoskin's patents.

I Guarantee Full Indemnity to all my Customers.

Machines of all size always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an Improved LITTLE GIANT.

For further particulars apply to

R. HOSKIN, Dutch Flat,
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Room 6, 240 Montgomery St., S. F. Agents
WILLIAMSON & CORY, Marysville.
Dutch Flat, Angus 10, 1873. 6v27-2m

STEEL SHOES AND DIES FOR QUARTZ MILLS.

Made by our improved process after many years of patient research and experiment. We have succeeded in producing STEEL SHOES AND DIES FOR QUARTZ MILLS, which are unequalled for



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Strength,
Durability
and
Economy.

Shoe.

Will wear three times longer than any iron Shoes.

BUILDERS AND CONTRACTORS

Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and general Mining Machinery in all its details and furnish them of Mining Supplies.

All orders promptly filled.

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Examination solicited.

TREADWELL & CO.'S UPRIGHT SAFETY ENGINES.

2 to 10 Horse Power.

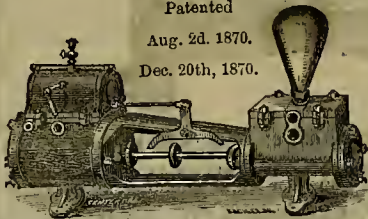
MADE BY THE N. Y. SAFETY STEAM POWER CO. Has tubular boiler, and therefore is secure against the dangers common to shell boilers. Power is taken from near the base, which avoids vibration or top-heaviness. Occupies but two feet square of floor space and is so simple a boy can run it. All its parts are easily accessible—a great advantage. Is complete in itself as a Portable Engine and Boiler, or the engine can be detached from the boiler and run independently, if required. Its main points are simplicity, safety, and economy. For printing offices, laundries, tanneries, ranches, small repair and machine shops, or for hoisting wherever a small and safe power is required, they are peculiarly adapted.

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And many others in different parts of the country.
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THE SELDEN DIRECT-ACTING STEAM PUMP, A. CARR, Manufacturer & Proprietor.

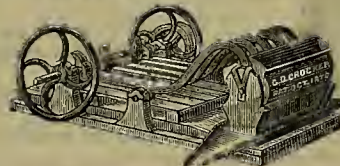
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Combining simplicity and durability to a remarkable degree. Its parts are easy of access, and it is adapted to all purposes for which Steam Pumps are used. As a Mining Pump it is Unsurpassed.

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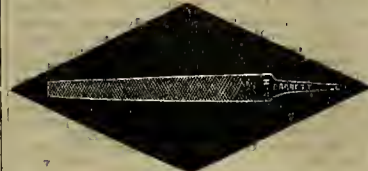
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Sold by all the principal hardware stores on the Pacific Coast. 15v25-1y

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These Machines Stand Unrivalled.

For rapidly pulverizing and amalgamating ores, they have no equal. No effort has been, or will be spared to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits. They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows.

The pan being filled, the motion of the miller forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular flow between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.

Settlers made on the same principle excel all others. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed.

Mill-men are invited to examine these pans and settlers for themselves, at the office, 229 Fremont Street, San Francisco

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68	27	98	35	132	48	175	58	265	68	500	77
70	28	35	40	138	50	183	59	275	69	520	78
73	30	36	41	137	51	200	61	285	70	700	79
76	31	109	42	142	52	210	62	300	71	800	81
80	33	117	43	146	53	220	63	320	72	900	82
84	35	122	44	150	54	230	64	345	74	1000	83
88	37	129	45	158	56	240	65	400	75	2000	84

And on intermediate values in proportion.

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Quartz Crushing & Ore Sampling MILLS.

Nos. 413 & 415 Mission st., bet. First & Fremont, S. F.



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A well-constructed model is generally first needed, if the invention can well be thus illustrated. It must not exceed 12 inches in length or height. When practicable, a smaller model is even more desirable. Paint or engrave the name of the article, and the name of the inventor, and his address upon it.

Send the model (by express or other reliable conveyance), plainly addressed, to "DEWEY & CO., MINING AND SCIENTIFIC PRESS OFFICE, SAN FRANCISCO." At the same time, send a full description, embodying all the ideas and claims of the inventor respecting the improvement describing the various parts and their operations.

Also send \$15 currency, amount of first fee of the Government. The case will be placed on our regular file, the drawings executed, and the documents made up, and soon sent to the inventor for signing.

As soon as signed and returned to us with the fees then due us, it will be sent straightway to the Patent Office at Washington.

When the invention consists of a new article of manufacture, a medicine, or a new composition, examples of the separated ingredients, sufficient to make the experiment (unless they are of a common and well-known character), and also of the manufactured article itself, must be furnished, with full description of the entire preparation.

For Processes, frequently no model or drawings are necessary. In such case, the applicant has only to send us an exact description, and what is desirable to claim.

For designs no models are necessary. Duplicate drawings are required, and the specifications and other papers should be made up with care and accuracy. In some instances for design patents two photographs, with the negative, answer well instead of drawings.

For further information, send a stamp for our illustrated circular, containing a digest of PATENT LAWS, 112 illustrated mechanical movements, and HINTS AND INSTRUCTIONS regarding the RIGHTS AND PRIVILEGES of inventors and patentees, which will be furnished post paid. Also a copy of NEW PATENT LAW of 1870.

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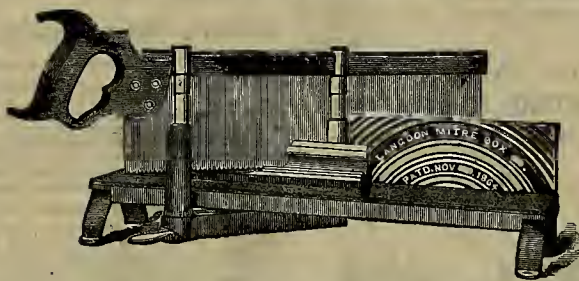
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 Mill Picks, Mill Pickes Dressed, Mill Stones Repaired and Rebuilt.
 Mill Stones Balanced with FELLEBAUM'S PATENT BALANCE, of which I am sole proprietor for California, Oregon, and Washington Territory.



LANC'DON'S ADJUSTABLE MITRE BOXES.



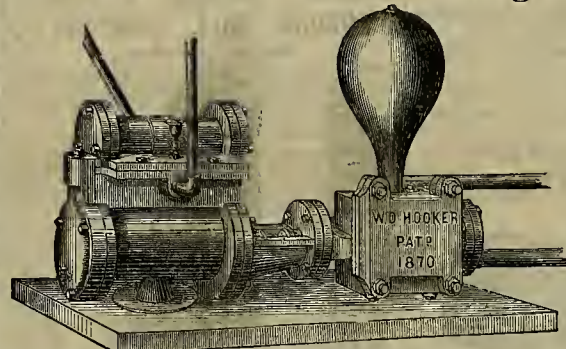
Common Mitre Boxes, 6 in. right angle, 4 in. at mitre; price, with Diston's Saws, ready for use, 18 in., \$9.00; 20 in., \$9.50.
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19v28-cow-6m-16p

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For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

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For medium and sandy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.

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v22-3m16p

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SPECIAL FEATURES for this year are MACHINERY IN OPERATION, and Processes of MANUFACTURE. The largest and best Exhibition Building on the Continent. The most liberal arrangements for Exhibitors in every class, and the best and cheapest method of advertising for all Artisans, Manufacturers and Inventors. Space, Steam Power, and Shafting free. Applications should be made, as early as possible, to

JOHN P. REYNOLDS, Sec'y.

Chicago, May 26th, 1874.

jm6-1t

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THE ONE-PLUNGER JIG,

Delivered on R. R. Car at Denver, Col., or St. Louis, Mo..

CONTAINING SIX REIVES, END TO END,

Separates in one and the same operation—1. galena and sulphide of silver; 2. pyrites or blende; 3. tailings, containing no valuable parts; or, 1. gold; 2. pyrites; 3. tailings (quartz, etc.), containing no valuable parts; or, 1. copper; 2. tailings, containing no valuable parts. The One-Plunger Jig can be combined with existing stamp-mills with highly important advantages, as after amalgamation it will recover completely all fine metals and all base ores and all mercury out of tailings. It concentrates all fine metal ores to such cleanliness that low grade ores can be shipped, after concentration, as first-class ores. Its feed and discharge are automatic. Its construction offers better guarantee against loss and repairs than any other apparatus in use. For particulars, apply to the inventor,
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A FRESH SUPPLY OF

EASTERN IRON KEG POWDER,

Manufactured by the World-Wide Known

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PATENT SAFETY FUSE,

Electrical Blasting Apparatus, Electrical Fuse, Rubber Tubing,

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We certify that the partnership of Dewey & Co., doing business in San Francisco, California, is composed of Warren B. Ewer, George H. Strong and John L. Boone, all of whom reside in the city and County of San Francisco, and Alfred T. Dewey, who resides in Oakland, Alameda County, Cal.

San Francisco, Cal., June 3d, 1874.
WARREN B. EWER,
GEORGE H. STRONG,
JOHN L. BOONE,
ALFRED T. DEWEY.

STATE OF CALIFORNIA,)
 CITY AND COUNTY OF SAN FRANCISCO.)
 On this 3d June 3d, 1874, before me, F. O. Wegener, a Notary Public in and for said City and County, personally appeared Warren B. Ewer, George H. Strong, John L. Boone and Alfred T. Dewey, known to me to be the persons whose names are subscribed to the within instrument, and acknowledged to me that they executed the same.

Filed June 5. **W. HARNEY,** County Clerk,
 By **W. STEVENSON,** Deputy.
 In witness whereof I have hereunto set my hand and affixed my official seal, the day and year first above written.
 jm6-4t **F. O. WEGENER,** Notary Public.

ANDERSON & WOODS'

AMERICAN CAST STEEL.

Price, 18c. per lb.!

Every Bar Warranted and Guaranteed equal to any English Brand.

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Sole Agents for the Pacific Coast.

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MINING AND SCIENTIFIC PRESS

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO.,
Patent Solicitors.

SAN FRANCISCO, SATURDAY, JUNE 13, 1874.

VOLUME XXVIII
Number 24.

Swingle and Huntington's Improved Breech-loading Fire Arm.

As an example of the progress which can be made in any branch of industry, when an incentive is offered to inventors, we refer to the improvements which have been made in fire arms within the past fifteen years. The improvement in loading fire arms at the breech, instead of at the muzzle, shortened the process so much that the old muzzle-loader went almost entirely into disuse; but recent improvements have gone so far as to enable the "shootist" to load his gun without taking it from his shoulder, and with only slight disarrangement of his aim.

The accompanying illustration represents a repeating fire arm, which is the invention of Messrs. Alfred Swingle and Frank A. Huntington of this city, and which has been protected by several patents secured through the MINING AND SCIENTIFIC PRESS Patent Agency.

Being a California invention, we have a pride in saying, that we believe it superior to any other fire arm yet invented. It is at once extremely simple, strong, convenient and safe.

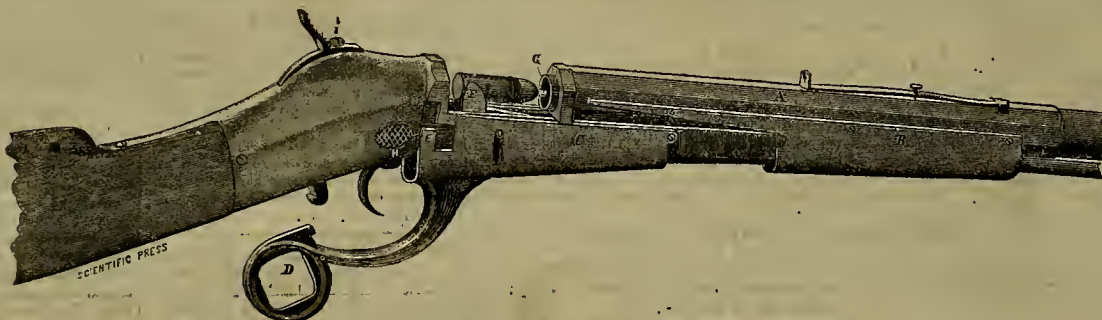
As will be readily seen, the invention belongs to that class of fire arms which is known as the "Sliding Barrel Breech-loaders."

The stock has a U-shaped extension which projects from its lower side. Upon this extension the barrel rests and slides when it is moved forward to load the gun. A cap or housing, B, on the under side of the barrel covers the outer end of the extension when the barrel is drawn back. This housing is in the proper position to be grasped by the left hand when the gun is aimed, so that a simple stroke brings out of the arm operates the barrel. When the barrel is drawn back it is locked in place by a U-shaped lever, C, which has its forward end pivoted to the slide or extension of the stock just in rear of the housing, B. The trigger guard is attached to or forms a part of the housing, C, so that when the finger of the right hand is inserted in the ring, D, of the trigger guard; a slight movement of the finger downward will depress the rear end of the U-shaped lever and allow the barrel to be moved forward. The upper edge of the rear end of the U-shaped lever is provided with a recess and shoulder upon each side of the barrel, which is shown plainly in the engraving. On the rear end of the barrel is an enlargement which abuts closely against the breech block when the barrel is drawn back, and thus when the lever, C, is forced upward, the recess in the U-shaped lever forms a clamp or lock for drawing and holding the barrel and breech block together. This movement is very simple and easily understood. The U-shaped lever is locked in place when it is drawn closely up against the barrel by a latch which is connected with the ring of the trigger guard, and which is operated by the finger, usually the second finger of the right hand.

This magazine tube, in which a supply of cartridges (usually seven) is contained, extends along inside of the stock from the butt end, and opens below the rear end of the barrel into the gutter of the U-shaped extension upon which the barrel slides. In this gutter the inventors have arranged a rocking lever, which they call a "comb-and-fetch-it," from the peculiar manner in which it operates to receive a cartridge from the magazine, and lift it into line with the bow of the barrel. This lever is pivoted at its middle in the gutter, and has a lug or toe at its for-

ward end, while its rear end has a saddle formed of two spring clasps, E, secured to it. This saddle is of the proper size to receive and hold a cartridge. When the barrel is drawn back against the breech block, the saddle, F, is forced down into the gutter, so that a cartridge is forced by the spring in the magazine into it; and after the load in the barrel has been fired, the thrusting forward of the barrel extracts the shell of the discharged cartridge by means of a shell extractor, properly located at the breech, and also by coming in contact with the toe on the forward end of the rocking lever raises the saddle or opposite end of the lever sufficiently to bring the fresh cartridge in line

one notch is made at the half, and the other at the full cock. A spring is arranged to force the stem upward so as to enter the lug in the notches when it comes opposite to these. Thus when the gun is at a half cock, the hammer is locked so that it cannot be drawn back until the head, I, is pressed upon with the thumb. This releases the lug from the notch, when the hammer can be drawn to the full cock where the lug enters the full-cock notch. A wedge, which is arranged so that it will be projected forward between the lug and notch, by a pull upon the trigger serves to release the lug in firing the gun; the entire arrangement being exceedingly simple, as the en-



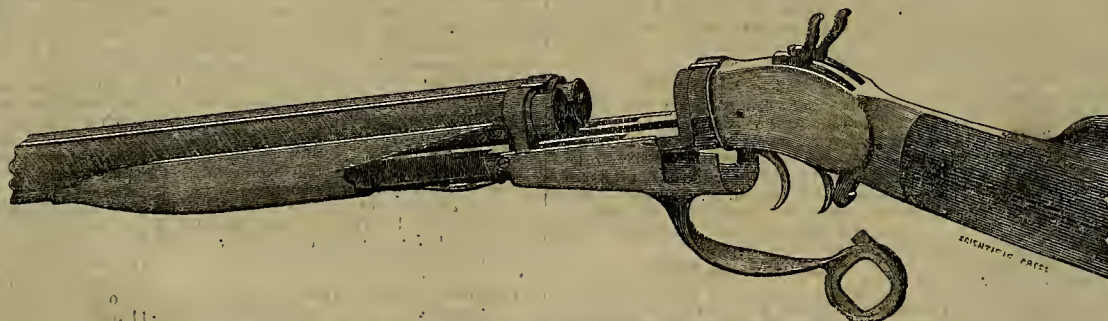
SWINGLE AND HUNTINGTON'S REPEATING RIFLE.

with the bore of the barrel; thus, when the barrel is drawn back again, the point of the cartridge will enter the bore and be forced out of the saddle and driven into the barrel, while the saddle is forced down again into the gutter ready to receive a fresh cartridge.

G is a telescopic extension on the rear end of the barrel, which enters a corresponding recess in the breech piece when the barrel is drawn back, so that an absolutely gas-proof joint is made, and the danger of powder blowing out at the breech, as is usual with other breech-loaders, is in this way entirely avoided.

The tire lock is composed of only three pieces. This safety lock is very necessary, as the frequent accidents which occur by the accidental springing of the hammer will testify. The firing pin used is so constructed that when the cartridge is exploded by the hammer driving the pin against it, the explosion which follows will force the hammer to the half-cock notch and lock it, thus providing for the possible forgetfulness of the person carrying the gun.

The inventors have applied several other improvements in this gun which are important and useful—in fact we may call it a new gun, as



SWINGLE AND HUNTINGTON'S BREECH-LOADING SHOT GUN.

The cartridges in the magazine tube can be arrested and prevented from leaving the tube by a stop arrangement which is operated by moving the button, H, up or down. This button, as shown, is within easy reach of the forefinger of the right hand. Thus when it is desired to use the gun as an ordinary hand breech-loader the button is moved downward so as to arrest the movement of the cartridges, when the gun can be loaded by inserting the cartridges by hand when the barrel has been carried forward; but in case it should be necessary that several shots be fired in quick succession, a movement of the finger raises the button and allows the cartridges to feed out as a repeater. By this arrangement a reserve of seven shots can be carried in the magazine, ready to be used in case of necessity, while the gun is used as a hand breech-loader.

Messrs. Swingle and Huntington have also patented a safety lock which they also apply to their breech-loaders. A stem passes down through a hole in the hammer, on the upper end of which there is a button, I. Below the hammer a lug is formed on the opposite end of the stem and this head enters notches which are made in the side of the slot in which the hammer moves;

the detail of every portion have been altered and adapted to the new arrangements.

We also present an illustration of a shot gun which is provided with Messrs. Swingle and Huntington's improvement. This gun we know will please the sportsman. It is loaded by hand, the barrels sliding forward in the same manner as described for the rifle, and it is provided with the same locking device.

Messrs. Swingle and Huntington have been very persevering in their efforts to provide a superior fire arm, and we believe that they have succeeded. We shall speak of this invention again. In the meantime the inventors are pushing its introduction, and we wish them success.

Suit has been brought in Pioche by the Magnet Mill and Mining Company against the Page & Panaca Silver Mining Company, for the recovery of certain mining ground described in the complaint. An injunction was also prayed for, prohibiting the defendants from working the disputed ground until the termination of the suit. On filing a bond conditioned in the sum of \$10,000, a temporary restraining order was issued, returnable on the 12th instant.

Public Documents for Miners.

We see by the telegrams from Washington that Congress is deliberating on the question of providing for the sale of extra copies of public documents, and for the distribution of the regular official editions. One section of the bill provides for the printing and distribution by the Commissioner of Agriculture of 25,000 copies of the Agricultural Reports. An amendment was afterward offered and agreed to, increasing the number to 300,000 copies.

We do not know whether the bill makes any reference to the reports of the U. S. Mining Commissioner, or whether any provision is to be made to increase the edition of that work, or provide for the sale of extra copies. It is to be hoped, however, that it does. After all the "tinkering" with the mining laws by Congress this session, they have probably been made aware officially that there is such a thing as a mining community, as well as an agricultural community in the United States. If they have at last had this impression forced upon them, it would be well for them to consider that there is also a Mining Com-

missioner, who publishes an annual report, and that this report may be of interest to these miners; that it may contain valuable information which these miners ought to be possessed of, and that there ought to be some means by which these miners could have these reports. If there was only one book to one hundred miners, it would not be so bad, but there is not.

A very small edition of this report is printed, somewhere between 1,500 and 3,000 copies. A few hundred of these books find their way to this coast, and nobody knows where the rest go to. The Mining Commissioner can not get hold of enough of them to send to people who have furnished articles for the work gratuitously, which creates considerable dissatisfaction among them. As by far the greater proportion of the report is contributed by parties resident on this coast and without compensation, after a year or two more they will decline to write, and the report will necessarily be a meager one. The appropriation is so small that the Commissioner is unable to travel much or employ many assistants. We have received so many letters since the last report was issued, asking where the work could be procured, that we are certain that a much larger edition would be acceptable. We have had, heretofore, to rely entirely on the probability that a private publishing house would issue the work from the Government plates, which has usually been done. Whether it will be done this year or not, we do not know. But it seems rather strange to print 300,000 copies of the Agricultural Reports, and only 3,000 of the Mining Reports. Of course there are more farmers than miners, but so great a discrepancy in the number is not just to the mining interests. An interest which produced out of the ground over seventy million dollars in 1873, and over sixty-two million dollars in 1872, is surely worthy of at least one public document in a year. Let us have more of these reports, or print an extra edition, and print them at a price so that they will be within the reach of all.

QUICKSILVER has been discovered in the mountains back of Borlitos, Santa Cruz Co. A number of claims have been located and a company has been formed to work one of the claims.

CORRESPONDENCE.

Mining in Plumas and Sierra Counties. No. 8.

[By Our Special Correspondent.]

After leaving Port Wine we pass down the eastern side of Slata creek until we come to Poverty Hill.

Why this place received the name it bears, I am not informed; it certainly could not have been from its poverty. The first company encountered, on our westward course, is that of Kingdom & Bros. Their claims are hydraulic. At the present time of writing they have but one pipe in operation, (a monitor), but I understand they intend to add another as soon as they conveniently can. Of the extent of this company's ground I cannot inform your readers, as I am not informed myself. Adjoining them are the claims of Westall & Co. Theirs are also piping claims and great results are anticipated by the company when they clean up. They, like Kingdom & Bros., own their water rights, thus saving them a heavy tax for the aqueous fluid.

The Gold Valley Company

Are driving their tunnel ahead through rock that can almost be called flint rock, it is so hard. They are in now about 1,000 feet, and expect to get it completed this spring. Hugh Smith, and his brother William, are two of the owners. I believe that capitalists in San Francisco own a controlling interest. There are a great many companies, whose claims are lying dormant, waiting for the company to finish their tunnel, as they will then have plenty of fall to wash their dirt through the tunnel. Poverty Hill, poor in name, is certainly rich in gold.

We will now take a walk from here over to Scale's Diggings

And see what our friends are doing there. I will start off first with Col. Williams & Co., who have 500 feet of bed-rock tunnel, and 4,000 feet of flume. Their banks of earth (60 feet in height) are knocked down by two Little Giant pipes. Their under-currents are A No. 1, of which there are two. They use about 1,000 inches of water through both pipes. The Col. resides in Oakland, I believe. The mine is in charge of superintendent Robert Williams, Esq., a gentleman who is not only highly esteemed by the company, but by the public, wherever he is known. Mr. Williams also has charge of the company's claims at Council Hill.

The company here have a ditch 12 miles in length, with 600 feet of flume, 40 feet in height. Their two reservoirs have a holding capacity of 5,000 inches of water each. Their under-currents, of which there are two, are of the best, while two Little Giants, with a pressure of 300 feet, and 600 inches of water each, crumble away the banks, and send them seaward, to fill up the Yuba and Sacramento rivers, with their useless dirt, after the golden treasure it contains has been extracted therefrom by the ingenuity of man. Returning to Scale's Diggings, we will poke our long nose into

Boyce & Bro's

Diggings at Fairplay. They obtain their water from Rock creek, conveyed in a ditch three miles in length. Two Little Giants, using 800 inches of water, make sad havoc with the works of nature. Stephen Boyce & Bro. are the lucky owners of this valuable mine. C. W. Hendel, United States L. M. S., informs me that the brothers made a clean-up, after a short run recently, and realized the snug little sum of \$15,000. Stephen Boyce also owns in the hydraulic diggings at

Marion Hill,

Just below Scale's Diggings on the road to Strawberry valley. The company is known as Joe McChesney & Co. One Little Giant is used in these claims, but I think it a big giant, the way it knocks the banks of earth down. I intended to give a description of Brandy City and its mines, but will wait till my next, for want of reliable information. I wish to explain one thing to your readers; I will not on any occasion write anything in these letters that deviates one iota from truth if I know it. I am the trusted correspondent of your journal; and as such, I will not lend the use of my pen to falsehood. I stated to you that if I could not give you facts, I would say nothing at all. So far, I have kept my pledge, and will continue to do so. I merely speak of this to avoid further annoyance from any parties wishing me to pander to their interests, either for or without pay, for I will not do it. There are some of your readers, who will, when they see this, understand its meaning. Whenever you consider my letters unreliable, throw them into the waste-basket, where all articles of that nature should go. I find it very hard work to obtain news, as those from whom I wish to glean my information are quite reticent in giving it. With these remarks I will close this short letter.

MAXIMILIAN.

The rollers used in an improved crushing and grinding machine being furnished with scrapers and knives, will prevent any clogging, a desideratum, especially for cocoa and sugar, not hitherto obtained.

Quicksilver in San Luis Obispo Co.

A correspondent of the San Luis Obispo Tribune says: On reading a notice of the developments in cinabar being made near Csmbria and at the Josephina mine, I thought it would be of interest to your readers to give you some particulars in regard to the progress being made in the Pasedor Colorado district, situated about 10 miles from Santa Margarita post-office, and four miles from the flourishing settlement of San José. Having business at San José valley, and hearing so many reports of those "vains," their prospective development, richness, extent, permanency, etc., I propose to give you a slight description from my personal examination.

These veins or deposits are called the

Tres Amigos,

And lie parallel to each other, upon a spur of the Santa Lucia mountain (a portion of the Coast range), which, in this immediate vicinity, runs in a northerly and a southeasterly direction; the veins, or deposits (more properly called) appear to lie with the course of the spur.

Extent.

There are four locations of 1,500 feet each, which were located some 15 months since, under the Mining Laws of the Act of Congress, passed May 10th, 1872, upon the spur as referred to above, which I should judge to be about 2,000 feet above the Rinconada valley.

Present Developments.

From the croppings facing upon the west side of the spur, I found an excavation of 120 feet in length by an average depth of 40 feet, and width of 60 feet, showing cinabar, which lies beneath a stratum of serpentine, forming a wall upon the north side, and upon the south, as far as prospected, a kind of conglomerate mixture of cinabar and limestone; but from croppings not yet developed, I should judge will eventually, when prospected, be found of a serpentine formation, thereby forming a perfect chimney of ore.

Tunnels.

About sixty feet below the developments above referred to, the Livermore tunnel is being run now on a depth of 100 feet; also the Tres Amigos tunnel, about 150 feet below still, now in a depth of 80 feet, which are intended to strike the center of the chimney, which show ore in small quantities, called threads or feeders, evidently giving indications of permanency. There were also quite a number of prospects, such as open cuts, shafts, which, the superintendent informed me, had been made before this valuable property changed ownership, all of which showed more or less ore.

Character of the Ore.

Upon examination of the ore upon the dump, on the occasion above referred to, I think it will fully average from 5 to 8 per cent., of which there is quite a pile.

Mining and Smelting Facilities.

Immediately at the base of these deposits, say about 1,000 feet, a fine spring of water, containing about $\frac{1}{2}$ an inch, miners' measure, flows, as well as the water of the Rinconada creek, about $\frac{1}{2}$ a mile off, running through a tract of wood composed of live oak and pine, being a portion of a tract lately purchased by the present owners, containing one hundred and sixty acres; which I am informed it was the intention of the owners to utilize immediately, thereby ignoring the music of the celebrated song, "Woodman Spare that Tree;" from which fact I judge the present owners of these deposits are evidently aware of the permanency of their investment.

This Magnificent Property

Is now employing twenty-five practical miners, mostly from the New Alajaden and Idria mines, under the general superintendence of Don Estevan Castro, (one of the original discoverers) all of whom seem to take an individual interest in the prospects of this enterprise; and I must say, from previous observations of mines in Nevada and Arizona, fully understand their business in all its details.

There are other Veins

Or deposits, located in this district, I learned, but not having time to examine them, can give no report. I have been informed since my return, that another very extensive deposit has been found, about two miles from Tres Amigos Co.'s claims. In conclusion I would state that at no very distant day, the port of San Luis Obispo will be able to make a fine showing of quicksilver among its many articles of export.

THE STICKER MINES.—The Portland Oregonian publishes the following extracts from a letter written to a citizen of Portland, dated from Wrangel May 26: "The river opened about the 23d of April, and the bottom of the mines dropped out about the same date. The very first day after the river opened about 100 disgusted men started back for Wrangel. From that time up to the date of the letter they were coming down almost every day. About 800 men are at the mines and scattered along the river; but the writer says that within a few weeks there will be considerably less. Most all who went up are becoming disgusted, and are anxious to return. The general impression prevails that these mines are a first-class blirk. A good many who arrived at Wrangel are 'dead-broke,' having expended everything in coming down. The writer says there are a few claims which are rich and yield well, but there is no extent of country. Every steamer which leaves Wrangel is carrying away great numbers of men."

The Sumner Mine.

While at Kernville recently, we found that new energy had been infused into the mining interests of Kern county, partly by the new discovery of rich leads, and partly, perhaps, by the success which has attended the opening of the Sumner mine, under the management of capitalists and competent mining engineers, who have prospected the lead to the extent that justifies the construction of an eighty-stamp mill, the machinery for which is already being laid on the site selected for its erection, the stamps being 750 pounds weight, and capable of crushing 100 tons of ore per day through fine screens.

The water power is abundant for several mills, should the future development of the mine require them, which is not improbable from the fact that the company now have a United States patent for nearly two miles in length on the lead; notwithstanding which they will, the coming season, construct a large ditch, about ten miles in length, at a cost of \$40,000 or \$50,000, carrying the water to the top of their main shafts, so that the whole of their mine may be worked by water, the pumping out, hoisting and reduction being done by the same power, ensuring the cheapest mining and milling done in the State.

The mine being owned and backed by such men as John P. Jones and John O. Earle, we may reasonably expect, at no very distant day to see hundreds of stamps and a small army of men employed in the operation now before us.

Many extensive improvements for cheapening the work are in contemplation, some of which will not be introduced at present, though we understand a tramway with T rails will be laid from the mine to the mill for the delivery of ore in cars, using horse power, and pumping and hoisting engines adapted to the capacity of the new mill will soon be put up, it being the intention to continue sinking the main shaft for new leads.

The company have a new road now nearly completed to Greenhorn mountain via Waggy's Flat, to a large saw mill which is now in course of construction. This road will be continued to Bakersfield, bringing Kernville within fifty miles of that place, by a good road. It is plainly to be seen that the work now in hand is destined to change the whole business of this section, as it will give encouragement to other enterprises, some of which are being quickly developed, and to which we intend to give attention at another time. —Visalia Delta.

MINES OF NOVA SCOTIA.—The Commissioner of Mines has made his report on the mines of Nova Scotia in the year 1873. There were twenty-eight coal-mines in working operation. From these were turned out 1,051,467 tons, of the value of \$2,699,347. The price in the course of a single thralve-month rose from \$2.25 (free on board) to \$3.50. The produce has increased from 673,242 tons in 1871 to what we have already mentioned in 1873. The Commissioner calculates that in all probability the output for 1874 will amount to at least 1,250,000 tons; in all likelihood it will be much larger. The chief consumption was in the home market, but 264,760 tons were exported to the United States. It is curious to notice that while the United States exported in 1873 to the West Indies 47,708 tons of coal, of which 36,363 tons were bituminous, or what is produced in Nova Scotia, the Nova Scotians managed to the same quarter only 1,538 tons, while Great Britain sent during the previous year to these same West Indies 147,997 tons. The gold mining for the year presents no noticeable feature. The yield has been smaller, and the modes of working the mines are still so primitive as to cause no surprise at the comparatively unsatisfactory results. The yield was 11,852 oz., valued at \$219,270, from 17,708 tons of quartz. Iron was produced in small quantities. The two iron works of Acadia and Annapolis were not worked continuously, and between them produced only 1,226 tons of pig metal. The total iron produce of the mines of Nova Scotia in the year was 3,485 tons, of the value of 10,455 tons.

LIFE-BOAT STATIONS.—The House has passed the bill to provide for an establishment of life-saving stations and homes of refuge upon the sea and lake coast of the United States. The life-saving stations to be established on the Pacific coast are as follows: Washington Territory, at Neah bay, Shoalwater bay and Cape Oiza; Oregon, at Capa Rajo, a life-boat station; California, Humboldt bay, Point Reyes, between Point Lobos and Point Pedro, and Point Conception, near the lighthouse, life-boat stations. The Secretary of the Treasury is authorized to employ crews of experienced surf men at such of the life-boat stations on the Pacific Coast as he may deem necessary and proper, for such period and at such compensation, not to exceed \$40 per month, as he may deem necessary and reasonable.

THE SAN FRANCISCO COPPER MINING COMPANY, operating near Spencerville, a few miles east of Wheatland, have new furnaces built, and commenced operations last Monday. They have put a new pulsometer pump into the mine, which works well and is capable of handling all the water in the mine.

RICH developments have recently been made in the Hercules and Live Oak quicksilver mines, located near Cloverdale.

A LARGE body of ore has been struck in the Rattlesnake quicksilver mine at Pine Flat.

Jersey Mining District.

Jersey district is situated in Lander county, near the northeast corner of Churchill county, and is distant from the town of Galena 40 miles, and from Battle Mountain, via Galena, 55 miles, and from Viock's station, on the Austin stage road, only 20 miles. The district was organized about two years ago, and work has been going on by the original locators for the past two months, but the rich ledge was discovered about two weeks ago by Lan. Trimbla, who was following a trail at the base of the mountain, and who discovered a piece of ore weighing about 40 pounds, which had recently been broken by a horse stepping on it. This piece proved to be rich in galena, and Trimbla immediately commenced a search for the ledge from which it came, and, after about nine days' prospecting, found what is now known as the Trimbla ledge, and is about a mile from the company's old works.

Robert McBeth reports the ledge as well-defined, with a granite head-wall and quartzite foot-wall, the ore streak being four feet wide, but it measures eight feet on the surface, owing to the dip of the ledge. Mac. says there are at least 500 tons of ore on the surface, and all alike. As far as assays had, the ores go as \$30 in silver per ton, and 57 per cent. in lead. McBeth believes that in a short time it will prove to be one of the richest strikes in Eastern Nevada.

The first locations consist of 3,000 feet on the course of the ledge, owned by Lan. Trimbla, James McKay, Joseph Parks and Capt. Taylor, of Galena.

The ledge can be traced for a mile, in a southerly direction from the original location, but shows mineral only in two localities—to wit, on the original location and on the locations owned by McBeth, B. F. Wilson, Samuel Timby, and Robert Smith, whose location is 6,000 feet south of Trimbla's discovery. The mines are situated between two creeks, about $1\frac{1}{2}$ miles apart, in either of which there is sufficient water for mining purposes, and the surrounding country is tolerably well timbered. —Measure for Measure.

ALPINE MINING.—European travelers are fond of narrating the perils of the ascent of the Alps amid eternal snow and ice, yet in the American territory of Colorado, mining is carried on all winter on Mount Lincoln, at over 14,000 feet above the sea level, the height of the Jungfrau Alp in Switzerland. In the latter country the forests of pine timber disappear at an altitude of 6,000 feet above the sea level, but in Colorado they only give out at an altitude of 11,500 feet. Much of this difference arises from the fact that Colorado is in latitude much south of Switzerland, but the country is also remote from ocean vapors, and the ascent to the foot of the mountains is very gradual. Certain it is that in all parts of the vast interior mountain regions settlements are flourishing and mining and agricultural operations are carried on at altitudes that would be uninhabitable in Europe. There are settlements in Wyoming that are 8,000 feet above the sea level. The climate in all that vast region bears no analogy to that of the Atlantic States, being mostly dry and healthy, and not liable to the torrid heats of midsummer.

A STEAM QUABBER.—We find in the London Builder a description of a machine invented for quarrying and removing blocks of rock. The machine is in operation at the granite quarries of Lochfynsida. Hitherto, in connection with the system of large blasts of 40,000 to 80,000 tons at one explosion, the innumerable large pieces of rock got wedged together to such an extent as to render it a work of great difficulty and danger to get them moved out from the mass of rock on the quarry floor. The quarrier has been supplied by Messrs. Napier Brothers, from a modification of their patent purchase steam windlass for the lifting of ships' anchors. At the outer extremity of the area of the quarry floor, the sole-plate, occupying a space about six feet square, is bolted down to the solid rock, and the whole superstructure above this is only, over all, about nine feet in length, by eight feet in breadth, and four feet in height. Steam is admitted into a pair of nine-inch horizontal cylinders, and by means of a small auxiliary drum the chain cables are carried up to any given point on the quarry face. Arriving there, the chain is attached to the block of stone required, the purchase windlass is then set in motion to heave in the chain, and, according to test, moves off a block of granite forty tons in weight with great ease.

THE WOODVILLE MINE.—The billion yield of the Woodville mine for the past nine months was \$30,220. During the same interval, \$133,000 in assessments has been collected. The disbursements for the same period have been \$160,042, including \$36,533 for debts previously contracted. The present liabilities are \$17,000 for additional machinery sent, and \$5,500 for mine expenses in May. The amount of cash on hand is \$3,200. An assessment of \$28,000 was levied on the 23d ultimo to remove these outstanding obligations.

Most of the platinum which finds its way into the market is produced in Russia, the product, however, being very small. The total production for 1871 was 4,100 pounds. It is worth \$75 per pound. Being of great hardness and almost indestructible, it is very useful in the construction of standards of measurement and instruments for scientific purposes.

SCIENTIFIC PROGRESS.

The Time Taken in Nerve Telegraphy.

The interval between the action of a stimulus on the organ of sense and the conscious reaction is termed by Exner the "reaction-time." This he endeavored to measure in a large variety of cases. The recognition of the impression was generally indicated by pressing a key with the right hand. Both the stimulation of the organ of sense and the responsive pressure of the key produced marks on a blackened cylinder turning at a known rate; so that the interval of time between the two could be estimated by the space between the two marks.

Experiments were made on persons of various ages and temperaments,—one of them a feeble old man of 76 years—the interval being noted between the stimulation of the left hand by an induction shock and a signal in response with the right hand. The reaction-time varied from .1,295 of a second to .3,576 of a second, or roughly speaking, from about one-eighth to one-third of a second. It would seem that, as a rule, the shortest time is to be looked for in persons who have formed the habit of concentrating their attention on an object, depending upon this rather than upon age.

Different methods of measurement give corresponding results with different persons; that is, if one method gives a shorter reaction-time than another method with one person, it will give a shorter time with all the other persons. The shortest reaction-time was obtained when an induction shock was sent through the eye, producing the impression of a flash of light. The next shortest was when an electric shock was given to a finger of the left hand; the next, between a sudden sound and the signal that it was heard. Then follow, in order of quickness, the responses to an electric shock to the forehead, and to the sight of an electric spark; and last and slowest, that to a shock of the toes of the left foot. It is a noteworthy fact that Donders measured the reaction-time for three of these cases, and found the order the same.

Of the circumstances that affect the reaction-time, the most important is the intensity of the stimulus, weak stimuli giving more discordant and generally larger numbers than strong ones. The concentration of the attention comes next in this respect. The reaction-time diminishes with practice, but fatigue increases it. In a long series of experiments, the last results are commonly larger than the first. The taking of tea or of a small dose of morphia did not affect the reaction-time.—*Jour. of Chem.*

FRACTURE OF METALS.—In the course of a paper on the character of metals, Prof. Thurston says: A kind of fracture, which is probably always indicative of brittleness is generally, and possibly correctly, termed crystalline. It is supposed to be produced by a long continued succession of shocks, which, entraining the metal to the elastic limit, permit the crystalline grouping of molecules to take place. Dr. Percy, the leading metallurgical authority of the world, seems to have been fully convinced of the possibility of the formation in this way of true crystals; but direct experiment is still desirable fully to determine it. A singular instance of this peculiar molecular action recently occurred at the Morgan Ironworks, New York. While a powerful steam hammer was at work upon the red-hot end of a very large shaft, originally designed for the engines of a large naval steamer, a piece of the opposite end, which was cold, and which was supposed to be strong enough to transmit several thousand horse-power, dropped off. This was an extraordinary event, but not unprecedented. In all such instances, the fracture seems to follow a plane passing through a comparatively sharp angle at the side of a collar or at the end of a journal.

Though nearly all solids expand by heat, they do so to very different degrees. Even members of the same class, such as the metals, exhibit this difference. A band made up of a sheet of brass, welded to a sheet of iron, bended into an arc when heated, the brass taking the outside of the arc, because it expands more than the iron. So by taking a long spiral ribbon, made by welding a platinum on to a silver ribbon, a sensitive thermometer is formed, which twists and untwists as it is heated or cooled.

M. GRUNER, France, has been engaged in measuring the quantity of heat needful to effect the fusion of cast iron slags, dross and steel, in order to compare the heat produced in blast furnaces with the heat utilized. He finds that cast iron melts at from 2,664° to 2,874° Fah. The heat of a hot blast iron furnace, for cast iron, is ordinarily reckoned at 3,092° Fah. Beesmer steel, according to M. Gruner, melts at 2,912° Fah. Siemens estimates the heat necessary in a furnace to melt steel at 3,600° Fah.

As an electric indicator of vitiated air, says the *Gaceta Industrial*, a solution of palladium chloride is so connected with a battery that, as long as no metal is precipitated, no current passes; but as soon as carbon monoxide occurs in the atmosphere, metallic palladium is precipitated, which establishes a current, and rings a bell to give warning of the presence of the noxious gas.

Mineral Waters.

On its long subterranean travels water generally meets with substances which it can dissolve. Even the ordinary spring-water is therefore chemically not as pure as rain-water; and, although the carbonate of lime which it contains in solution is found in it only in small quantities, they are nevertheless sufficient, in contact with soap, to form a fishy lime-soap, while in rain and river water the soaps are uniformly dissolved. It is also sufficient to prevent the swelling of boiling peas and beans, since the lime attaches to the skin and prevents the access of water. On that account spring-water is called hard, in contrast to soft river-water. The spring is converted into a mineral spring when it contains mineral matter in solution to a greater amount.

Regarding the formation of mineral waters, Pliny long ago pronounced the important fact: the waters are as the land through which they flow. Starting from this point of view, Struve examined the different varieties of rock in the vicinity of Carlsbad, and after having discovered in them all the solid constituents of the neighboring mineral springs, he attempted their artificial imitation by bringing the pulverized minerals under the pressure of a pump in contact with carbonic acid gas and water. His experiments were crowned with success, and the artificial mineral waters which he thus produced have proved to be of great benefit to suffering humanity, especially in regions at a great distance from natural mineral springs. The ocean is the mightiest mineral spring of the earth; but the uniformity of its composition, regulated by evaporation, external access of various substances and organic processes, can be fully understood and appreciated only by following the further wanderings of the water gushing forth from springs, in the form of brooks, rivers and streams, over the surface of the earth—a theme which exceeds the limits of this discussion, and is deserving of a special investigation. It is thus the directly visible complementary link in that circular course of water, the first movements of which have so long been misunderstood, because going on in the air and under the ground, and thus being hidden from the observation of man.—*Gastlight Journal.*

PRECIPITATION IN FRESH AND IN SEA WATER. It is a curious fact that the deposition of sediment is much more rapid in sea water than in fresh water. At a recent meeting of the Royal Physical Society of Edinburgh, some experiments made to determine the comparative rate of deposition in the two cases were described by Mr. David Robertson. The reader can satisfy himself that the precipitation really is quicker in the sea water by a simple experiment. Let him take two glass jars of equal size, and fill the two about four-fifths of their depth, the one with sea and the other with fresh water; then fill both up with clay dissolved in fresh water—say, about the consistency of cream—and stir both well up. Set the jars side by side to settle, and in a very short time the precipitation in the jar containing the sea water will be seen to be going on rapidly, while in the jar with the fresh water little or no change will be observable. From these results, it is evident that rivers running into the sea will deposit their sediment nearer their mouths than if they empty into fresh water lakes, and are, therefore, other things being equal, more likely to be obstructed by bars.

THE CENTENNIAL OF CHEMISTRY.—It has been suggested by a correspondent of the *American Chemist* that the year 1874 be accepted as the Chemical Centennial, and celebrated as such. Of course chemistry has no definite birth-day, but so many important discoveries were made in 1774, and that year was so noted for remarkable activity in the progress of the sciences, it is suggested that the foundation of the modern science of chemistry may be dated from that period. The editor of the *Chemist*, in view of the fact that centennial celebrations are now in order, approves the suggestion, and seconds the proposition that American chemists should meet on the first day of August next, at some pleasant watering-place, to discuss chemical questions, especially the wonderfully rapid progress of chemical science during the last hundred years.

THIRTY-SEVEN small planets have been discovered in the years 1872 and 1873, or eighteen and a half for each year, making 1,850 per century. From the days of Hipparchus to the present time we may reckon 2,000 years; had astronomers worked with the same zeal and success during these 2,000 years, the number of small planets known would have amounted to 37,000, only three times the number given by Arago of stars to the 7th magnitude, and a very small proportion of the stars of the 10th magnitude. Although very minute, the latter are generally much brighter than small planets as seen at the time of opposition.

RENDERING WOOD UNINFLAMMABLE.—A recent invention relates to a novel treatment of wood for the purpose of rendering the same unflammable, which treatment also tends to preserve the wood; the said invention consists in the use of a new composition, and in the novel means employed in its application. The fluid which the inventor employs for the purpose is composed of protoxide of iron, sulphate of potash, sulphuric acid, sulphate of aluminum, hydrochlorate of soda and protochloride of iron, with sufficient water to give the fluidity required for the application.

MECHANICAL PROGRESS.

An American Coal-Cutter.

We give an account of the recent trial of the first practical coal-cutting machine in the United States. The machine is employed in the Coal Brook mine, about two and a half miles north-east of Brazil, Indiana, and is known as Brown's Monitor coal-cutter. The machine consists of a five-horse power steam engine, driven by steam carried into the mine by a steam-pipe, terminating, however, in a few feet of rubber hose, which permit of full freedom of motion to the machine. The intention of the proprietors is to employ compressed air in place of steam as soon as their experimental trips are finished. The cutting arrangement is an iron rim of four feet in diameter, which has on its periphery movable steel teeth, placed at points about 12 inches apart. These teeth may be taken out and ground whenever they become dull. This rim lies on small wheels which support it, and allow a free motion, and has cogs on its under surface which gear into cogs on a shaft turned by the engine. By this means the power is applied near the circumference of the wheel, instead of at the center, as in the ordinary circular saw. The principal reason for this arrangement is to get a deeper cut at the coal. The cutter can be put to a depth of three and one-third feet or seven-eighths of its whole diameter, whereas the ordinary circular saw can scarcely cut to one-half its diameter. The machine runs on a movable track, and is fed by means of a screw working in cogs. The track is put down along the side of the coal at the proper distance from it, and when a cut has been made the whole length, the machine is put on tracks and wheeled to the next room, where the track is laid as before, and so on through the mine. The duty of the machine is put down at about a yard in five minutes. The estimate of its economy given by the proprietors is, that it saves about 35 cents per ton over the cost of putting out coal by hand labor, which, in a mine turning out say 200 tons a day, amounts to a saving of \$70 a day.—*Gas Light Journal.*

THE FIRELESS LOCOMOTIVE.—The *Chicago Times* gives the following account of the fireless locomotive, now in use on the tramways of that city: It consists of a boiler, eight feet long by three feet in diameter, and the usual machinery on a small scale. There was no fuel, no fire, no fireman. The steam was supplied for the round trip of six miles before starting. At the depot was a supply boiler, sixteen feet by three feet, in which steam was generated until 200 pounds pressure was indicated by the steam gauge. The locomotive boiler was three-fourths full of cold water. Instead of boiling this by means of a fire, and raising the pressure to a required height, the steam was introduced from the supply boiler through an iron tube. The iron tube was connected with the locomotive boiler, the latter running under the water, along the bottom of the boiler, and letting out the steam as it was freed from the supply boiler into the locomotive boiler. This steam, rising through the cold water, permeated it, and quickly raised its pressure to 170 pounds. With this supply of steam the locomotive started, drawing a heavy four-horse car, over three miles, to thirty-fifth street, in ten minutes. The amount of steam consumed represented eighty pounds pressure, locomotive starting back with ninety pounds remaining. When the starting point was reached, there were fifty-seven pounds of steam in the boiler, the pressure being reduced only thirty-three pounds in the return trip, which was a down grade. It must be borne in mind that there was a large car, heavily laden, making eighteen miles per hour. The experiment proved conclusively that, as a substitute for dummy engines, the fireless locomotive is, beyond question, a success.

SCORES OF BRICKS.—The *Colliery Guardian* thus described the process adopted by the Tee Company of Dartington, England: There is planted at the entrance of the kiln an apparatus which may best be described as a revolving table, on which are a number of wrought-iron brick moulds. A line of rails, some 20 or 30 yards, runs from the blast furnace toward this table, along which is brought the slag liquid in boxes or hoggies. These are placed in such a position that the molten liquid runs into the mould, and as each mould is filled, the table revolves round. The time required for the slag to set is about two minutes. When it is red hot the bricks are taken out of the moulds and put into the annealing kilns or ovens, where they remain for three days, after which they are perfect, cool, solid and hard, and ready for use. The company contemplate erecting an apparatus near the blast furnaces, so that the slag can run into the moulds direct, and instead of the revolving table, they are going to adopt the principle of a horizontal movement, so that the moulds will be carried along by a chain action, something after the mode of the river dredgers. The manufacture of scoræ or slag bricks is now an accomplished fact, and this new industry must tend to diminish the cost of making pig iron, wherever it is brought into requisition.

COPPER TUBES.—To manufacture solid drawn brass tubes with a copper end or copper tubes, an ingot is first cast partly of copper, partly of brass, and is afterwards drawn into a tube.

PUMPS FOR LOCOMOTIVES.—A short time ago, an apparatus was invented for supplying the tenders of locomotive engines with water, by arrangements intended to remove all risks of obstruction by foreign substances which cause such apparatus to become inoperative. This machine, as originally constructed, depended upon the automatic action of a valve in a water tank, unprovided, however, by any appliance for adjusting the valve, or affecting its automatic action by the lodgment of any foreign substance—a defect which has recently been obviated by a very simple device, the perfect adaptation and efficiency of the apparatus being, of course, still retained. In this arrangement, the valve used is either a clack, hinge or spigot valve, in combination with which is arranged a lever pivoted to the wall of the tank, or any other suitable and convenient support, and connecting with a rod extending upwards with a handle above the reservoir, in some position convenient for manipulation. For the purpose of maintaining the submerged tank in its position at the bottom of the reservoir, even when the water is entirely expelled therefrom, the eduction pipe is made to act as a stay, or special braces are affixed from the wall of the reservoir to the tank. For the attachment between the air-reservoir pipe, and the water-reservoir pipe, the coupling consists of a male part, with a collar on one end, provided with grooves to permit the passage of two hooks on the female part of the coupling.—*Ex.*

MOWING AND REAPING MACHINES.—English inventors appear to be working very vigorously to perfect existing agricultural implements, as well as introduce new forms. The feature of novelty in a new machine consists, first, in so adjusting the draught pole and driver's seat according to the nature of the crop or the weight of the driver as not to cause any undue weight to bear on the horses' necks while working, which is accomplished by having slotted holes in that part of the frame to which the draught pole is attached, so that the draught pole together with the whole of the apparatus for carrying the driver may be shifted forward or backward and thus be in a proper balance for the easy working of the horses; Secondly, in a method of adjusting the cutters and fingers so as to point up or down, as the nature of the crop to be operated upon may require, by using a lever or link upon the gear frame to adjust its angle to the draught pole. A new English patent consists in the addition, to any ordinary reaping and mowing machine, of a second or underset of the usual knives or cutters, which may either be made stationary by fixing them to the finger bar or other suitable bar, or be actuated by an extra crank and connecting rod for the purpose, although it will be understood that the upper set of knives might be made the stationary set, although this is not preferred.

METALLIC FLOORS.—A method has been devised for rendering floors in a good degree fire-proof, by employing long, flat bars of thin sheet metal, with a perpendicular flange turned on each edge. Other long, thin bars, which are curved or arched, and riveted at or near their edges to the first named strips, are placed edgewise vertically, one between each two, the connection being so arranged that the tops of the arches do not rise quite as high as the tops of the first set of bars. Narrower strips are also arranged across and riveted to the lower flanges at suitable intervals apart, to serve as lath for holding the ceiling plaster to be applied to them, as well as to brace them laterally. Similar strips are arranged across and riveted to the upper flanges, or wood pieces may be bolted on to receive and support the floor boards. The outside flanges are built into and rest in the wall; and other flanges may be applied, if desired, to the outside strip for letting into the wall. For a floor of great length the bars are lapped and riveted.—*Iron Age.*

The *English Nautical Magazine* says: The armor plates used by the Americans in the construction of their monitors were not welded together, as are those used by our own government; they were made by simply connecting thin plates together by means of rivets; thus, a 10-inch plate would be made by riveting together 10 one-inch plates. By experiment it has been ascertained that a good five-inch rolled plate is much more capable of resisting shot than 10-inch armor built up in this fashion. In conclusion, it may be remarked that it is not enough, in comparing two iron clads of similar design, to say that they each have armor of a certain thickness; the quality of the armor plates, the accuracy with which they are fitted on the ship, and the nature of the fastenings by which they are kept in place, may so affect the question as to give one ship a decided superiority over another which is said to be as strong.

IMPROVED BALE TIE OR BUCKLE.—This is formed of one piece of metal, and is made at least double the width of the band, hoop, wire or rope to be tied or fastened; it receives the strains of the band on different parts and in parallel lines; and it has portions bent sideways, or pieces projecting from the edge or side to serve as safety pieces and prevent the band from getting free. It is patented.

TURNING the past ten years, the screw has entirely replaced the paddle in transatlantic navigation, the weight of marine engines has diminished one-half, the steam pressure has quadrupled, and the consumption of coal has decreased two-thirds.—*Scientific American.*

Weekly Variations in Stocks.

(Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.)
For 6 days ending Wednesday, June 10, 1874.

NAME OF COMPANY.	FEET IN MINE.	SHARES IN MINE.	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.						
Alamo	300	6000	12 1/4	11 1/4	1/4	
Alpa Con	3600	72000	6 1/4	5 1/4	1/4	
American Flat	55	24000	6 1/4	5 1/4	1/4	
Bacon M. & M.	55	54000	6 1/4	5 1/4	1/4	
Baltimore Con	1040	104000	8 1/4	7 1/4	1/4	
Belcher	22	2200	28	28		
Best & Belcher	22	2200	28	28		
Bowers	22	2200	28	28		
Bukeye	16000	160000	12 1/4	11 1/4	1/4	
Bullion	2500	25000	12 1/4	11 1/4	1/4	
Caladonia	500	5000	12 1/4	11 1/4	1/4	
California	2000	20000	12 1/4	11 1/4	1/4	
Chollar-Potosi	2800	28000	6 1/4	5 1/4	1/4	
Confidence	150	15000	12 1/4	11 1/4	1/4	
Con. Gold Hill Quartz	150	15000	12 1/4	11 1/4	1/4	
Con. Virginia	1150	115000	8 1/4	7 1/4	1/4	
Cook & Geyer	1600	16000	12 1/4	11 1/4	1/4	
Crown Point	600	60000	12 1/4	11 1/4	1/4	
Dancy	200	2000	12 1/4	11 1/4	1/4	
Dardanelles	1200	12000	12 1/4	11 1/4	1/4	
Dayton	150	15000	12 1/4	11 1/4	1/4	
Eclipse	400	4000	12 1/4	11 1/4	1/4	
Empire M. & M.	150	15000	12 1/4	11 1/4	1/4	
Eschbacher	400	4000	12 1/4	11 1/4	1/4	
Fairmount	1500	15000	12 1/4	11 1/4	1/4	
Flour	1500	15000	12 1/4	11 1/4	1/4	
Globe	1500	15000	12 1/4	11 1/4	1/4	
Gould & Curry	1200	12000	12 1/4	11 1/4	1/4	
Hale & Norcross	400	4000	12 1/4	11 1/4	1/4	
Imperial	180	18000	12 1/4	11 1/4	1/4	
Insurance	2000	20000	12 1/4	11 1/4	1/4	
John Little	2000	20000	12 1/4	11 1/4	1/4	
Julia	2000	20000	12 1/4	11 1/4	1/4	
Justice	3000	30000	12 1/4	11 1/4	1/4	
Kentucky	85	8500	12 1/4	11 1/4	1/4	
Kickerhooker	1200	12000	12 1/4	11 1/4	1/4	
Kossuth	1500	15000	12 1/4	11 1/4	1/4	
Lady Bryan	3500	35000	12 1/4	11 1/4	1/4	
McMeans	3500	35000	12 1/4	11 1/4	1/4	
Mont.	1500	15000	12 1/4	11 1/4	1/4	
Nevada	3000	30000	12 1/4	11 1/4	1/4	
New York Con.	3000	30000	12 1/4	11 1/4	1/4	
Occidental	800	8000	12 1/4	11 1/4	1/4	
Overman	1400	14000	12 1/4	11 1/4	1/4	
Phil. Sheridan	1200	12000	12 1/4	11 1/4	1/4	
Pioche	2000	20000	12 1/4	11 1/4	1/4	
Rock Island	2000	20000	12 1/4	11 1/4	1/4	
Savage	800	8000	12 1/4	11 1/4	1/4	
Seg. Belcher	160	1600	12 1/4	11 1/4	1/4	
Seg. Caladonia	1000	10000	12 1/4	11 1/4	1/4	
Seg. Rock Island	1000	10000	12 1/4	11 1/4	1/4	
Senator	24000	240000	12 1/4	11 1/4	1/4	
Sierra Nevada	2000	20000	12 1/4	11 1/4	1/4	
Star Hill	5000	50000	12 1/4	11 1/4	1/4	
South Comstock	5000	50000	12 1/4	11 1/4	1/4	
South Overman	24000	240000	12 1/4	11 1/4	1/4	
Succor M. & M.	7600	76000	12 1/4	11 1/4	1/4	
Trenoh	2000	20000	12 1/4	11 1/4	1/4	
Tyler	2200	22000	12 1/4	11 1/4	1/4	
Union Con.	800	8000	12 1/4	11 1/4	1/4	
Yellow Jacket	1400	14000	12 1/4	11 1/4	1/4	
NEVADA.						
Adams Hill	5000	50000	12 1/4	11 1/4	1/4	
Alpa	800	8000	12 1/4	11 1/4	1/4	
Amador Tunnel	3000	30000	12 1/4	11 1/4	1/4	
American Flag M. & M.	3000	30000	12 1/4	11 1/4	1/4	
Arkansas	800	8000	12 1/4	11 1/4	1/4	
Belmont	3000	30000	12 1/4	11 1/4	1/4	
Bowery	3000	30000	12 1/4	11 1/4	1/4	
Chapman M. & M.	3000	30000	12 1/4	11 1/4	1/4	
Chollar-Potosi	100	1000	12 1/4	11 1/4	1/4	
Chief of the Hill	3000	30000	12 1/4	11 1/4	1/4	
Chief East Extension	3000	30000	12 1/4	11 1/4	1/4	
Columbus M. & M.	10000	100000	12 1/4	11 1/4	1/4	
Condon	2500	25000	12 1/4	11 1/4	1/4	
El Dorado South	5000	50000	12 1/4	11 1/4	1/4	
Eureka Con.	5000	50000	12 1/4	11 1/4	1/4	
Excelsior	1200	12000	12 1/4	11 1/4	1/4	
Harper	3000	30000	12 1/4	11 1/4	1/4	
Hayes	1000	10000	12 1/4	11 1/4	1/4	
Hermes	1000	10000	12 1/4	11 1/4	1/4	
Hine Ticket	3500	35000	12 1/4	11 1/4	1/4	
Huba & Hunt	3500	35000	12 1/4	11 1/4	1/4	
Ingomar	1000	10000	12 1/4	11 1/4	1/4	
Ivanhoe	3000	30000	12 1/4	11 1/4	1/4	
Jackson	5000	50000	12 1/4	11 1/4	1/4	
Josephine	5000	50000	12 1/4	11 1/4	1/4	
Junata Con.	5000	50000	12 1/4	11 1/4	1/4	
K. K. Con.	1000	10000	12 1/4	11 1/4	1/4	
Kentucky	1000	10000	12 1/4	11 1/4	1/4	
Kipston	1000	10000	12 1/4	11 1/4	1/4	
Lehigh	1000	10000	12 1/4	11 1/4	1/4	
Lillian Hall	1000	10000	12 1/4	11 1/4	1/4	
Louis	2400	24000	12 1/4	11 1/4	1/4	
McMahon	1000	10000	12 1/4	11 1/4	1/4	
Marion	3000	30000	12 1/4	11 1/4	1/4	
Meadow Valley	2400	24000	12 1/4	11 1/4	1/4	
Mocking-Bird	1200	12000	12 1/4	11 1/4	1/4	
Monitor-Belmont	1200	12000	12 1/4	11 1/4	1/4	
Murphy	2000	20000	12 1/4	11 1/4	1/4	
Nevada	800	8000	12 1/4	11 1/4	1/4	
Pacific Tunnel	2400	24000	12 1/4	11 1/4	1/4	
Page & Pausa	1000	10000	12 1/4	11 1/4	1/4	
Paving	1000	10000	12 1/4	11 1/4	1/4	
Phoenix	1000	10000	12 1/4	11 1/4	1/4	
Pioche	1000	10000	12 1/4	11 1/4	1/4	
Pioche West Ex.	1000	10000	12 1/4	11 1/4	1/4	
Pioche-Phoenix	1000	10000	12 1/4	11 1/4	1/4	
Potland	1000	10000	12 1/4	11 1/4	1/4	
Raymond & Ely	5000	50000	12 1/4	11 1/4	1/4	
Rye Patch	1000	10000	12 1/4	11 1/4	1/4	
Silver Peak	3000	30000	12 1/4	11 1/4	1/4	
Silver West Con.	3000	30000	12 1/4	11 1/4	1/4	
Standard M. & M.	18000	180000	12 1/4	11 1/4	1/4	
Star Con.	6300	63000	12 1/4	11 1/4	1/4	
Starlight	3000	30000	12 1/4	11 1/4	1/4	
Sterling	3000	30000	12 1/4	11 1/4	1/4	
Spring Mount	2000	20000	12 1/4	11 1/4	1/4	
Spring Mt. Tunnel	2000	20000	12 1/4	11 1/4	1/4	
St. Beecher	300	3000	12 1/4	11 1/4	1/4	
Washington & Creole	300	3000	12 1/4	11 1/4	1/4	
Watson	300	3000	12 1/4	11 1/4	1/4	
Yellowstone	300	3000	12 1/4	11 1/4	1/4	
CALIFORNIA.						
Alpa	1200	12000	12 1/4	11 1/4	1/4	
Bellevue	8000	80000	12 1/4	11 1/4	1/4	
Calaveras	3200	32000	12 1/4	11 1/4	1/4	
Chollar	2000	20000	12 1/4	11 1/4	1/4	
Chollar Mill	2000	20000	12 1/4	11 1/4	1/4	
Jon. Amador	2000	20000	12 1/4	11 1/4	1/4	
Ottowood Creek	2000	20000	12 1/4	11 1/4	1/4	
Dunderberg M. & M.	2000	20000	12 1/4	11 1/4	1/4	
El Dorado	1600	16000	12 1/4	11 1/4	1/4	
Eureka	1600	16000	12 1/4	11 1/4	1/4	
Gold	1600	16000	12 1/4	11 1/4	1/4	
Independent	1800	18000	12 1/4	11 1/4	1/4	
Keystone	1500	15000	12 1/4	11 1/4	1/4	
McJefferson	1500	15000	12 1/4	11 1/4	1/4	
Orville	1500	15000	12 1/4	11 1/4	1/4	
St. Lawrence M. & M.	1800	18000	12 1/4	11 1/4	1/4	
St. Patrick	1800	18000	12 1/4	11 1/4	1/4	
Tecumseh	3000	30000	12 1/4	11 1/4	1/4	
Yule Gravel	400	4000	12 1/4	11 1/4	1/4	
IDAHO.						
Empire	2500	25000	12 1/4	11 1/4	1/4	
Golden Chariot	750	7500	12 1/4	11 1/4	1/4	
Id. Elmore	1200	12000	12 1/4	11 1/4	1/4	
Manogony	700	7000	12 1/4	11 1/4	1/4	
Red Jacket	600	6000	12 1/4	11 1/4	1/4	
South Chariot	600	6000	12 1/4	11 1/4	1/4	
W. E. Gravel	1000	10000	12 1/4	11 1/4	1/4	
WHITE PINE.						
General Lee	1000	10000	12 1/4	11 1/4	1/4	
Mammoth	1000	10000	12 1/4	11 1/4	1/4	
Norway	1000	10000	12 1/4	11 1/4	1/4	
Orig. Hidden Treas.	1000	10000	12 1/4	11 1/4	1/4	
Silver Vein	800	8000	12 1/4	11 1/4	1/4	
Ward Beecher	2400	24000	12 1/4	11 1/4	1/4	
UTAH.						
Deseret Con.	2400	24000	12 1/4	11 1/4	1/4	
Wellington	3000	30000	12 1/4	11 1/4	1/4	
OREGON.						
Virtue	2000	20000	12 1/4	11 1/4	1/4	

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq't.	Sale.	Secretary.	Place of Business.
Alpa S M Co	Ely District	7	25	April 23	May 29	June 25	C D Squire	425 Montgomery st
Baltimore Cons M Co	Washoe	6	1 00	May 23	July 2	July 25	D T Bagley	410 California st
Buckeye G & S M Co	Washoe	10	50	May 7	June 9	June 9	O A Sankey	331 Montgomery st
Bowery Cons M Co	Ely District	5	20	May 14	June 25	July 6	C F Elliott	419 California st
Calaveras G M Co	Cal	5	50	May 13	June 16	July 16	T B Winward	419 California st
Empire M Co	Idaho	6	1 50	April 18	May 22	June 16	J W Willis	419 California st
Gold Mt G M Co	Holcomb Valley, Cal	25	1 25	May 15	June 20	July 10	J P Cavalier	513 California st
Hale & Norcross S M Co	Washoe	42	50	June 9	July 14	August 4	J F Lightner	438 California st
Imperial S M Co	Washoe	19	25	June 5	July 8	July 30	W B Dean	419 California st
Ingomar S M Co	Ely District	7	25	May 4	June 10	July 2	C S Neal	419 California st
Julia G & S M Co	Washoe	18	1 00	May 23	June 29	July 20	A Noel	419 California st
Manogony G & S M Co	Idaho	12	1 50	May 8	June 12	July 6	W F Borart	419 California st
Mint G & S M Co	Washoe	10	May 1	June 3	June 3	July 2	D A Jennings	419 California st
Newark S M Co	Ely District	7	2 00	April 20	May 25	June 19	D T Bagley	401 California st
New York Cons M Co	Washoe	9	1 00	May 12	June 12	June 20	H C Kibbe	419 California st
Verman S M Co	Washoe	29	3 00	June 1	July 15	July 31	W W Stetson	414 California st
Kureks, Nev	Eureka	3	8 00	April 21	May 22	June 10	H C Kibbe	419 California st
Rock Island S M Co	Ely District	4	25	April 13	May 20	June 15	B J Gray	438 California st
Rock Island G & S M Co	Washoe	3	1 00	May 13	June 16	July 9	J W Clark	418 California st
San Joaquin S M Co	Idaho	14	2 00	May 13	June 16	July 10	J W Clark	418 California st
Sierra Nevada S M Co	Washoe	33	2 50	May 14	June 19	July 10	R Wegener	414 California st
Sentator S M Co	Washoe	10	50	June 3	July 11	July 31	H Boyle	Stevenson's Building
St Lawrence M & M Co	Idaho	6	50	May 27	June 1	June 25	F B Boyes	411 1/2 California st
Thompson G & S C M Co	Washoe	25	25	April 25	June 25	July 25	F B Boyes	411 1/2 California st
Tyler M Co	Washoe	5	20	June 4	July 9	July 29	C K Duhrow	Merchants' Ex
Utah S M Co	Washoe	5	1 00	April 22	May 26	June 16	W B Dean	419 California st
Utah M Co	Washoe	11	May 8	June 8	June 8	July 8	C S Neal	419 California st
Woodville M Co	Washoe	7	1 00	May 23	June 27	July 15	A Noel	419 California st

A contract for performing the work is already let. Emerson, purchaser of the well known Drumm claim, in Happy valley, expects to commence washing next Monday. The new flume and 13-inch iron pipe are laid. All the appliances connected with the mine are first-class. Evans & McCann, engaged in tunnelling Tunnel ridge, have not got quite through the bed-rock yet. The rock is extremely hard, but they expect to knock a hole through in the course of a couple of weeks. The French company, who own the old "Boh Paul claim" in Chill gulch, are just commencing to run an incline. The tunnel will be about 450 feet long, in solid bed-rock. The location selected for running the new tunnel is down the gulch from the old one.

BANK BLASTING.—Thursday afternoon last two blasts, aggregating fifty barrels of powder, were exploded in the Dryden hydraulic mine, Chill gulch. Two tunnels were run into the bank, twenty and thirty feet in length, respectively. From the ends of the tunnels short drifts were run at right angles to them and then extended in a direction parallel with the main tunnels, the whole excavation being in the shape of the letter T. We are informed that the blasts did good execution, shattering the bank for a considerable distance back from the front and caving down a large quantity of gravel. A few lengths of the hydraulic pipe used in the mine were badly battered by the shower of rocks and cement thrown by the blast. Piping is to be recommenced immediately.

PRUSSIAN HILL.—Work is actively progressing at the Russian Hill mine, near Railroad. A new shaft is being sunk, and appearances indicate that the proprietors of the mine intend thoroughly to develop it.

The Orleans mine continues to improve as the drift is extended eastward. The ledge is over six feet thick, and every ton of the quartz will yield, at the very lowest estimate, \$100.

EL DORADO COUNTY.

MINING INTERESTS AT SPANISH FLAT.—Cor. *Mountain Democrat*, June 6: The majority of these men were here in early days, when every gulch and ravine paid pounds of gold every week, and it required but very little labor or skill to extract it. The money obtained thus easily was as easily spent, and now since they find themselves penniless, their force is gone, their energy is lost and they are living from "pan to mouth," waiting for something to turn up. "Tis true that we have two companies who are pushing their work ahead in a manner that shows their confidence in their respective claims. The Pleerville company's tunnel is now in 178 ft. They have cut one ledge 4 ft. wide and will be well rewarded for their labor. The Spanish Flat company, who have lately commenced work, are now in 40 ft. There are several large lodes directly upon the line of this tunnel which will be cut at the depth of 150 ft. or more from the surface. Now there is plenty of more room for 50 more companies, who would have just as fair prospects of success. Now we want a few energetic men who have capital or can command it, to come in here and develop it, and show it to be what it really is, one of the richest mining belts of the Pacific slope.

A REMARKABLE LEDGE.—We have been shown a specimen from the so-called "soapstone ledge" recently discovered by Leonard Reeg, about half a mile above Chile Bar bridge, on the north side of the South Fork of the American river. The specimen before us is richly studded with very bright gold, and is said to be but a fair sample of the ledge, which is from 15 to 20 ft. thick, between walls of soapstone and country slate. The gold-bearing vein matter feels and looks somewhat like soapstone, but is more translucent, has a clear greenish tint, and much of it rapidly pulverizes on exposure to the atmosphere. Our Spanish Flat correspondent pronounces it feldspar associated with granular asbestos. Others call it talcose slate.

INYO COUNTY.

COLUMBUS ITEMS.—*Borax Miner*, May 30: We are informed that the Mariotte furnace, at Sylva, will be ready for the fire on Tuesday next. The result sought is the smelting of ore without a blast.

Parties in from Lida during the week state that Gen. Page is buying up the indebtedness of the Lida mill, with the view of starting that concern to work at the earliest moment.

MARIPOSA COUNTY.

QUARTZ IN CATHAY'S VALLEY.—A gold-bearing quartz vein was discovered by Mr. Benj. Willis on his ranch in Cathay's valley, a few weeks since. It prospects favorably.

WASHINGTON MINE.—The mill connected with the Washington mine, which has been undergoing necessary repairs, recommenced running last Monday.

NAPA COUNTY.

PINE FLAT.—Correspondent *Reporter*, June 6th: The Hog's Back mines have been disturbed of late by men from different parts of the country coming on and jumping the Missouri, Lost Ledge, Geysers and Kentuck. But they were gotten rid of on easy terms, except in one case, in which I am told force had to be used. It is to be hoped it will rest here and be left to the courts to decide the case on its merits. The Oaklin Quicksilver Company, (formerly Lost Ledge) started three new furnaces on Monday, June 1st, and are doing good work.

QUICKSILVER.—Everything is looking well and work progressing at the Phoenix. Yield for month of June, 78 flasks of quicksilver.

The Reed mine sent down 19 flasks on Tuesday.

MINING ITEMS.—*Free Press*, June 6: We found the mines one of the hueiest places imaginable. Work is being pushed along vigorously, and the yield of mineral is good, and the prospects unexceptionable.

NEVADA COUNTY.

MINING AT RELIEF HILL.—Mining in the gravel claims in the upper portion of the county is now being prosecuted vigorously. The winter storm is over, the season has assumed its most favorable aspect, and water is to be had in abundance. At Relief Hill the miners are not on the great blue lead, but yet good mines are there, the gravel being the reddish brown, which frequently proves a very valuable mining ground. The principal claim there is the Eureka, upon which a tunnel of 1,400 feet in length has been driven in the last three years. During the past winter, and up to this time, the claim has paid regularly by drifting the gravel and washing it in sluices at the mouth of the tunnel. At the present time it is paying \$20 per day to the hand. One hundred inches of water are used. The Eureka Lake Water Company is also working ground at Relief Hill belonging to the company. They are now engaged on top sluicing, and are doing well. There are other claims at this camp, on some of which no work is being done at present. The water for the Relief Hill mines is supplied by the Eureka Lake Water Company, which has a large supply for this and neighboring districts.

NEVADA CITY ITEMS.—*Transcript*, June 2: The Little York Consolidated Company's claims are looking better than ever before. Some specimens about the size of a bird's egg were picked up from the bed rock the other day, and they are very plentiful.

The American Hill and the Manzanita hydraulic claims were cleaning up Monday. The Manzanita, in consequence of an immense cave, will be unable to clean up all their sluices. A large amount of gold, however, will be deposited by the two mines, and help to swell the proceeds of the county.

NORTH STAR.—*Tidings*, June 6: Report had it early this week that nearly all the employees of this mine had been discharged, and it was likely to be shut down soon. As near as we can learn, the suspension of work, even so far as it has taken place, is only temporary. It is understood that a change of management is soon to be made, and that work is impartially suspended for the better bringing about of this change.

KENTUCKY is idle at the present time, the company awaiting negotiations which are in progress in an Eastern State. These negotiations will probably secure to the company a fund sufficient to open the mine and put it on a paying basis. There must be a rich chute of ore in the Kentucky.

PLUMAS COUNTY.

LAPORTE ITEMS.—*Cor. National*, June 3: Our mines are in full blast now, there being an abundant supply of water. Gard & Orr, in their upper claims, have but one monitor at work. In their lower claims they have two at work tearing down the huge banks of earth. Immediately below, and south of Gard & Orr, are Gowell & Conly's extensive diggings. The Spanish Flat Co., under the able management of Capt. William Taylor, assisted by a huge monitor and four small pipes, are sending the gravel, dirt, rocks, etc., down Slate creekwards as though they meant business. At Secret Diggings, Superintendent Early is running two monitors, and will undoubtedly surprise those San Francisco capitalists who entrusted their property to his management, with an immense clean-up when water fails in summer. At Gardner's Point, east of Slate creek, Col. Baker has two large monitors in operation. The Pioneers, at Grass Flat, are still pushing their tunnel ahead toward the center of the hill. They are in some 3,500 feet or more. This company owns a large tract of mining property, that will, eventually, rank among the best hydraulic mining claims on the Pacific coast. At La Porte the Claybank Tunneling Co., who are running a tunnel under Bald Mountain, or in that direction, intend to tap the great mineral basin supposed to exist beneath. Their tunnel is in some 1,700 feet, all gravel and bedrock raising. There is a fine prospect of gold obtained in the gravel. The Bald Mountain Co. are also pushing their tunnel ahead.

OVER NORTH.—The North Fork Co., on Barker Hill, are running one pipe steadily, using 240 inches of water from the old Wagner ditch. They have 80 feet pressure and use a 3-inch nozzle. The water will last a month longer, and from the indications, they will clean up at least \$15,000. The same Co. are running a bedrock tunnel in the old Dutch Hill claim, and intend using the celebrated steam power diamond drills. Mr. Keddie has already surveyed 1 1/4 miles of the large ditch which the company propose to run from the Rice Creek Meadows, and also surveyed a tunnel 814 feet long, through the ridge between Butt valley and Clear creek for the ditch to pass through. The ditch will be some 20 miles long.

EAST BRANCH ITEMS.—McDougal & Co. are ground-slucing in French ravine, are doing well and have good prospects. The Taylor Hill Co. have all the modern improvements, giants, iron pipe, etc. They now have the finest bank of gravel ever uncovered in that claim; the gravel being 30 feet in depth, and prospecting uniformly and well.

SAN LUIS OBISPO COUNTY.

QUICKSILVER INTERESTS.—*Tribune*, June 6: This has been an active week in our cinnabar

interests. Two important mines have changed hands. Dr. Cochran, of San Francisco, has effected the purchase of the Oceanic mine, situated at the headwaters of Santa Rosa creek, near Cambria. The mine brought \$47,000. He is to pay \$2,000 within 30 days; \$20,000 in nine months, and the remainder in twelve months. We also learn that the Santa Cruz, known as the Frenchman's mine, near the Josephine, has been bonded by parties in San Francisco for a fabulous sum. These sales will give an impetus to our mining interests. All that is required is muscle and money to prove that there is abundant mineral wealth in this region. Time will demonstrate that our predictions are correct.

SONOMA COUNTY.

MINING ITEMS.—*Union Democrat*, June 6: There appears to be much activity in prospecting quartz leads in the county, and at those mines that are developed the preparation for getting to work is progressing as rapidly as the lateness of the season permits.

In the Soulsby mine last week a rich chute of ore was struck in the south drift, which has continued to increase from a small thread to a vein of some feet in thickness. A new mill will be erected at this mine as soon as lumber can be had.

At the Buchanan mine we learn that new battery etc., has been put in and that recently a new streak of very fine ore has been developed.

A tunnel is being run into the hill at the New Albany, which, when open to the vein, will enable ore to be taken out and the mine worked with economy.

A new mill is to be built at the Riverside, the lumber being now hauled for it. A fine grade of ore is ready for manipulation as soon as the mill is ready.

Nevada.

WASHOE DISTRICT.

CROWN POINT.—*Gold Hill News*, June 4: The daily yield is 550 tons of ore, from the 1,400, 1,200, 1,100, 1,000 and 900-ft. levels, all of which show no signs of giving out. Sinking the main incline is making steady progress.

The main south drift from the north cross-cut on the 1,400-ft. level is in 55 feet, still in ore that assays from \$250 to \$700 per ton. The ore breasts in the main west ledge on the 1,400-ft. level are yielding splendidly and looking very encouraging for the future. The ore breasts in the east ledge on the 1,400-ft. level are yielding rich ore, and are opening out with every indication of great extent as well as extreme richness. The north winze on the 1,400-ft. level has been again discontinued on account of the water, which is slowly but gradually draining. At the time of being stopped the bottom of this winze was still in rich ore.

OPHIE.—The bottom of the winze from cross-cut No. 1 on the 1,300-ft. level is still in good ore. The ore in the face of the south drift from cross-cut No. 2 on 1,300 ft. level has been considerably mixed for the past few days with porphyry, sometimes assaying well, and at others being of a very poor quality, although it now appears to be coming in more solid, and ore of a better character. The north drift from the winze in cross-cut No. 1 on the 1,300-ft. level still gives good assays, but the streak of ore which it is following is very narrow. Surveys and other preparations are being rapidly completed for the extraction of ore from the 1,455-ft. level. The incline shaft from the 1,700 to the 1,455-ft. level is to be immediately enlarged so as to increase its working capacity. The connection of the south drift on the 1,300-ft. level with the Virginia Consolidated mine is fast cooling the mine.

CONSOLIDATED VIRGINIA.—On the 1,400-ft. level the several cross-cuts are still driven ahead across the ore body. In these drifts, and in the various openings to the northward and southward of the main north winze, the ore disclosed is of a very superior quality. The ore breasts from the 1,300-ft. level upward are now yielding ore of extraordinary richness.

GOTTL & CURRY.—On the 1,700-ft. level the north drift is carried forward without cessation in the vein, and very satisfactory advancement is made. The development of the fourth station level is energetically continued. The grade of ore heretofore exposed in this level is too low to pay for extracting.

GLORE CONSOLIDATED.—The west prospecting drift at the second station in the upraise from the lower tunnel has cut the ledge, showing it to be much wider than on the level above, and the ore of greatly increased richness. This gives an almost undoubted ore development, extending a distance of three hundred and twenty feet in depth, and just how much deeper yet remains to be decided.

SUCCESS.—The necessary timber and lumber are on the ground and the erection of new hoisting works at the Grant shaft is making rapid progress.

KOSUTH.—Work in the north drift on the first station level has been suspended for the present, preparatory to resuming the sinking of the shaft for a new level.

SIERRA NEVADA.—A large extra force of workmen are now engaged in the erection of the new large hoisting building, the timbers of which are already framed and only need putting together. The pipe is laid and everything in readiness to start the hydraulic works in full blast to-morrow, though it will take one or two days after getting under way, to wash down the sides of the drain chute, so that a heavy run of large boulders will not clog the tunnel and sluices. Once under full headway with the great force and pressure, that is secured by

the great fall of the water, it is expected that an immense amount of gravel can be washed in a very short space of time. The ore bodies are showing considerable improvement in quality in the lower tunnel going west, the extent of which is not known. Daily yield 60 tons of ore.

BECKER.—There is no particular change to report of the ore-producing sections of the mine; all the ore stopes on the 1,400, 1,300 and 1,200-ft. levels are looking well and yielding abundantly. Daily yield, 550 tons of ore. The machinery of the mine is all in splendid working condition, the mills all kept steadily running, and the future of the mine looks prosperous and lasting.

HALE & NORCROSS.—The work of opening the 2,000-ft. level station from the incline has been commenced, and the incline is at the same time continued downward. The line of pumps is being extended from the 1,900 to the 2,000-ft. level. The appearance of the ground at this point is very encouraging and these deep workings are prosecuted with the utmost vigor. Some ore is also being extracted from the best looking seams on this level.

JULIA.—The increased and flattering ore developments on the 900 and 1,000-ft. levels have given new life to the company, and the erection of another heavy hoisting engine and new and powerful pumping machinery, has been commenced.

UTAH.—The shaft is sunk 70 ft. below the 400-ft. station. On the 400-ft. level the south drift has been extended 250 ft. south from the main east drift.

CHOLLAR-POTOSI.—There is no change of value to report of the ore producing sections of the mine. Daily yield 120 tons of ore, the assay value of which is \$30 per ton.

WOODVILLE.—Work in all parts of the mine is progressing as usual. The report of the trustees show the receipts of bullion for the past nine months to be \$30,219 05, the amount of assessments collected since July, 1873, \$133,000, making a total of receipts of \$163,219 05; total amount of expenditures during the same period, including the payment of \$36,533 of old indebtedness, \$160,041 69, which leaves a cash balance on hand of \$3,177 36.

NEVADA.—During the past two weeks the work in this mine has been concentrated upon sinking a winze to ascertain the value of a cross lead, met with in the face of the main south drift, 200 ft. from the main west drift or adit.

SILVER HILL.—The ore in the upraise, on the first level from the old St. Louis chimney, has been steadily improving for several days past, carrying a considerable quantity of rich brown sulphurets.

DAYTON.—The extraction of ore from the stopes on the second station level is prosecuted with usual vigor.

CALIFORNIA.—On the 1,400 and 1,500-ft. levels of the Consolidated Virginia shaft the drifts started north to connect with corresponding drifts from the Ophir mine are advancing steadily on the west side of the ore vein.

JUSTICE.—New hoisting machinery is being placed over the old Waller Defeat shaft, which will be completed in about a week, ready for ore extraction.

DARDANELLES.—This mine is to be brought into notice once more through practical development. During the past few days a new working shaft has been commenced at an eligible point on the company's ground, about 600 ft. southeast from the Overman shaft. The new shaft is already down 17 ft. to-day, and the work will be pushed ahead as rapidly as possible. At the depth of about 200 ft. this shaft will cut the ledge and pay ore.

IOWA.—The main west drift, 209 feet from the surface, is now being re-timbered for the purpose of resuming operations in that portion of the mine.

OVERMAN.—The main west drift on the 1,200-ft. level is still driven vigorously ahead.

MINT.—The bottom of the shaft last evening was in a heavy body of clay with every indication of a near approach to the hanging wall of the ledge.

FLORIDA.—The new shaft is down 75 ft. The company's new hoisting machinery is on the ground, and the boilers are being placed in position.

KNICKERBOCKER.—The face of the main west drift, on the 450-ft. level, still continues in quartz of a very promising character.

CALEDONIA.—Sinking the main shaft has been again resumed.

YELLOW JACKET.—Sinking the main incline is making the usual good progress.

BALTIMORE CONSOLIDATED.—Sinking the shaft is making about the usual progress, the flow of water at the bottom continuing steady and uninterrupted. The erection of the new machinery is steadily progressing.

NEW YORK CONSOLIDATED.—The new pumping machinery is all working with the utmost perfection.

LADY BRYAN.—Sinking the new shaft is making steady progress. The new machinery is working with the utmost perfection.

TYLER.—The ground in the face of the main east drift at the second station is working much softer and better, and the drift is progressing at the rate of 4 1/2 ft. per day.

MCMEANS.—The water blast is completed, and work in the face of the main tunnel has been resumed with good indications of some excellent ore developments.

SUTRO.—The main west tunnel is still being driven vigorously ahead, the rock in the face being quite hard, with a slight increase in the flow of water.

LEO.—The good ore streak in the face of the main drift still continues.

Reclamation of Swamp Lands.

At a recent meeting of the California Academy of Sciences, Mr. Chas. D. Gibbs, C.E., read a paper on the "reclamation of swamp lands." Mr. Gibbs is an old resident of California and has had great experience in the tle lands of the State. The various modes by which swamp and overflowed lands may best be reclaimed and brought into a state of cultivation will, of course, depend on many circumstances of which the nature of the soil is one of the chief considerations; also the rise and fall of the tides; together with slinices of sufficient capacity and properly placed to drain the land at least 18 inches below the general level of the surface. There are essential conditions on which alone the work of reclamation can be commenced.

This subject divides itself into so many branches, each so important, that we can only give a few condensed remarks from Mr. Gibbs' paper, in the hope of their being useful to those who are reclaiming; and to show some of the errors in the present manner of draining.

Drainage.

The first thing to be examined is the difference of level between the interior of the land to be drained and the bank of the slough or river on which the dike is to be constructed, in order to know the required depth of the ditch to enable it to keep the waters down to a level of 18 or 20 inches below the surface of the interior; for unless drainage is perfect the reclamation and cultivation are hopeless.

Frequently one or more small sloughs extend into the interior, which are of great advantage, forming a natural reservoir and drain for discharging the surplus water at every low tide.

The difference in the level of the land is frequently two or three feet.

Tide.

The next thing to be considered is the tides. In each lunar day of 24h. 50m. there are generally two high and two low tides, which are unequal in height and occur at unequal intervals.

In a series of observations on the tides, taken by me last summer on the coast, in San Mateo county, the result of one day shows that, commencing at low water large, it rose to 4.1 feet to high water small, then fell 1.7 to low water small, then rose again 4.3 feet to high water large; making a total rise of 6.7 feet, then fell 7.5 to low water large.

Now for some distance above the confluence of the Sacramento and San Joaquin rivers, the greatest rise and fall of the tide is six feet; high water small would average perhaps 3½ feet above low water large; and low water small about two feet above. A flood gate at a level with the lowest water would be most of the time under water and therefore afford but a very short run in the discharge of the water.

Flood Gates.

In the attempt to reclaim our tule lands, the flood gates have been a great source of trouble and expense, from the imperfect manner in which they are constructed and senced; in many places no calculation having been made for the amount of pressure they have to sustain; they frequently give way, and the sluice box is sometimes canted with one end four or five feet lower than the other. The reason is evident.

I speak now more particularly of the large sluices at the mouths of sloughs that are dammed they have generally been made of an open box 20 or 30 feet in length, 10 or 12 feet wide, and placed at the level of low tide. The levee being five or six feet high gives a gate, say 10 feet wide, 12 feet deep and three or four inches thick. This heavy gate, equal to about one-half a ton, is placed in the center of the box; consider now what a loss of power a small body of water, perhaps only one or two feet in depth, has, to raise the gate in discharging. But this is not the only error. We come now to the

Pressure of Water.

The weight of a cubic foot of fresh water is 62½ lbs. Water standing in an enclosure presses with equal force on the bottom and the sides of the junction, but the force on the sides will be in compound ratio of its depth. The pressure of a column of water a foot square, and six feet deep, equals 375 lbs., but the side pressure equals 1,312½ lbs.

Suppose we have an open sluice box 20 feet in length by ten feet wide with the gate in the center, 10x10 the square of the bottom outside of the gate=100 sq. feet x375 lbs.=37,500 lbs. or 18½ tons; and the pressure of each column 1,312½ lbs. x10 feet wide=13,125 lbs., or 6½ tons on the gate; width of water has no influence on side pressure.

Now, we generally find that these sluice boxes stand for some time until the water inside is reduced to the level of low tide, when, there being no resistance on the inside of the gate to counteract the enormous pressure outside, it gives way gradually day by day, until at last it is not surprising that it sinks outside and cants up inside; particularly when there is no sheet piling, only some inch or one and a half inch boards six or seven feet long put in the mud and tacked on at each end.

The same case occurs with the dams unless made sufficiently strong to stand the pressure, which against a dam 100 feet in length is at high tide about 65½ tons.

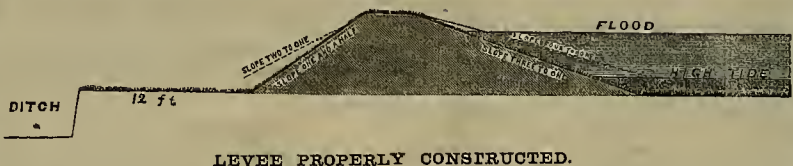
We have been referring to quiescent water; but in considering the forces of waves driven by wind, the pressure of flood tides, or the strength of a strong current against the embankment or flood gates, a large allowance must be made; it is scarcely possible, however, to reduce them to calculation, but we may safely add one fourth to the pressure. Great care should therefore be taken in selecting a site for a dam or flood-gate to avoid those spots that are exposed to any great currents or rush of tidal waters, particularly where a stream suddenly narrows, as the tide comes up very strong; and also to its exposure, with respect to the prevailing winds.

Where fresh water swamp lands are adjacent to high land, catchwater drains should be made to intercept the upland or external waters and conduct them off to a separate outlet.

Proper Level of Small Sluices.

The small sluices from the ditches or drains inside of the levee should be placed, if possible, sufficiently above the ordinary low water, to allow it to have five or six hours' run between tide and tide, beginning at half ebb and continuing to half flood tide; if placed at low water, the gate would be shut sooner by return of tide, although so long as weight of the water inside is greater, so long will it continue to run.

The best level therefore to afford the longest run, is probably between the mid-tide level and the lowest low water, or in fact as high as it will admit to drain the low land in the interior, 18 or 20 inches. The trunk or box sluice has



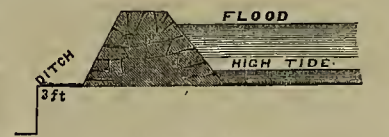
LEVEE PROPERLY CONSTRUCTED.

been used in the rice fields of South Carolina upwards of a hundred years, and has been found to answer better than any other. A good size for our use is about six feet wide by eighteen inches deep, with self-acting tide gates; if made of redwood and put in properly, they would last a long time, stand firmer, and are not liable to be thrown out of level by the pressure of water. They should be put down while you are making the embankment, as it is useful in keeping the land drained, and so facilitate the work. It is now more than twelve years since I furnished these plans to a gentleman on the San Joaquin, who found them to work well on his place.

The trunk dock connecting the outer end of the trunk with the river, should be wider than the sluice box, so as to allow the free egress of the water, and should also be deeper than low tide. The flood gates now being in place we can proceed to build the

Levee.

The materials of which the embankment is to be constructed will govern in a great measure the other requisites to be attended to in its formation. These materials differ essentially on the San Joaquin and Sacramento rivers in dif-



Levees Now Made.

ferent localities. On the San Joaquin we generally find a sod or turf of a peaty formation, which shrinks when dry about one-third; becomes very light and can either be burnt up or float away, while on the Sacramento it is composed of two kinds. In some places the turf has a sedimentary deposit of clay, which makes it firmer, heavier, and not so liable to burn. In other places the banks of the river are sandy, which is the most difficult material to manage, and the least to be depended on, and melts away like snar in water.

The first consideration is to determine the height of the levee to keep out the ordinary summer freshets, but it will not answer to have the levee of the same level, for in certain places it will be found necessary to raise it; for instance, I examined the water marks of the flood of '71 and '72 on trees about a mile apart on the same island where the bank was apparently the same height above ordinary tide, and found a difference of six to eight inches, which was caused by the confluence of two currents backing the water above.

Having determined the height that you wish to construct your levee add at least one-fifth for shrinkage and build it the proper height at once.

The distance from the ditch to the inner slope of the levee should be at least 12 or 15 feet, and from the outer margin to the river not less than 30 feet, and in some cases more; but it will depend a great deal on the formation of the bank, exposure to currents and winds.

The inner slope should be 1½ to 1; and the outer slope not less than three to one, or follow nature as far as possible, as the downward pressure of the water will assist to keep the levee in place, and the broader base will enable it to resist the inward pressure, which with a flood of five feet on the level will equal 45½ tons on every hundred feet in length, without allowing for the force of the current or wind. [The cuts on this page show the proper method of constructing levees and the improper

method on which many are making them now.—ENS. PRESS.]

Whilst the levee is yet wet, sow mesquit or Bermuda grass seeds on it, either of which will form a good sod to protect and bind the levee together and prevent it from cracking; also would form a good pasture for a few sheep or Angora goats.

Care should be exercised in running ditches into the interior; first the ground should be examined that you do not cut through float land, second to ascertain the level; for I have known a contract let to Chinamen to dig a ditch three feet deep, and when completed the water ran back and flooded the low land. Unless your levees and flood gates are properly constructed it is only a waste of money to attempt reclamation.

The Murchie Mines.

The Nevada Transcript says: We yesterday visited the mines owned by the Murchies, which are situated about a mile and a half east of this city on the Red Dog road. They have a hydraulic mine and two quartz mines. One of the latter is called the Lone Star, and the other the Independent. The Lone Star was struck a few years ago, while running a drain tunnel to the hydraulic mine. They have taken rock since from the ledge through this tunnel, which has never paid less, on an average, than \$21 per ton. Another tunnel was commenced

some time ago further down the side of the hill, which taps the ledge about 375 feet deeper than the first one. The ledge was reached about ten days ago, and we gave a short notice at the time about the rich rock found in it. There are now between 75 and 100 tons of rock taken out at this point, and it is difficult to find a piece that does not show rich in free gold. The gold is visible among the sulphurets with which the rock is heavily charged. We do not believe the same amount of rock can be found anywhere which will show so much gold as can be seen in this with the naked eye. It does not seem to be specimen rock, but a general distribution of gold through all the quartz. The ledge is two feet thick, and is very easily worked and taken out.

The Independent is about four hundred yards or more from the Lone Star. This mine is worked by means of a shaft, and the hoisting is done by steam power. The ledge averages from twenty inches to two feet thick. The shaft is down over 300 feet, and the ore has paid as high as \$75 and \$80; it averages about \$26 to the ton. The mine improves in looks as a greater depth is attained. The rock from both ledges is crushed at a mill belonging to the company, situated on Deer creek just below the mines. It is run most of the time by water power. An engine has been put in, however, and hereafter when water gets low, the mill will be run by it. The batteries have eight stamps, and the gold saving apparatus consists of copper sluices, grinders, rockers, etc.

The hydraulic mine has quartz boulders scattered all through the gravel; these have been saved and crushed also at the mill. They have produced gold enough to pay the expenses of running the mine. The lead in this gravel claim is very rich, and is but just barely opened. The Murchie family, consisting of five brothers and their father, own and work all the mines. Being practical miners, they make everything count. They have been doing a large amount of dead work in order to open out their mines, which are as yet comparatively undeveloped; but regular dividends have been received all through the time. Everything now is in good working order. The property, taken together, is one of the most valuable in the county. It has been opened up and developed by hard work, and its owners have the hearty wish of all for abundant returns for their labor.

IMPROVED DRAFT EQUALIZER.—The object of a new invention is to produce an equalizing attachment for three horses, to be applied to reapers and other vehicles, by which a greater effect is obtained, and the side draft regulated, as required. The weight of the tongue on the neck of the horses may also be adjusted. The invention consists of a curved bar which is attached to the tongue, and carries the rear extending bar, with regulating rod, which connects with and is adjustable on a cross bar of the bounds. Both bars together support the equalizing bar, and allow the adjustment of the same into any required position.

OATMEAL.—In answer to a correspondent, who asks whether oatmeal is heating to the blood, the editor of the Herald of Health says: Nearly all foods are to a certain extent heating; if they were not they would be worthless. Now from this standpoint oatmeal is a little more than half as heating as butter. As regards the fattening properties of oatmeal, brown bread, etc., if you are already to fat use more acid fruit as a part of your diet, and work harder. Butter and sugar are more fattening than fruit; avoid these to a great extent, also much milk and cream.

Pioche Mines.

From the local mining review of the Pioche Record, of May 31st, we take the following: Prospecting in the lower depths of our principal mines is being pushed as rapidly as circumstances permit, but thus far the explorations have not revealed any new features. During the past few days an effort has been made to resume sinking the main shaft of the Raymond & Ely, but the water came in too rapidly to permit of further operations with present appliances. This attempt and its lack of success show conclusively that until adequate pumping machinery is erected, nothing more can be learned of the nature of the lead at a greater depth than the 1,200-foot level. This observation will apply as well to the Meadow Valley, for the water at the bottom of No. 3 shaft will no doubt be equally plentiful as in the Raymond & Ely. We regret this, as we indulged in some faint hopes that as the Raymond & Ely was a perpendicular shaft, that with its powerful hoisting machinery, barrels or tanks might be raised with sufficient rapidity to keep this bottom clear. This expectation the experiment of last week proved to be fallacious, so further sinking is out of the question until the requisite means for raising the water are provided.

The bullion yield for the week, considering all things, is encouraging, amounting to \$78,989.89. If Pioche in its dullest time produces the precious metal at this rate, what may we not hope for when the season of its active prosperity returns, as we believe it shortly will?

Washington and Creola.

Since our last report about 25 feet have been added to the depth of the Mazappa shaft. The drift from the lower level running eastward to strike the shaft has also made good progress. The work on the west winze has been stopped, the air becoming foul. The middle winze is being sunk, and a connection will be made during the present week that will have the effect of affording better ventilation. The returns from the last crushing at the Floral mill were quite favorable, and so soon as the mill completes the necessary repairs, it will recommence on rock from this mine; that is, from the stock on hand, for at present no ore is being raised. A shipment of about \$6,000 was made during the week.

Raymond and Ely.

An attempt has been made during the last week to continue sinking the working shaft, but the flow of water was soon found to be too great to permit its removal without the use of pumps; so, therefore, the men were withdrawn. On the 1,200-foot level the drifts east and west have been started, following the ledge. The appearance of the latter presents little or no difference from the point where it was intersected by the crosscut. The remainder of the mine calls for but little remark. From the slopes of the upper levels ore is being extracted and shipped to the mills. The yield from the latter for the week is a little over \$20,000.

Meadow Valley.

No. 3 shaft.—The crosscut at the 1,200-foot level is now 59 feet in length, and must be in the immediate vicinity of the vein. The west drift on the 1,100-foot level is in 291 feet, and the east 191 feet. The vein on the western side appears very much broken, on the east presents but little change. The eastern drift on the ninth level is now 817 feet in length. The face does not offer any different appearance from last report.

No. 5 or Summit Shaft.—This is now 1,061 feet deep, and sinkings progressing as quickly as possible. The drift to connect with the ninth level of No. 3 is in 25 feet. About the usual quantity of ore is being raised from the mine and is yielding about the same results. At the mill operations are progressing as usual, without any occurrence out of the ordinary routine.

Newark.

The contractor is at work on the new shaft, formerly the Amador, and about 12 feet has been made during the past week. In the mine the winzes are being sunk from the lowest or 700-ft. level; is 200 feet in depth. From the fourth level upwards, stoping is going on in various parts of the mine, and about ten tons of ore are being raised daily. The mill is being kept actively employed on the company's ore and custom work, only having been idle one day since its possession was acquired, and that was necessary in order to effect some repairs. Bullion to the amount of \$16,000 was shipped during the week just elapsed.

American Flag.

The American Flag mine still presents the favorable appearance we have noticed of late. The shaft is being sunk as expeditiously as possible, and is now 85 feet below the ninth station. Above that level a number of men are at work stoping, and sufficient ore is being extracted to keep the mill employed. The shipment of bullion for the past week is about \$6,000.

In the Pioche, Portland, Havana, Chief of the Hill and other mines at work there is little or no change to report. Matters within these undertakings are proceeding as usual, and afford no room for additional comment.

ANTIMONY BLUE.—Kraus obtains this color by boiling tartar emetic with yellow prussiate of potash, and adding hydrochloric acid. The antimony does not enter into the composition of this color, but merely facilitates its formation.

USEFUL INFORMATION.

Waterproof Structures.

While one useful set of inventors is constantly striving to the utmost to furnish an efficient protection for buildings against the ravages of fire, another is endeavoring to counteract the equally damaging, though slower action of water. It is too evident to need proof that rain falling from above, and moisture absorbed from below, constitute an important element in that deterioration of structures which is continually going on. In all probability the damage done by weather to such buildings as the Houses of Parliament is mainly due to the action of aqueous vapor and rain, bearing in solution some of the gases which are invariably generated in large towns. Sulphurous acids from the combustion of coal, carbonic acid from the same source, and from the respiration of millions of inhabitants, and, possibly, hydrochloric acid from such operations as those of the Lambeth potteries, all tend to give the moisture always present in the atmosphere the power of attacking the carbonates of the alkaline earths which are usually employed for building purposes. The surface disintegration thus caused is the first stage in their deterioration, producing a roughness, which leads to a crumbling away of the material in successive layers.

Besides this chemical action of acid vapors there is a mechanical agency at work, similar to that which produces the disintegration of rock surfaces resulting in the production of soils. This is the absorption of water, and its subsequent expansion by frost, causing the fracture of the material by which it is absorbed. Manifestly the most porous stones are the greatest sufferers by this agency, though nearly all building materials are affected by it; for, as is well-known, both brick and stone are porous, some varieties extremely so. This porosity is the cause, not only of "weathering" on external surfaces, but of that slow creeping up of moisture into walls, resulting in the incurable dampness of dwelling-houses. The introduction of slate in the courses of brickwork is a preventive sadly too seldom employed.

As might be expected, many attempts have been made to remedy the evil alluded to. These attempts are of two kinds—chemical and mechanical. The most noteworthy of the chemical methods is that depending on the use of alkaline silicates with calcareous and magnesian stones. Here an interchange of acids and bases occurs, an insoluble silicate of lime or magnesia being incrusting on the stone, and an alkaline carbonate, and sometimes sulphate crystallizing out. The chief objections alleged against this system are the unsightliness of the efflorescence, and the necessity of removing it, as well as the length of time necessary to effect the reaction. Still, there is little reason why a chemical method of this kind should be a failure, and if that important element in all chemical changes, time, is only at command, a chemical protection against decay would seem to be efficient as any.—*Iron.*

PETROLEUM FOR FUEL.—The Titusville, (Penn.) *Herald* says: With the present low prices the question of employing petroleum as fuel is again agitated. The latest intelligence upon the subject comes from Canada, where a man named Relighine has been trying an experiment on a locomotive belonging to the Canada Southern railway, with an average consumption of four gallons per mile. The engine steamed quite freely and made good time with a train of 30 cars. This would be about a barrel for over 10 miles. The most simple contrivance for burning petroleum is either by means of a jet of steam or compressed air passed at right angles over the orifice of a pipe in such a manner that the oil will be sucked and thrown into the furnace in the form of a fine spray, where, if properly adjusted, it will undergo perfect combustion. The cost of the apparatus is trifling. The whole point, it seems to us, turns upon cheapness, and as the market might go up rapidly with any marked increase of demand, there seems to be an indisposition to try the experiment. There can be little doubt that oil will be found in many parts of the country where at present it is not thought of, in which case a new and unlimited market for its utilization as fuel would naturally follow.

CLEANING GLASSWARE.—Dr. I. Walz, who has devoted considerable attention to the uses and properties of potassium permanganate, has devised the following neat and effective method of cleaning glassware: The vessel to be cleaned is filled, or, if large, rinsed, with a moderately dilute solution of potassium permanganate, the contact of liquid being prolonged till a film of hydrated manganic oxide has been deposited; the solution is then poured away, and the glass vessel rinsed with some strong hydrochloric acid. Chlorine is then formed, but not enough to cause inconvenience; and, acting in the nascent state on the organic matters, it speedily converts them into substitution products, which are absolute in the slight excess of acid or water.

DETECTION OF CURARINE.—F. A. Fluckiger finds that curarine may readily be distinguished from strychnine by the fact that its chromate is amorphous, that of strychnine being easily obtained well crystallized. Further, air-dried chromate of curarine dissolves in concentrated sulphuric acid with a pure and very intense blue color, while the chromate of strychnine gives a violet.

Inventors' Mistakes.

Inventors are too liable to think that upon the granting of their patents success is certain, which it would be if they would display as much business tact as they have done inventive ability. Upon the granting of a patent the inventor thinks his "future made," and thereupon sits down, waiting for the dollars to come without any effort on his part to induce a flow of coin into his treasury. After a season of such inactivity, with poverty finally staring him in the face, he parts with his patent for a small sum to a shrewd business man, who places the matter before the public in a business-like way, advertises it in mediums through which it reaches the attention of all in need of that particular invention, eventually creating for it a large demand, and bringing a correspondingly large revenue to the advertiser.

The day has passed when people have any desirable thing to sell may expect to reap success by waiting for the public to seek them out. At the present day, every important branch of manufacture has its own special organ; if an inventor has anything to sell which is worth buying, the attention of purchasers is expected to be called to the fact through such publications, as well as through the mailing of circulars, etc. A large proportion of the patents granted are for inventions of real merit, and of value to the public, and inventors and the public are alike sufferers for this very want of business tact on the part of inventors, who should, immediately upon the issuing of the patent, have it properly engraved and published in such journals as reach readers who require the use of such particular inventions. "Masterly inactivity" has ruined many an inventor who might otherwise have been to-day in the possession of a fortune.—*Newark Manufacturer.*

GRAINING MIXTURE IN DISTEMPER.—Take equal part of yellow ochre, burnt sienna, and raw umber, and mix with ale, beer, or vinegar and sugar. Then with a bristle brush spread on the mixture—or as termed by grainers, "rub in" as smooth and evenly as possible; or, it may be applied with a sponge, going over only a small portion or panel at a time, for the distemper colors dry quickly. Then with a graining comb made of leather or gutta percha, make the coarse grain by drawing the comb over the surface in a zigzag manner; then with a finer steel graining comb draw over the whole panel again in the same direction; then with a piece of soft muslin folded over the thumb of the right hand, make the heavy grain or figures by wiping out the graining mixture; this done lightly pass the fine comb over the work again, or with a thin flat bristle brush, lightly brush over the surface to blend or soften the heavy lines. Proceed in this manner over all the parts to be grained, and by imitating the real wood—as near as possible, a very fair piece of work will result. A professional grainer would overgrain, and mottle, and stain, and glaze, etc., but as a description of these processes would tend to embarrass the amateur, we do not deem it judicious to extend upon these extras.—*Am. Homestead.*

ADULTERATION OF ALBUMEN.—Albumen is frequently sophisticated with gum, dextrine, farina, etc. To ascertain this, about thirty grammes of the albumen are dissolved in lukewarm water. After some time the mass is stirred. If the liquid contains many white clots the quality is low, that is a notable amount of the albumen has been coagulated by evaporation at a too high temperature. The solution is mixed with acetic acid, and alcohol is added to the clear acid liquid after decantation. If gum is present a precipitate will appear. If it contains amylaceous matters these can be recognized by the addition of iodide of potassium. Albumen often contains sugar, which is detected by means of Fehling's test-liquor.—*Iron.*

METHOD OF RENDERING PHOTOGRAPHS SOFT AND BRILLIANT.—Engelmann accomplishes this object by placing in front of the sensitized plate, during half of the time of exposure, a plate of ground glass, rendered more transparent by rubbing with sweet oil. The ground glass is then removed, and the plate exposed as usual, so that two negatives are produced, one overlying the other, on the same collodion film. The development and printing are conducted as usual, but a rather shorter exposure is advised. With these negatives both positive and negative retouching are said to be unnecessary.

TANNING.—A recently patented process consists mainly in forcing, by the aid of pressure or exhaustion, tanning or other liquids through the pores of the skin or hide, which is laid on a suitable filtering or porous surface on the bottom of a vessel, into which the liquor is then poured. The skin or hide is removed from time to time and immersed in a stronger liquor, after which it is again laid, the other side up, on the filtering surface. To remove lime from the skins, they are thus impregnated with a weak saccharine solution and washed in water.

AROMATIC MIXTURE.—A formula from the collection recently published, for use in the Philadelphia Hospital, affords a pleasant vehicle for administering nauseous remedies. It consists of coriander and angelica seeds in spirits of wine, water, glycerine and syrup.

THE BREATH.—A disagreeable breath can be avoided by keeping the mouth clean, the teeth filled and sound, the stomach healthy, the skin active, and by always breathing pure air.

GOOD HEALTH.

The Future of Hygiene.

Dr. Jarvis, in the *Sanitarian*, inquires: Where shall sanitary science be taught? And to whom shall it be taught? I will answer this question by and by. In the meantime, let me ask: *Who need sanitary instruction?* In my opinion, the people need it—and the medical profession need it. Let the elements of hygiene be taught in every common school, in every academy, in every private school, and in every college in the country. The bodies of our youth need the saving grace of cleanliness. And when they grow up they will teach their children the simple and health-saving rules of hygiene. But where shall we begin to dissipate ignorance? Why, of course, begin with the medical profession, and begin with undergraduates.

It was a damaging thing, when one of the officers of health of New York city gravely informed Judge Whiting that "highjinnicks" meant "a bad smell arising from dirty water,"—damaging both to politics and medicine, but most damaging to the people, whose most important interests were in the hands of ignorant keepers.

But what shall I say of medical schools and hygiene? If medical schools taught hygiene *per se*, and insisted upon their graduates being "posted" in the principles of sanitary science, officers of health would at least have the merit of being sanitarians.

What hope is there for hygiene in this country? Will it succeed? Can it be planted among the people? And will it grow and flourish? In my opinion, hygiene has a grand future in this country; I will tell you why I think so. The American youth—and especially those who come here to study medicine—have a practical turn of mind; they do not believe much in theories—they believe in the useful first, and after that, the beautiful. It is an acknowledged fact, that our medical men are among the best practitioners in the world; they have more science on the other side of the ocean, but our students are always wanting to know what will cure their patients, and they generally find out, too. Now, I hold that this practical turn of mind is the best kind of soil for the cultivation of sanitary science. Let the seed be planted there—it will take root and grow, and it will be perennial; the seed will be scattered over the length and breadth of the land, and the harvest will abound more and more; the calamities that befall Memphis and Shreveport will not occur again; the beauty and healthfulness of our rivers will not be marred by dead animals, by the refuse of factories, and by sewage; there will be more to live for, and life will be more desirable; there will be less sickness and less need of medicine. Hygiene will be invited to come to our banquets; she will be a perennial guest in our homes; she will be the presiding genius of our hospitals; she will be sculptured in marble and wrought in bronze in our public parks; and she will be raised high above medicine, and enthroned in the Capitol of the nation with Liberty.

PETTENKOFFER SAYS, in the *Herald of Health*: The difference of temperature between a place sheltered from the rays of the sun and a neighboring one exposed to them, produces a motion, a current, because bodies of air of unequal temperature are also of unequal weight. They are not in equilibrium, and seek to re-establish it by motion. Any one may easily convince himself thereof who, on a hot day with calm air, walks alternately over places exposed to the sun and sheltered from it. As soon as he comes into the shade of a cloud, a house or a tree, he feels at once a soft wind rising. The shade not only protects us against the direct solar rays, but it increases also the ventilation of the shady place. The fan acts on the same principle. The panksh in the bungalow, by increasing conduction and evaporation, keeps the blood of the European at its normal temperature of 99°². When the temperature of the air rises to 140°, when the walls of the bungalow are no longer cool enough to provoke radiation from the heated human body, man is reduced to cooling by evaporation. It greatly depends upon the state of dryness of the air how far he succeeds. The drier the hot air is, the better is it able to withdraw water from the skin, from the respiratory organs, from the wetted floors, and consequently the more heat from the human body. The moister it is the less it is able to act thus. In order to give you an idea of the quantitative differences in play, we will consider the losses of heat by respiration as they take place at different temperatures and different conditions of moisture of the air we draw in. In twenty-four hours the quantity of this air is on an average 2,000 gallons. It has been calculated that by the process of respiration a person loses 1,172 caloric units when the air is at 32° and quite dry, 1,116 when it is half saturated by water, 1,060 when it is completely so. The difference between the two extremes is only a small percentage of the whole loss. But when the temperature is 86° the above numbers would be respectively 1,096, 760, and 420.

Dr. BEARN, of New York, says the golden decade in the age of the mind, is between thirty and forty, the silver, between forty and fifty, the brazen, between twenty and thirty, and the iron, between fifty and sixty years. It is impossible, of course, to fix definite limits, which would apply equally to all.

Checking Coughing, Sneezing, Etc.

There are many facts which show that morbid phenomena of respiration can also be stopped by influence of arrest. Coughing, for instance, can be stopped by pressing on the nerves on the lip in the neighborhood of the nose. A pressure there may prevent a cough when it is beginning. Sneezing may be stopped by the same mechanism. Pressing also in the neighborhood of the ear, right in front of the ear, may stop coughing. It is also true of hicough, but much less so than for sneezing or coughing. Pressing very hard on the top of the mouth inside is also a means of stopping coughing, and I may say that the will has immense power there. There was a French surgeon who used to say, whenever he entered the wards of his hospital, "The first patient who coughs here will be deprived of food to-day." It was exceedingly rare that a patient coughed then.

There are many other affections associated with breathing which can be stopped by the same mechanism that stops the heart's action. In spasms of the glottis, which is a terrible thing in children, as you well know, as it sometimes causes death, and also in whooping-cough, it is possible to afford relief by throwing cold water on the face, or by tickling the soles of the feet, which produces laughter, and at the same time goes to the gray matter that is producing the spasms and arrests it almost at once. We cannot always prevent cough by our will; but in many instances these things are possible, and if you remember that in bronchitis and pneumonia, or any other acute affection of the lungs, hacking or coughing greatly increases the trouble at times, you can easily see how important it is for the patient to try to avoid coughing as best he can.—*Ex.*

Lead Poisoning.

The *Annales de la Société de Médecine de Grande, Belgium*, speaking of lead poisoning caused by the use of a hair preparation, relates the case of M. R. W., aged fifty-five, who was suffering from muscular rheumatism, affecting chiefly the deltoid and other muscles of the shoulder; the patient had also lost the use of both arms. Dr. Crocker, the attending physician, had the painful parts wrapped up in cotton wadding, and prescribed lime juice and narcotics. A great improvement was rapidly felt, but it only lasted for a short time, for a month afterwards the patient's fingers were struck with paralysis. No blue tinge could be seen on his gums, though he had suffered with severe colics at various times. The water used for drinking purposes was obtained from a brick well and kept in wooden pails; the culinary utensils offered nothing worthy of notice.

At last, after long researches, Dr. Crocker discovered that for the 15 years preceding, his patient had been in the habit of using, for blacking his hair, a certain liquid that he prepared himself by adding to a pint of water two teaspoonfuls of sugar of lead and three teaspoonfuls of sulphur. This he used to apply to his hair at least once a week. The physician stopped entirely the use of the mixture, and under the influence of electricity and the use of iodide of potassium the colics disappeared and the patient recovered entirely.

AN INCESSANT WANT.—One of the incessant wants of man is air. We want air mainly to nourish us and to keep us cool. The quantity of air inhaled and exhaled by an adult in 24 hours amounts on an average to about 300 cubic feet, or 2,000 gallons. What we take in and give out during 24 hours in the shape of solid and liquid food, occupies on an average the space of five and a half pints, which is equal to one three-hundredth of the volume of the air passing through our lungs. It will astonish you to hear, perhaps for the first time, that this amounts to 730,000 gallons in one year, and to be reminded of that continuous work which goes on day and night—a never ceasing bellows-blowing, by which the organ of our life is kept in play. Of course the quantity of air flowing round the surface of the human body is greater than that. Do not object that air is something so light that it need not be taken into account. It has some weight; water, certainly, is 770 times heavier, but our daily 2,000 gallons have for all that a weight of 25 pounds avoirdupois.

NOXIOUS GASES IN WELLS.—Lives are frequently lost by noxious gases in wells. This may be prevented by the adoption of the following very simple means: Take some pieces of carpet, or common sacks, and make them up into a loose bundle, nearly as large as the area of the well. Enclose in it a brick to give weight, and attach to the bundle a rope of sufficient length to reach the bottom of the well. Throw this bundle down the well, and haul it up again as quickly as possible. Repeat this operation rapidly for ten minutes, and the atmosphere of the well will become quite innocuous, as may be proved by letting down a lighted candle. The bundle, as is easily understood, carries before it a quantity of fresh air from the surface, and this, of course, displaces the foul and dangerous air from the bottom.

BATHING.—Delicate people may bathe daily if they do it in a warm room, in tepid water, and use much friction and little water. They ought to bathe at least three times a week. The morning is a good time, and so is the middle of the forenoon.



W. B. EWER.....SENIOR EDITOR.

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CAZIN'S JIG.—We gave, in a recent issue of the Press, a description of Cazin's Automatic Continuous One-plunger Jig. A description of the machine is also given in the last Annual Report of R. W. Raymond, U. S. Mining Commissioner. Mr. Cazin writes us that both notices necessitate supplementary information on his part, to this effect: For some time past he has constructed the jig with four or five sieves, and to end, thus allowing a reserve sieve for catching the mixtures.

The enterprise originated by S. N. Stranahan and others, about a year since, to tunnel through from American to Bear river, Placer county, and thereby open up a section of mining country to development which would otherwise be impossible, has been incorporated under the name of the Bear River Tunnel, Flaming and Mining Company. Capital stock, \$10,000,000.

NEW PLACERS.—Thirty miles below the Japa placer mines, in Lower California, rich mines are said to have been discovered recently, and miners are flocking to the new diggings. It will not be long before they flock back again, with complaints about scarcity of water. That part of the country has paid as little to Americans as Utah mines have to Englishmen.

The People's Northern California Stage Company has been incorporated, for the purpose of running stages in Shasta, Trinity and Siskiyou counties, and elsewhere. This company has secured the mail contract from Shasta to Yreka, on the Trinity Center and Scott Valley route, and will put on a daily line of stages, commencing 1st of July.

SALE.—H. M. Newhall & Co. sold at auction, this week, the entire mill property of the Rising Star Silver Mining Company, located at Flint, Owyhee county, Idaho Territory. M. J. McDonald was the purchaser, at \$8,100; the property cost \$68,000.

The Emma Mine.

The meeting of the Emma Mining Company was held in London, on the 15th ult. A very extended account appears in several of the English papers, from which we should judge that the meeting was rather a stormy one. The report of the directors and managers, of which we gave an abstract last week, was read and adopted, and the meeting adjourned to June 19th.

The report, as we stated before, was a very discouraging one, etating that they must depend entirely on new discoveries for future ore supplies from the mine. Very naturally the character of the report dissatisfied many of the shareholders, who would much rather have had a favorable report, so that they could sell their stock at as little loss as possible. This is one reason, probably, why the meeting was such a stormy one. We have not the space even to give a simple condensation of the report of the meeting, or comment on some of the statements made, but content ourselves with a few remarks concerning the management of the mine. In looking over some of the Salt Lake papers, it appears to a casual observer, as if they and their correspondents were more eager to get up an excitement over strikes in the mine, than to stick to actual facts. They pitch into Mr. Attwood for exercising unusual caution in keeping everybody out of the mine, and then give credence to the reports of correspondents as to the immense reserves of ore in sight and rumors of rich strikes. The managers at the mine send statements to the directors, contradicting the rumors of rich strikes, and wish the mine to stand on whatever merits it possesses; correspondents concealing their names, who are unable to get into the mine to examine it, send articles to the news papers describing new strikes and rich bodies of ore; and who are to be believed? Surely it seems to us that the gentlemen in charge of the mine ought to be believed before those disinterested (?) parties who make statements not borne out by future explorations, and who fear to sign their real names to their effusions. Managers, known by name, have reputations at stake, while unknown correspondents have none.

People write to Salt Lake papers and purpose to misrepresent the facts. One correspondent half quotes Mr. Murray's report, and then wants to know how it was that if the mine was exhausted they could pay above expenses \$131,000. If he had foinised Mr. Murray's report in the quotation, he would have known where the ore came from, for Mr. Murray said that all the ore left in the mine "was the leavings of the old workings, scrapings of the walls, ore that may have been entombed by the cave, old fillings and second-class ore on the dump." That is precisely where the ore came from that produced the bullion this year; but by suppressing a few lines of Mr. Murray's report, the whole facts were misconstrued.

Mr. Attwood is also misrepresented by plenty of people, most of whom, however, have stoek to sell, no doubt. The Utah Mining Gazette quotes a statement by Mr. MacDougal, made at the meeting, saying that Mr. Attwood had been asked who the manager of the Illinois tunnel was, and that he did not know, whereupon some scornful remarks were made concerning him. Now, Mr. Attwood was not asked any such question. He was asked if Mr. Park owned in the tunnel, and replied that he was under the impression that he did, but had no proofs. Perhaps Mr. Park had told Mr. MacDougal or some of the Salt Lake correspondents, but he had not told Mr. Attwood, or he would have said so.

Now we protest against the wholesale denunciation of the managers and directors as schemers until it shall have been proved that they are such. And as the Superintendent of the mine recently said, is it perfectly fair to assume that every expert who visits the mine and reports favorably on it must necessarily be an honest man and every person connected with the management a knave?

Is it not more probable that the gentlemen connected with the mine will make more reliable statements than parties having stock to sell, who write anonymously to the papers? Surely there has been enough misrepresentation about this and other Utah mines, to injure the mining interests there, without letting it go any farther. If there is plenty of ore in the mine and Mr. Attwood says there is not, any reliable expert who examines will expose the falsehood and Mr. Attwood's reputation will be gone. But unfortunately for these very disinterested (?) parties (owning stock), three reliable experts fully corroborate Mr. Attwood's views. But we notice that the reports of Clarence King, E. S. Blackwell and Andrew Murray are conveniently slurred over or ignored entirely by the people who so industriously circulate stories of rich strikes in the Emma.

The American name has been sufficiently disgraced already by the transactions connected with this mine, and for the sake of the future of our mining interests, it is to be hoped that our brethren of the press in Utah will be careful not to swallow everything told them by correspondents who are interested in misrepresenting this mine. If a few of these "experts" and would-be managers should get hold of the property, there would be immediately a rich strike and at the same time plenty of stock for sale. It is for the interest of Utah that misrepresentations should cease and that the real state of this mine should be made public.

The White Pine Tunnel.

The Senate Committee on Mines and Mining have reported with amendments a bill granting certain rights to aid in the construction of the tunnel under White Pine mountain. It grants 2,000 feet on the east side on all ledges discovered and not heretofore claimed, two sections of land at the mouth of the tunnel, and requires the expenditure of \$250,000, within two years from the passage of the act, and the same sum each year thereafter, until at least four miles shall be completed.

It is understood that Sargent opposed the bill in committee, on the ground that ample facilities are granted by the general mining laws, and that this bill is only an egg to be hatched into another scheme.

In view of the fact that the committee has reported favorably on this project, it is to be hoped that all the mining companies anywhere within a radius of a few miles of the proposed tunnel, will immediately interpose such objections as they may think proper, and see that these objections are laid before Congress. It will be much better to do this now than to wait a few years, until three or four hundred thousand dollars are expended on the tunnel, and then begin to hunt up reasons why the tunnel is objectionable. Moreover, it would save the projectors of the tunnel a great deal of trouble, time and money, if this suggestion should be adopted. The Sutor tunnel business has caused such a waste of ink and paper, such a waste of words, and so much commotion generally, among not only the common miners in Nevada, but the members of Congress in Washington, that the people do not want to see a repetition of the subject. If the White Pine tunnel is to be of any service, the people in that part of the country should encourage it; if it will only benefit a few, let the others throw cold water on it at once and try to drown it out, but not wait till it is half completed before taking steps to block the way. At all events, do one thing or the other immediately, do not encourage it willingly at first and then vituperate the scheme and the promoters when you change your minds. Above all things, if there are to be contracts, see that they are drawn properly, and stick to them when signed, or do not sign at all.

Economy in Using Quicksilver.

In corroboration of the views of certain of our correspondents in regard to "economy in the use of quicksilver," "C. H. A." informs us of the fact that on Mack's mill, at Benton, Mono county, Cal., only enough quicksilver is used in the harrelle to form a hard amalgam, which adheres to the copper balls, the process used being that invented by Mr. Aaron. In this case the economy consists only in the smaller working stock of quicksilver required, as the final loss was, and perhaps still is, in that mill large. This is ascribed by some men in this city, to the fact that so little is used.

But having watched the process for five years, our correspondent is in a position to assert that the loss at Mack's mill is not due to using too small a quantity of quicksilver, and the remedy, though not apparently understood in that mill, is very simple, and will be fully explained in the long promised series of articles on our correspondent's method of amalgamation, which are now in course of publication.

The practice of working a "dry" amalgam was introduced by Mr. A. B. Williams, with the express purpose of avoiding a loss of quicksilver, and our "C. H. A." has experimented on it, and carried the principle still further, as will shortly appear; but it seems to him, that except for the fact that a smaller working stock is required, there is no advantage in using so little. The real saving of quicksilver in the process lies in another direction, though the fact remains, that the use of amalgamated surfaces of copper, or other suitable metal, will effect a certain economy.

ANOTHER BENEFACTOR.—The will of J. Edgar Thompson, the well known railroad man, who died in Philadelphia recently, provides that the Trustees are to appropriate the remainder of the net income of the estate, after payment of specified sums for so much as may judiciously be applied thereto, to the education and maintenance of female orphans of railway employees, whose fathers have been killed while in the discharge of their duties. Preference is to be given—first, to orphans of employees engaged upon the Pennsylvania railroad; second, to those of the Georgia railroad, between Augusta and Atlanta, Ga.; third, to those lines controlled by the Pennsylvania railroad, by lease or otherwise; fourth, to those of the employees of any railroad company of the United States of America. The estate is valued at about two million dollars.

BIG DITCH.—A correspondent writes from Baker county, Oregon, as follows: "The El Dorado ditch is now running water to some of the richest mining ground in the world. This ditch is 100 miles long, and carries enough water to supply thousands of men. The mines are rich, the climate healthy, living cheap, and cost of travel here reasonable."

The Lightning creek (Cariboo) claims have taken out in less than a year past, 26,504 ounces of gold, worth in Victoria \$17.50 per ounce, or an aggregate of \$570,445.90 in value.

A New Mining Bill.

A bill has been introduced in Congress, which requires every person or corporation, claiming mining locations upon quartz lodes which shall have produced minerals to the gross value of \$5,000, to file application for patent within one year from the enactment of this bill; and in case no adverse claim be filed, final proof must be made and the land be paid for at the rate of \$5 per acre, within six months after. It is also provided that all applications heretofore made without appearance of an adverse claimant, shall be complete, and the land paid for at \$5 per acre, within six months from the enactment of this bill; and in all cases where adverse claims have been or may be filed, filing for a patent and payment at the rate of \$5 per acre shall be made within six months from the rendition of final judgment.

This bill appears to apply to quartz lodes alone, no reference being made to placer claims. It will certainly have the same effect as the Negley amendment would, if passed. The Negley amendment, however, applied only to the Comstock, while this bill is general and is applicable everywhere, the Comstock included. The new bill contains a clause which will have exactly the same effect as the Negley amendment, as "all applications heretofore made, without the appearance of an adverse claimant, shall be complete and the land paid for within six months."

A number of the mines on the Comstock have applied for patents, and never took them from the office or receipted for them; if the law is passed, these patents must be taken out. Accordingly the boundaries of the claims must be defined, and as the objectionable Sutor Tunnel clause appears in all patents to mines on the Comstock, the owners of the big mines there have a new bill to fight. If there is to be any law compelling miners to take out patents for their claims, such a one as this is very good; since only those which have produced something are compelled to take out patents, and partly prospected claims are left alone.

MOLASSES AND STAMP-HEADS.—"C. H. A." sends us the following item: In looking over a file of the Press for 1867, I notice the account of a fire-proof cellar which was built with earth and molasses, and it reminds me that the Chinese frequently build houses in the same way. I once made a rather queer use of molasses myself. It was in the Silver Sprout mill. One of the stamp shoes could not be kept in; I waited till the mechanics gave it up, and then went at it myself. The socket in the stamp-head was so large that it required a good deal of sacking, besides wedges, to fill it. Under and over each layer of sacking and wedges, I smeared molasses freely, dusting it over with pulverized ore. When that shoe was put in its place it stayed there.

HOLCOMBE VALLEY MINES.—The San Bernardino Guardian gives these items concerning the Holcombe valley mining district: There are now between 300 and 400 miners in the valley. About 30 buildings are in the course of erection. Holcomb enports one hotel, three restaurants, one store, two butcher shops, two laundries, three saloons, one bakery, three carpenter shops, two blacksmith shops, one quartz mill in active operation and one saw-mill. Jamee B. Greene has gone to Grass valley for a 20-stamp-mill, to be put up in Jacoby cañon.

A DECISION has been rendered in the Circuit Court of Nevada, in the case of I. L. Regua, et al., vs. William Blackwood, et al., to the effect that a valid possession of mineral land may be acquired for the purpose of catching tailings, and that such possession cannot be interfered with by other subsequent claimants who assert a right to enter and take the tailings without any title higher than that of the first possessor, upon the ground alone that the land is mineral and therefore open to exploration.

ALMADEN.—Owing to the constant throng of visitors at the Almaden quicksilver mines, to the hindrance of the work, the superintendent has found it necessary to adopt a rule restricting the admission of visitors to the redmition works to Thursdays only. Visitors will not be admitted to the mine at any other time.

A SUIT involving the title to the principal mines in the Pine Flat district will come up for trial at the next session of the Sonoma district court. This suit, in addition to the pecuniary interest involved, will attract attention from the nice questions of law relating to mining locations in Sonoma.

The Central Pacific Railroad Company employ 26 men, watching 30 miles of track across the Sierras. Their business is to travel back and forth on sections of the road, and look out for rocks that are liable to roll down and obstruct the track.

The employee of the Crown Point mine subscribed \$947.60 for the benefit of John Leary, who, two months ago, lost two fingers on his right hand, and was otherwise injured by a premature explosion of giant powder, in that mine.

MINING has been commenced in all the camps in Deer Lodge county, Montana; but the supply of water in many places is still short; consequently but little has been done.

That Quicksilver Monopoly.

One of the recommendations of the Ways and Means Committee on the pending Tariff bill, is to place quicksilver on the free list. Mr. Morrison, of New York, objected to it. He said that last year Spain produced 36,600 flasks, Russia, 11,000 flasks, and Austria, 9,000 flasks. All produced by convict labor, against which well-paid American labor must compete. The entire production of the world is about 90,000—not enough to supply the demand of the world. Our miners want it cheaper; but if they knew the fact that if we do not collect a duty from it, the Rothschilds get the difference, and they would not gain a dollar, they would be the last men in the world to ask us to do it.

"The mines of Spain are owned by the Rothschilds, who are so wealthy and produce so much quicksilver that they establish the price everywhere. Whenever our mines cease to produce what is required here, the Rothschilds send us quicksilver; otherwise they do not. Now, if we take off the duty, the Rothschilds get this 15 per cent. instead of our own bleeding and suffering treasury. This is the whole fact in regard to the matter, and I do not see the policy or philosophy of the charity proposed by the Committee on Ways and Means.

"Now, these gentlemen have been told there is a monopoly among quicksilver producing mines in this country. At one time it was so. Three or four years ago the New Almaden, the principal quicksilver mine in the country, ran behind some \$300,000 or \$400,000, which it owed to the bank of California. That bank was about to foreclose, take possession and own the mine. They made a bargain with the New Almaden mine that they should have the entire production for two and a half years at \$31 a flask. They had no sooner made the bargain than they put the price up to \$85 a flask. The Rothschilds joined them. The miners throughout the country were obliged to pay an enormous price for quicksilver. That monopoly has expired, and none of these men are connected with each other, and there exists no monopoly now. They are entirely distinct, and each American mine is independent of any other. The fact is, there is no quicksilver enough in the world to supply the demand. Our mountains are full of it, and it is an industry that needs protection. We should encourage the searching of our mountains for this metal, which in former days was called a noble metal."

The *Call* quotes these paragraphs and proceeds to state that "the public here do not doubt that a combination exists on this coast to put up the price of quicksilver, for not a discovery is made in California which promises an additional quicksilver supply, which does not draw around the locality speculators. There is great danger that the quicksilver mines of California will all fall into the hands of a single organization; in which case we do not doubt that the supply will be doled out so as to tax the mines to their utmost capacity."

If there is any single organization in this country or in Europe with money enough to buy up all the quicksilver mines in California, and the will to do it, we are very much mistaken. Perhaps the *Call* is not aware that with quicksilver as high as it is, every owner of a quicksilver claim in the State thinks he has a fortune, and wants half a fortune on his chances. They all want to sell out, but they all want heavy prices and do not like it because capitalists are not as enthusiastic as they are.

These "discoveries, which promise an additional quicksilver supply," do not draw speculators, as the *Call* states. The fact is that nine out of ten of the owners of these claims want to sell to parties who can work the mines. It takes labor and money to develop these mines into paying properties, and labor and money to prove whether they are worth being developed. Let a capitalist who intends purchasing "cinnabar," show his head anywhere in the Coast range, and he is forthwith dragged to several hundred locations, all of which are for sale. And this is not all; the owners of these claims may be seen for months at a time in this city, trying to induce capitalists to invest in cinnabar, and not one in fifty succeeds. Furnaces are needed and men are wanted. Neither can be procured without money. The prospectors have no money and can get none, and if the *Call* can point out to them the method by which they can secure the aid of capital, it will do much more good to the mining community than by harping about a monopoly that does not exist.

The price of quicksilver is regulated by the laws of supply and demand. The old monopoly is dead and gone. There are too many mines for one company to control, and too small a production with too large a dividend for the price to be low. The mining interests of the Coast would be greatly benefited, if the price was 60 cents, instead of \$1.35; but growing about "monopoly" will not reduce it. What is wanted, is capital to open out these new mines, and increase the production so as to provoke competition. When this is done, the price will fall; until then, it probably will not. Most of the speculators who have bought into the new discoveries thus far are men who have bought to develop a little and sell to companies for higher prices. These men unfortunately do very little good, since they endeavor to get rid of the property on any representation, whether the claims are worth anything or not. Cinnabar mining is too uncertain to draw out many capitalists who are eager to put their money into it.

Geology of the Emma Mine.

In connection with the report made by Mr. Attwood, Manager of the Emma mine, to which we referred last week, were several diagrams showing certain geological features. We give two of these diagrams this week, designated in the report as plans No. 1 and No. 2. Plan No. 1 is a geological diagram showing anticlinal fold



Fig. 1. Diagram Showing Position of Rocks in which Emma Vein was Found.

and position of rocks in which the Emma vein was found. Plan No. 2 represents transverse and horizontal section, showing shape and size of the ore deposit found in the Emma. In the report to the shareholders Mr. Attwood says: To avoid fatiguing you with scientific details in relation to the large amount of geological data I have obtained and collected from a most careful "study" and also "survey" of the rocks in which your mine was found, I have

the latter and other outside companies. The "slide," from all observations I have so far been able to make, has taken place subsequent to the formation of your ore deposit, and has also been one of great magnitude, judging by the portions so far exposed. Sixth: The portion of the limestone rocks in which your ore deposit was found has evidently been the part upheaved. Small pieces of ore and vein matter are found implanted in the foot wall of your

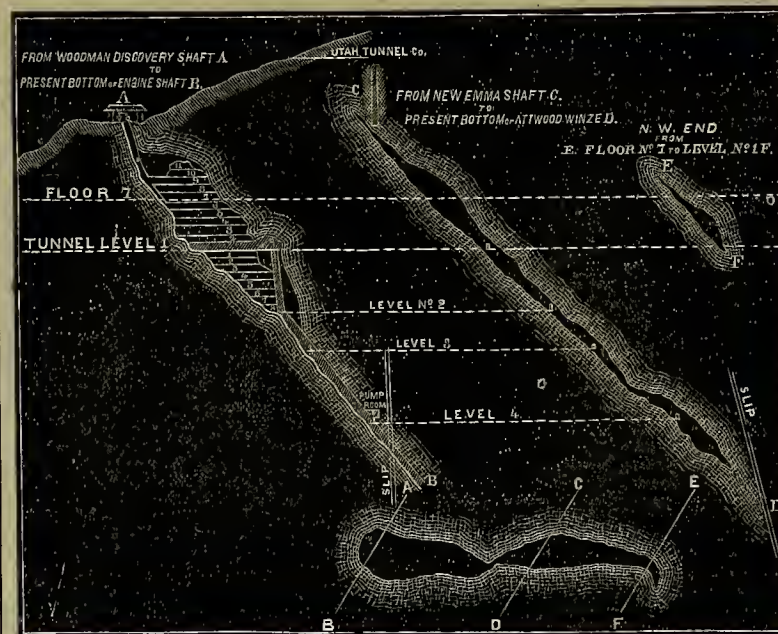


Fig. 2. Transverse and Horizontal Sections of Ore Deposit in Emma Mine.

prepared a geological diagram to accompany this report, which is marked plan No. 1, and I have now come to the following conclusion: First: The Emma vein (or as it ought to be rather termed, "deposit," "it" is a "bed vein," or in other words, a mineral deposit, lying between the enclosing strata of rock, and conformable in its "course" and "angle of dip" to that of the enclosing rocks. Second: The Emma vein lies in a bed of the lower silurian limestone, and in what may be termed metamorphic limestone, in which all traces of fossiliferous remains have been consequently obliterated. Third: Fossils, undoubtedly "corals," have been found in the rocks, which I call middle silurian, but they are so obliterated that it is impossible to determine their geological age with any degree of certainty, therefore I have been compelled to draw my conclusions chiefly from a careful study of the stratigraphical features of the rocks in which your deposit was found, as well as from the neighboring geological sections, which are wonderfully exposed for several thousand feet in height within half a mile of the Emma mine. Fourth: That the porphyritic dyke marked in plan No. 1 has been instrumental in supplying the original cavity (in which your mine was formed) with its minerals,

lower workings, leaving what a miner calls a "dirty tail," showing plainly in which direction the rocks have been thrown. (See plans Nos. 1 and 2). Seventh: A most important feature attending the "pitching out" of your ore deposit is, that all ore and vein matter disappears before the "slide" was cut, in both the engine shaft and finally in the Attwood winze. (See plan No. 2). Eighth: Contrary to the ordinary rules of mineral deposits, the galenas and sulphides are found in the upper workings of your "deposit," and the sulphates, carbonates, oxides, etc., are found in the present lower portions; which fact may be accounted for in a great measure by the water level, and which level may be said to commence at level No. 2. Near the present bottom of the engine shaft I find a natural drainage, but of a limited size, as it will not permit more than 100 gallons per minute to escape; and, from all observations made on the subject, I consider the water finds its way to the surface along the line of the "slide."

EXTENSION OF TIME.—The President has signed the amendment to the mining law of May 10th, 1872, extending the time for the first annual expenditure on mining claims.

The Negley Amendment.

The Supplemental Mining Bill to the Mining Law of May 10th, 1872, providing that the companies on the Comstock lode shall obtain their patents, or in other words define their boundaries, was referred, as is usual, to the Senate Committee on Mines and Mining. When Senator Jones became a member of that committee, objections were made that he was an interested party and should not sit in judgment on the Bill. That these objections were well taken was proved by the subsequent action of the Committee on Mines and Mining, who agreed to refer the Bill to the Senate Judiciary Committee. This latter committee have just made an adverse report on the Supplemental Mining Bill and House amendments thereto, and say they have considered in connection with them various briefs, arguments and views of Sutro and his associates upon one side, and of various mining companies on the Comstock lode in Nevada on the other. The committee then quote the Sutro Tunnel Charter Act of the Legislature of Nevada, April 4, 1865, the agreement between the Sutro Tunnel Company and the Chollar-Potosi Mining Company, April 13, 1866, and the Sutro Tunnel Charter Act of Congress, approved July 25, 1866, and say: It does not appear that Sutro and his associates have complied with the requirements of the contract; but he and his associates have long since commenced the prosecution of said work, have spent considerable money, and have made considerable progress therein. Sutro insists that the mining companies have conspired together to delay and defeat his operations, and have forfeited any equitable right to complain of his non-compliance with the contract; while on the other hand, the companies assert that they have not so conspired, or otherwise acted to his injury, beyond what they were entitled to do for the protection of their own legal rights. The present contract between these parties really turns upon the construction to be given to the Act of Congress of July 25, 1866, above cited; it being declared by Sutro that he has acquired against the occupants of the mines the lawful right to prosecute and complete the tunnel and to collect from the operations of the mines, by force of that Act of Congress, and independent of any title, under the agreement referred to, two dollars per ton and other compensation named in the contract; and the opposite parties contend that if this be so, the Act was passed under misapprehension by Congress, and that they ought to be relieved from the effects of it.

This Act contains no reservation of any power in Congress for its repeal or modification, and the committee are not satisfied that any improper means were used for its passage, or that it was not as well understood as Acts of Congress generally are when they are passed. In this state of things, the companies now ask Congress in effect to relieve them from the operations of said Act, if they are affected by it, and Sutro asks Congress to assist him by further legislation in forcing the companies into an attitude by which he can more easily compel them to pay the two dollars per ton, etc., when his tunnel shall have been completed. It will be seen, therefore, that the respective rights of the parties to this controversy are purely private questions between themselves, depending upon the grant of the Legislature of Nevada, the Act of Congress, and the contracts and business transactions of the various parties. This being the case, the committee are of opinion that the questions at issue are properly those of judicial cognizance, and that under the circumstances it is not the duty of Congress to interfere in aid of either party; but they ought to be left, as all other questions of private rights between citizens should be left, as from time to time they may arise, to the determination of a judicial tribunal or to a settlement between the parties themselves; and as the bill in question, as well as the amendments by the House of Representatives thereto, is deemed on one side or the other to directly or indirectly affect their pending dispute and contested rights, the committee recommend that the bill be indefinitely postponed.

This bill—properly known as the Negley Amendment—was intended to compel the productive mines on the Comstock lode to procure their patents. By obtaining their patents, the boundaries of their claims would be defined, much to the gratification of outside claims, especially to the eastward of the lode, the owners of which fear to take any steps toward obtaining a patent until the rich companies define their boundaries. That the owners of the rich mines do not wish to define their boundaries is very evident from the violent opposition they have made to the bill. This opposition was ostensibly made against it because the patents contain a clause relative to the royalty to be paid to the Sutro tunnel, and the fight was made on that point. But as the companies will probably have to pay this royalty in any case, if the tunnel is ever constructed, and they, of course, know that fact, it is very plain that the opposition to the bill was only maintained so that the boundaries of the claims should not be definitely defined. If these men are working on their own ground, they need not fear to define their boundaries; if they are not, the proper owners of the ground should have possession of it, and get what they can out of it.

McCann, who has been for several weeks prospecting on a quartz vein near what is known as the "Donnybrook Slide," on Sherlock's creek, Mariposa county, unexpectedly discovered a vein of copper.

Silver Mines.

The wealth of silver mines is historic. We are informed by Humboldt, in his Essay Politique, that the yield of the Mexican mines since the Conquest until 1803, had been two thousand and twenty-seven million nine hundred and fifty-two thousand dollars, all of which had been produced from a few central spots, and the mining confined to a comparatively limited circle.

Mexican Mines and Mining.

The register coinage of the mint of Mexico, from the year 1733 to 1860 shows \$1,742,573,107. When we remember that the royalty to the King of Spain, to whom, until the commencement of the 19th century, the Mexican states paid tribute, was one fifth, or 20 per cent. of the yield, and take into consideration the royal monopoly of quicksilver and gunpowder, the result seems astounding.

The Mexican method of mining was crude and simple. The ore, as well as the water from the bottom of the shafts, was generally brought to the surface upon the shoulders of *teneros* (carriers) over ladders. Their *crustas*, or crushing mills and amalgamators, were of the rudest possible character, and were run almost wholly by mule power.

Immense Returns.

The following is the registered yield of a few mines on the American continent:

Biscaña	\$ 16,000,000
Santa Anita silver mine	21,347,210
Valencia silver mine	31,813,486
Rayas silver mine	35,421,014
Veta Madre silver mine	235,935,736
Veta Madre of Guanajuato	800,000,000
Veta Grande of Zacatecas	650,000,000

The Paravallon silver mine, when first opened, produced \$20,000 per day for five years, when a torrent of water from the mountains filled the shafts and swept away the improvements. It was opened again, and for the succeeding ten years yielded \$50,000,000, when it was again abandoned in 1696, and not opened again until 1781, when it was vigorously worked for eight months, the ore taken from it in that period yielding \$11,600,000.

The different members of the celebrated Fagoajo family of Mexico are estimated to have received during fifty years' working of two veins over \$16,000,000 as profits.

The Carmen vein, north of Durango, in the State of Chihuahua, among the mines of *Btopilas*, has produced enormous yields of silver. From this mine, three masses of pure malleable silver were taken, weighing, collectively, 870 pounds.

Silver Mines of High Altitude.

The best silver mines are those of high elevation. It has been the experience in Mexico, and it is a well known fact, that the mines of Great Potosi, which have produced over one thousand millions, are worked at a height exceeding that of Mount Blanc.

Fuller, in his treatise on silver mines, says: "Wherever, in any part of the world, silver mines have been worked, they are worked now, unless from some unexplainable cause. The lack of machinery, the existence of war, and the invasions of Indians have, as in Mexico, familiarized our minds with the idea of abandoned mines. But they have all been abandoned for some other cause than that they have been exhausted. We know of no silver mining regions in the world that have given out."

Inexhaustible Riches.

The mines of Mexico, originally worked by the Aztecs, before the Spanish conquest, are worked still. The mines of the Andes have given forth their wealth for more than three centuries. The mines of old Spain have been worked from the middle ages, and are in working condition now. In Hungary the same mines worked by the Romans before the birth of Christ, still yield their steady increase. The silver mines of Freiberg, in Saxony, worked from the eleventh century, have no diminution. In Bohemia, Tyrol, Norway and Sweden, on the Ural and Atlas mountains, and indeed wherever the discoveries of silver mines have been made, we believe, without exception, the mines continue to be worked to the present day, and are generally more productive now than at any time during their past history. Silver mining, for permanent and rich returns, has had its parallels in no other business.

NEW MACHINERY AT THE CONSOLIDATED VIRGINIA.—An addition has been made to the Consolidated Virginia works, which extends the full length of the west end of the main building. In this will be placed the Burleigh compressor, which is to furnish compressed air for driving the engines and drills in the lower levels of the mine. The compressor will drive two engines (stationed at winzes) and four Burleigh drills. These underground engines will be sufficiently powerful to sink the winzes to the depth of 700 feet. The foundation for the compressor is now being laid. In the addition in which the compressor is now being set up will be placed a large amount of machinery for doing iron work. There will be a large lathe, a planer, a drill and a shaper. This machinery will be driven by an upright engine. All of this new machinery is expected to arrive here shortly.—*Enterprise*.

THE OPTIC NERVE.—By a microscope examination of the retina and optic nerve and the brain, M. Bauer found them to consist of globules of 1-2,800 to 1-4,000 of an inch in diameter, united by a transparent viscid and coagulable gelatinous fluid.—*E. Lovett*.

The Mullins & Ryan Gravel Claim—A Lucky Purchase.

This claim, situated on Central Hill, has been worked for over seven years, during which time a tunnel has been run 1,200 feet in search of the lead, but until lately without success. After spending all their means in what seemed to be a wild goose chase, the proprietors—Messrs. Mullins, Ryan, and the Harkins Bros.—stopped work. One of the partners went to Oregon, one to San Francisco; and, although the other two stayed here, they were unable to make any headway in opening the mine. This was the condition of affairs when Messrs. Dyas and Montgomery bought into the claim, some ten months ago. Already had \$50,000 been expended in searching for the lead, and the prospect was indeed gloomy. Notwithstanding this, after the new proprietors had made a careful survey of the ground, they came to the conclusion that the lead was there, and that they could do what others had failed to do—find it. With an expectation that it would be a work of time and necessitate the investment of much filthy lucre they made the venture. And now comes the strange part of the story. Under the new management the tunnel had not been driven over four feet, when the lead was found and gold was visible in the gravel on all sides. They had struck the famous Blue Lead, one of the "dead rivers" of California, and in which has been found some of the best paying claims in the State. There has been no claim struck in Calaveras for years which will compare in richness with this. The claim is 800 feet in length, and the pay-streak is 110 feet from rim to rim, with a thickness of seven feet independent of the crevices, which are abundant. After the lead was struck there was considerable work required to put the claim in working order, but that is now all finished. The first washing from the lead was cleaned up last week and we are informed amounted to twenty-six hundred dollars. The claim is now paying about twenty dollars a day to the hand. It will undoubtedly last for years, adding much to the prosperity of our county, and encouraging others to venture their capital here.—*Calaveras Citizen*.

CHARCOAL AND BULLION AT EUREKA.—The Eureka Sentinel of the 31st says: The charcoal receipts for the 30 days ending last evening were as follows: Richmond, 74,390 bushels; Hoosac, 50,000 bushels; Ruby, 29,000 bushels; Eureka Consolidated, 90,000 bushels; in all, for the month, lacking one day, 523,300. The bullion product for the same time, with to-day's included (which we have approximated in order to give the full month's returns), has been: Richmond, one furnace 31 days and one 16 day, 877,780 pounds of crude bullion; Eureka Consolidated, one furnace 31 days and one 24 days, 908,600 pounds; Hoosac, one furnace 26 days, 346,000 pounds; and the Ruby Consolidated, one furnace 12 days, 110,000. These figures give a grand total for the month of 2,237,780 pounds or nearly 1,119 tons. Who shall say that these are not encouraging results when we come to consider the great drawbacks against which we have had to contend from the first to the present instant of the month? Eureka has good cause to exult over them. The shipments were: By the Richmond, 255,504 pounds of refined bullion, free from all the base metals but lead; Eureka Consolidated, 603,584 pounds of crude bullion; Hoosac, 132,676 pounds of crude bullion; Ruby, 80,000 pounds; which make in all 1,071,764 pounds for the month, leaving a balance on hand yet to be shipped of 1,166,016 pounds. The bullion shipped through Wells, Fargo & Co.'s Express to the Bank of California, up to last evening, includes 11,834½ ounces, valued at \$10,797.47.

MINING INTERESTS AT EUREKA.—The mining interests are in a very flourishing state, indeed, and every day is adding to the common prosperity. Our mines are, as a rule, richer, better and more extensive, as regards their ore deposits, than they have been known to be at any preceding period in the history of Eureka. These facts are being abundantly evinced by the amount of ore extracted, and also by the quantity of bullion produced and shipped hence to New York, San Francisco and other quarters. The figures, which we give below, too, showing the result produced by six furnaces for the month ending to-day, will add to our testimony in favor of the above proposition, and will, we doubt not, be read with no little interest by those who have been searching for a place of permanent location.—*Sentinel*.

A HUGE NEW MILL.—The Consolidated Virginia Mining Company will shortly erect in this city an immense mill for the reduction of their ores. This mill will stand to the northward of their waste-dump, and will front on F street. The mill building will be 208 feet in length by 190 in width, and it will contain 60 stamps, 30 pans and settlers, and other apparatus in proportion. About 200 machinists and iron-workers at San Francisco are engaged upon the machinery for this mill, and the greater part of it will soon be completed and ready for shipment. The company own several acres of ground in and about where the mill is to be erected, they having bought all the lots and buildings in the vicinity. When this first mill is completed a second of the same size will be erected alongside of it.—*Enterprise*.

The coal production of the United States amounted last year to 45,413,340 tons; the corresponding production in 1872 was 42,749,241 tons.

Let Us Have Figures.

A point is now reached in our mining history when mere statements of the appearance of mines, the size of veins, the character of the ore and the amount of work done have ceased to be of any avail in inducing capitalists to invest in Utah mines; in other words the speculative period has passed away, and we must now come down to business principles if we would secure the co-operation of men of means and energy.

The questions now asked are, what is the daily yield of your mines? What amounts of ore and bullion are you shipping? What is the cost of extraction, smelting, milling, etc.? All indicating that no more gopher holes, salted mines, or other swindles can be palmed off on an excited public. What is needed and what we must demonstrate by actual figures is that profits are being realized from our mining, smelting and milling operations, and until this is accomplished we have but little hope that capital to any great extent will force its way here.

Hitherto there has been too much reticence on these subjects, resulting in great difficulty in obtaining reliable information. Ordinary letters, such as are written in the form of correspondence from the various camps amount to but little in creating an interest in our mining affairs. The day for that kind of information has passed, and instead thereof information must be supplied of a more definite and argumentative character.

To this end we invite the co-operation of superintendents of mines, mills and furnaces throughout the Territory. At all times we shall take pleasure in publishing statements of a statistical character, as it is from these men of business take data for their operations, and such only interest the class of legitimate operators we are seeking to induce to invest in Utah.—*Utah Mining Gazette*.

COLOMA.—On Thursday last, with a friend, we sauntered out for a walk, and almost before we were aware of it, were half way to Coloma, the point where the first discovery of gold in this State was made, and concluded to pay the old mining camp a visit. All that now remains of its former greatness as a flourishing mining camp are two long rows of tumble-down buildings on the principal streets, containing only two stores of general merchandise, two saloons, a hotel, tailor shop, shoe shop, etc. There is but very little mining now done in the vicinity, but agriculture and horticulture are quite extensively and profitably carried on. The town lies in a basin through which passes the South Fork of the American river, surrounded by steep mountains from five to eight hundred feet in height. There are but a few thousand acres of land in this basin, but they have been put to good use, and at this season of the year, leaving out the dilapidation of its main street, Coloma comes very near being a second garden of Eden. The altitude is in the neighborhood of eight hundred feet lower than that of Placerville, and vegetation is fully three weeks farther advanced. They have had ripe strawberries and green peas for several weeks, and we plucked ripe cherries from trees upon the grounds of Robert Chalmers, the celebrated wine manufacturer. The scenery surrounding the town is really enchanting, and no tourist should consider that he had "done" California until he visits Coloma.—*El Dorado Republican*.

THE BLAKE HOSE.—A hose to meet the requirements of fire service must be eminently light, compact and impervious, as well as durable and easily kept in order. Leather hose is heavy and filthy, requiring constant oiling; while the demerits of the "four-ply" gum hose are its extreme bulk and weight, and its rapid decay. Unlined canvas hose is light and strong, but not impervious. Seamless rubber-lined hose does not admit of perfect union between the envelope and its lining. In order to meet this objection, the Blake hose is made by calendaring pure gum through the pores of strong duck, then coating each side with pure rubber, sewing the fabric up and vulcanizing the whole together. Both rubber and duck are mildew-proofed. The new hose is light and strong.—*Journal of Franklin Institute*.

RECIPES FOR GLUE.—1. Powdered chalk, added to common glue, strengthens it. 2. A glue which will resist the action of water is made by boiling one pound of glue in two quarts skimmed milk. 3. For fire and waterproof glue, mix a handful of quicklime with four ounces of linseed oil; thoroughly lixivate the mixture, boil it to a good thickness, and spread it on tin plates in the shade; it will become very hard, but can be dissolved over a fire, like common glue, and is then fit for use.—*Jour. of Ap. Chem.*

Microscopic examinations of thin sections of various rocks is attracting a great deal of attention in Germany, and every mineralogist now supplies himself with a microscope and a cutting or rubbing machine for the manufacture of sections. A recent work by H. Rosenbusch on this subject shows the varieties and peculiarities of the internal structure of rocks, as revealed by the microscope and polariscope.

IMPROVED MODES FOR PREPARING MEDICINES.—In these gelatine, glycerine, and water, together with a certain quantity of medicine, is compounded and poured out on a plate divided into small equal squares. When dry, it is loosened from the plate, and each square forms a dose.

The Mineral Resources of Texas.

The following is from a recent report on the mineral resources of Texas:

Iron Ore.

The iron deposits of Northwestern Texas are the most remarkable character, equalling in extent and richness those of Sweden, Missouri, New Jersey and New York. They include almost every variety: magnetic, spastic, specular and hematitic ores. The largest deposits of magnetic iron ores are situated in Mason, Llano and more western counties.

Coal.

The coal-bearing rocks of Texas occupy an area of not less than 6,000 square miles, embracing the counties of Jack, Young, Palo, Pinto, Eastland, Brown, Comanche, Callahan, Coleman, and extending to the territory of Bexar. The rocks contain the characteristics belonging to the coal measures of Missouri and other Western States. In general appearance this coal resembles that of Belleville, Illinois. The analysis gives: Fixed carbon, 52 per cent.; volatile matter, 36 per cent.; ashes, three per cent. It cokes with a great flame, without changing its form. The development of this valuable mineral is destined to be of great importance to the State.

Anthracites, lighter and more brittle than those of Pennsylvania, have been found in various parts of the State, but I had no opportunity to visit these localities. Lignite, tertiary, and other coals of more recent origin, occupy an area of 10,000 square miles.

Copper.

Copper, covering as it does a large area of country, is almost inexhaustible, and will afford a vast fund of wealth for generations to come. A large portion of the counties of Archer, Wichita, Clay, Haskell, Territory of Bexar, counties of Pecos and Presidio, extending to the Rio Grande, is filled with immense hills of copper ore, some of which have been thoroughly tested, and will yield on the average, 55.40 per cent. of metal. Through some particular localities specimens have been found as rich as 68 per cent., containing besides some silver, oxide of iron, etc.

Explorations of the copper veins over the summits and sides of the hills, justify the conclusion that in the extent of one degree of longitude, along the little Wichita river, hardly a tract of 160 acres could be found without large accumulations of ore upon the surface. The vein leads are parallel with the strata, but there is sufficient evidence that they partake of the nature of true veins.

Lead and Silver.

These two metals are always associated together in this State. The calciferous sand rock, which is the lead bearing rock of Missouri, abounds in Texas, and the varieties found in it here are carbonate of lead, sulphuret of lead and molybdate of lead. The former two always contain such large quantities of silver ore as to be considered silver ore. A sample from a three-foot vein in Llano county, gave a yield of 286 ounces of silver, and 74.45 per cent. of lead. It is the carbonate of lead in combination with the sulphuret, and, owing to the large percentage of the former, will be easily reduced. The indications are very favorable for a large quantity and excellent quality of ore. With a well developed mining industry established here, no other country could compete with this region, so far as regards fuel, construction timber, and materials for building and sustaining a railroad.

Manganese, Cobalt, Nickel and Bismuth.

Leads of manganese, cobalt, nickel and bismuth are often met with. The copper ore contains only 25 per cent. of impurities; is far superior to ferro-sulphuret of copper, or copper pyrites generally worked for in England, and in native copper ores, as found at Lake Superior. It is easily smelted, and the strata in which it is found are more excavated than any other in which copper ores occur.

Petroleum.

Petroleum springs occur over a space of about 50 square miles in Hardin county, and it is probable that large supplies may be obtained by boring.

PLACER.—French Joe and Jos. Sheppard came in last week, bringing with them some coarse gold taken from the bed of Black cañon, on the west slope of the Humboldt range, and about six miles south of Humboldt city. The water was turned out and a small hole was sunk in the bed of the creek, and gold was found in every pan full washed. The gold found is very coarse and rough, and it is the opinion of all who have seen it that it is from a ledge in close proximity to the place where the gold was panned out. They knew nothing about working placer diggings, and they threw away all the fine gold saved in the pan, picking out and keeping only the coarse pieces. They had a set of sluice boxes made, and started back last Saturday, with a wagon carrying tools and provisions enough to last them all summer. Bob. Hazeltt, an old placer miner, accompanied the party to assist in setting up the sluices and opening up the claim. It is their intention to prospect for the ledge the gold is supposed to have escaped from. Wood and water are plenty in the cañon. The boys think they have a good thing.—*Silver State*.

If proper provision is made for expansion, portable engines can be made quite as durable as stationary engines.

1

The Partnership Publication Law.

The announcement that an amendment of the civil code provided that firms not publishing the names and address of their partners, could not maintain any action at law, has taken the commercial community somewhat by surprise, and as there are 18,000 firms in San Francisco, and 30,000 in the State who will be thus obliged to patronize the newspapers unwillingly, this latter will for awhile reap a goodly harvest. The simplest form of statement covering four lines is sufficient to comply with the law of which the following are the provisions:

2,466.—Except as otherwise provided in the next section, every partnership transacting business in this State under a fictitious name, or a designation not showing the names of the persons interested in such business, must file with the clerk of the county in which its principal place of business is situated a certificate stating the names in full of all the members of such partnership, and their places of residence, and publish the same once a week for four successive weeks, in a newspaper published in the county, if there be one, and if there be none in such county, then in a newspaper published in an adjoining county.

2,467.—A commercial or banking partnership, established and transacting business in a place without the United States, may, without filing the certificate or making the publication prescribed in the last section, use in this State the partnership name used by it there, although it be fictitious, or do not show the names of the persons interested as partners in such business.

2,468. The certificate filed with the Clerk, as provided in section 2,466, must be signed by the partners, and acknowledged before some officer authorized to take the acknowledgments of conveyances of real property. Where the partnership is hereafter formed, the certificate must be filed, and the publication designated in that section must be made within one month after the formation of partnership, or within one month from the time designated in the agreement of its members for the commencement of the partnership; where the partnership has been heretofore formed, the certificate must be filed, and the publication made within six months after the passage of this Act. Persons doing business as partners contrary to the provisions of this article shall not maintain any action upon or on account of any contracts made or transactions had in their partnership name, in any court of this State, until they have first filed the certificate and made the publication on herein required.

2,469. On every change in the members of a partnership transacting business in this State under a fictitious name, or a designation which does not show the names of the persons interested as partners in its business, except in the case mentioned in section 2,467, a new certificate must be filed with the County Clerk and a new publication made, as required by this article, on the formation of such partnership.

2,470. Every county clerk must keep a register of the names of firms and persons mentioned in the certificates filed with him, pursuant to this article, entering in alphabetical order the name of every such partnership, and of each partner therein.

The firm of A. L. Bancroft & Co. was the first to comply with the law.

The form recommended by Hon. J. W. Dwinelle is as follows:

CERTIFICATE OF PARTNERSHIP.—We certify that we constitute a partnership, transacting business in this State; its principal place of business is San Francisco, California; its name is Russell & Co., the full names and residence of its members are signed hereunto. May 29, 1874.

JOHN HENRY RUSSELL, of San Francisco, California.
GEORGE WILLIAM JONES, of San Francisco, California.
RICHARD NEALS, of New York City.

IS IT NOT A MISTAKE?—The San Francisco Post says that among the most prominent workers in the whisky interest at Oakland, on election day, was "Mr. Dewey, of the SCIENTIFIC PRESS." We can't think it.—*California Granger*, May 28th.

It was undoubtedly a mistake on the part of the reporter of the Post. This being understood, and Mr. Dewey's position in the temperance movement well known, no attention was given to the matter. But when parties who are well acquainted with Mr. Dewey's record and present position in temperance matters, parade this mistake in their paper, and thus involve the subject in doubt, his friends, during his absence from the city, feel called upon to notice the matter, and give it an unqualified denial.

In speaking of the cost of the pump in the Emma mine, in our article last week, the types made us say the pump would cost £30,000. We intended to say the pump would cost \$30,000.

The mint will be closed for repairs on next Tuesday, the 16th instant, and will resume business again on the 2d of July. Fine gold deposits, however, will be received during the time.

R. W. RAYMONN, U. S. Commissioner of Mining Statistics, arrived in San Francisco this week. He is on this coast on his annual tour among the mining districts.

NINETEEN flasks of quicksilver were received in Napa from the California mine Thursday.

General News.

NEWSPAPER POSTAGE.—The Postal Appropriation bill, as reported from the Senate Committee, contains an amendment providing that postage shall hereafter be prepaid on all mailable matter at the time of mailing. Efforts are being made to defeat this, or postpone its taking effect until a year after its passage; otherwise, newspapers taking subscriptions by the year will be compelled to prepay postage on the entire mail addition, although their contracts with the subscribers were made with the condition that the latter should pay the postage. The proposition is a tax upon knowledge, and so bungling in its provisions as to greatly interfere with the celerity of conveying news through the mails. It is altogether unworthy of the age, and utterly fails to introduce any economy in the mail service.

THE CIVIL RIGHTS BILL appears to be effectually killed. At least Grant will veto it if passed. Some people are so uncharitable as to think the President is moved in opposition to it by his desire thereby to make capital for himself in view of a nomination for a third term. It is also said that Dr. Sears, agent of the Peabody education fund, has declared that its passage, in its present form, would break off the Peabody schools throughout the Southern States. We can't see how.

SECRETARY BRISTOW, the head of the Treasury Department, starts out with the determination of making a thorough reform in the management of that office. The earnestness and determination which he evinces, fill his subordinates with much astonishment. It is to be hoped that he will hold out as he has begun. If he does so, he will save many millions for this country every year. He is evidently such a man as he claims to be—one without any "deficiency in backbone."

ROCHEFORT MAKES GOOD TIME.—For some reason, better known to himself, Rochefort, the great French Communist, seems determined to lose no time in placing himself in close proximity to his own stamping ground. His stay in New York was nearly as brief as it was in this city. Nothing but the British Channel now separates him from La Belle France. He has evidently discovered that communism is not looked upon with any degree of favor in this country.

A PEOPLE'S RAILWAY.—Senator Logan has introduced a bill to incorporate a commercial railway, with four or more tracks, between New York and Chicago and St. Louis, with a capital of \$200,000,000; tariffs not to exceed ten cents per bushel for grain and thirty-six cents per barrel for flour from Chicago to New York. A petition signed by 20,000 citizens of Illinois has been presented to Congress, through Senator Logan, asking for the passage of such a bill.

REGULATIONS FOR KILLING PEOPLE.—It is said that the International Congress, about to assemble at Brussels, will probably enact a new code to govern belligerent nations during war, and will also specify what kind of arms may be legitimately used, make regulations for treatment of prisoners, etc.

THE CATHOLIC CHURCH.—The priests of Rome are credited with saying that the Catholic church has gained more during the past two centuries in America than it has lost in all other countries.

TIMBER.—It is estimated that the number of railroad ties in present use in the United States is 150,000,000. A cut of 500 ties to the acre is above the average; and it therefore has required the product of 750,000 acres of well timbered land to furnish the supply. Railroad ties last about five years; 30,000,000 ties are used annually for repairs, taking the timber from 150,000 acres. The manufacture of rolling stock disposes of the entire yield of 350,000 acres, and a full supply of 500,000 acres more every year. Our railroads are stripping the country at the rate of 1,000,000 acres per annum.

THE surveyors of the Nevada City and Colfax Railroad are now surveying between Bear river and Greenhorn. They have run several lines between these points, and have not concluded which one to adopt.

THE contract for building the road from Healdsburg to Pine Flat has been awarded to B. B. Robinson & Son, of Napa county, their bid—\$4,494—being the lowest. The work is to be completed within 90 days.

THE Swatara, with 200 persons on board, has left New York for the South Pacific to watch the transit of Venus there. Twenty-six of the party were scientific men.

THE Eureka gravel mine, at Relief hill, Nevada county, uses 100 inches of water, and is paying at the rate of \$20 per day to the land.

THERE is considerable excitement at Crescent City about beach mining. A large number of claims have already been located.

A rich strike is reported at Cement hill, Nevada county. Streaks of gold are visible all through the cement.

THE cars for the Stockton and Lone Narrows-gauge Railroad will be manufactured in Stockton.

THE Weaverville ditch is about completed.

The Vanishing Forests.

The public have been called upon of late to consider the fate that seems to await our native forests, and the probable consequences that would follow their destruction. It is generally admitted that the subject is worthy of the serious consideration claimed for it, and the public are not disposed to leave it in the hands of mere theorists. It has become a subject of popular interest, and even though no specific remedy is offered, the sense of individual responsibility, and the expressed demands of public sentiment, will establish a more economical use of timber and do much toward preventing actual waste.

This is commendable; but with the prudent forethought and sense of responsibility manifested here, it is evident that an alarm, which can produce no good and which is also unreasonable, is blending itself with this subject.

The bugbear that the destruction of our forests is to entail upon the country an almost perpetual drought is already creating a degree of uneasiness in the public mind. The fact that forests have a beneficial effect on the surrounding country, by producing an increase of rain, is indisputable; and the prospect of their entire removal, with nothing substituted to perform this office, would be truly alarming. But it is confidently asserted, and the opinion is gaining ground, that railroad tracks and telegraph wires are already producing, in the new countries which they are intersecting, effects corresponding with those for which the forests have been accredited.

A change, of this character, is already noticed in the climate of the plains, which, it is claimed, is produced by the Pacific railroad. The same result has been remarked in other sections of the west. It is also claimed that the severity of thunder-storms is materially modified by the same influences—the iron rails and telegraph wires attracting the electric current and diffusing an equality through the atmosphere.

No greater stretch of imagination is required to find a remedy for the supposed impending evil that is called into play in the anticipation of it. And, without any aid from imagination, but with the light of science alone, we may safely reckon on a supply of minerals from the spots that we are denuding of their forests that will, to a great extent, supply their loss—furnishing materials for much that is now constructed of wood only, and throwing into disuse much that is now considered indispensable.

Are we not justified in trusting in Providence to supply the actual wants of each generation, or of the world at large, as well as those of the isolated individual?

TUOLUMNE REUNION.—The Tuolumne Reunion Association will hold their seventh annual picnic at Badger's Park, Oakland, on the 17th inst. This association is composed of residents and ex-residents of "old Tuolumne" who meet once a year and talk over old times when "they were in the mine." The officers this year are: President, L. P. McCarty; Vice President, C. B. Rutherford; Secretary, C. E. McCusker; Treasurer, W. G. Dinsmore. At the picnic next week, musical and literary exercises will be held in the Pavilion, when free and easy speeches are expected from many of the members. The musical part of the programme is made prominent, and Miss Fannie Marston, Prof. Carmine Morley, Mrs. Julia A. Cameron and Mr. C. Makin, will render the vocal music. Robert Ferral is to deliver the oration, and the exercises will conclude with dancing. Wallcott's band having been engaged to furnish the necessary music.

THE snow is off the Mineral King mines, Tulare county, and travel is increasing in that direction.

THE coal mines in Contra Costa county are turning out unusual quantities.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

(FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.)

By Special Dispatch, Dated Washington, D. C., June 9, 1874.

FOR WEEK ENDING May 26, 1874.

MECHANISM FOR LOADING AND UNLOADING LUMBER.—Hans P. Tothammer and Gustav Osborn, S. F., Cal.

BUTTON-HOLE SEWING MACHINE.—Justin J. Graff, S. F., Cal.

QUARTZ MILL SHOE.—Joseph G. Kittridge, S. F., Cal.

BRAKE FOR VEHICLES.—Elbridge G. Lancelotti, Yountville, Cal.

GANG PLOW.—Gideon J. Overshiner, Hollister, Cal.

—The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest time possible.

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PATENTS obtained promptly; Caveats filed expeditiously; Patent reissues taken out; Assignments made and recorded in legal form; Copies of Patents and Assignments procured; Examinations of Patents made here and at Washington; Examinations made of Assignments recorded in Washington; Examinations ordered and reported by Telegraph; Rejected cases taken up and Patents obtained; Interferences prosecuted; Opinions rendered regarding the validity of Patents and Assignments; every legitimate branch of Patent Agency Business promptly and thoroughly conducted.

Our intimate knowledge of the various inventions of this coast, and long practice in patent business, enable us to abundantly satisfy our patrons; and our success and business are constantly increasing.

The shrewdest and most experienced Inventors are found among our most steadfast friends and patrons, who fully appreciate our advantages in bringing valuable inventions to the notice of the public through the columns of our widely circulated, first-class journals—thereby facilitating their introduction, sale and popularity.

Foreign Patents.

In addition to American Patents, we secure with the assistance of co-operative agents, claims in all foreign countries which grant Patents, including Great Britain, France, Belgium, Prussia, Austria, Victoria, Peru, Russia, Spain, British India, Saxony, British Columbia, Canada, Norway, Sweden, Mexico, Victoria, Brazil, Bavaria, Holland, Denmark, Italy, Portugal, Cuba, Roman States, Wurtemberg, New Zealand, New South Wales, Queensland, Tasmania, Brazil, New Grenada, Chili, Argentine Republic, AND EVERY COUNTRY IN THE WORLD where Patents are obtainable.

No models are required in European countries, but the drawings and specifications should be prepared with thoroughness, by able persons who are familiar with the requirements and changes of foreign patent laws—agents who are reliable and permanently established.

Our schedule prices for obtaining foreign patents, in all cases, will always be as low, and in some instances lower, than those of any other responsible agency.

We can and do get foreign patents for inventors in the Pacific States from two to six months (according to the location of the country sooner than any other agents.

Home Counsel.

Our long experience in obtaining patents for inventors on this Coast has familiarized us with the character of most of the inventions already patented; hence we are frequently able to save our patrons the cost of a fruitless application by pointing them to the same thing already covered by a patent. We are always free to advise applicants of any knowledge we have of previous applications which will interfere with their obtaining a patent.

We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents, or purchasers of patented articles, can often receive advice of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money, but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency. The principal portion of the patent business of this coast has been done, and is still being done, through our agency. We are familiar with, and have full records of, all former cases, and can more directly judge of the value and patentability of inventions discovered here than any other agents.

Situated so remote from the seat of government, delays are even more dangerous to the inventors of the Pacific Coast than to applicants in the Eastern States. Valuable patents may be lost by the extra time consumed in transmitting specifications from Eastern agencies back to this coast for the signature of the inventor.

Confidential.

We take great pains to preserve secrecy in all confidential matters, and applicants for patents can rest assured that their communications and business transactions will be held strictly confidential by us. Circulars free.

Engravings.

We have superior artists in our own office, and all facilities for producing fine and satisfactory illustrations of inventions and machinery, for newspaper, book, circular and other printed illustrations, and are always ready to assist patrons in bringing their valuable discoveries into practical and profitable use.

DEWEY & CO.,

United States and Foreign Patent Agents, publishers Mining and Scientific Press and the Pacific Rural Press, 338 Montgomery St., S. E. corner of California St., San Francisco.

METALS.

WEDNESDAY M., June 10, 1874.

The Metal market is dull. Copper is lower. Quicksilver is steady at \$1.35 3/4 lb.

American Pig Iron, 100 lb.	40 00
Scott's Pig Iron, 100 lb.	40 00
White Pig, 100 lb.	50 00
Reddish Bar, good assortment, 100 lb.	3 1/2
Roller, No. 1 to 4	5 1/2
Plate, No. 5 to 9	5 1/2
Sheet, No. 10 to 15	5 1/2
Sheet, No. 16 to 20	5 1/2
Sheet, No. 21 to 25	5 1/2
Sheet, No. 26 to 30	5 1/2
Horse Shoe, per doz.	3 00
Nail Rod	95 00
Norway Iron, 100 lb.	5 1/2
Roller Iron	5 1/2
Other Irons for Blacksmiths, Miners, etc.	4 1/2
COFFIN	
Braziers	31 00
Copper Tins	45 00
O. Nial's Pat.	50 00
Sheeting, 100 lb.	24 00
Sheeting, Yellow	25 00
Sheeting, Old Yellow	12 1/2
Composition Nails	24 00
Composition Bolts	24 00
TIN PLATES	
Plates, Charcoal, 100 lb.	14 00
Plates, 100 lb.	15 00
Rolling Plates, 100 lb.	15 00
Banco Tin, 100 lb.	33 00
SEAL—English Cast, 100 lb.	20 00
Anderson & Woods' American Cast, 100 lb.	20 00
Drill	18 00
Flat Bar	18 00
Plough Points	15 00
Zinc Sheet	10 00
NAILS—Assorted sizes	5 1/2
LEAD	
Pig, 100 lb.	5 1/2
Sheet	6 1/2
Sheet	6 1/2
Pipe	8 1/2
Quicksilver, per lb.	1 35

LEATHER.

WEDNESDAY M., June 10, 1874.

The Leather trade remains as last noted. There is a fair amount of activity; but nothing of special importance to chronicle, and no change in quotations.

City Tanned Leather, 100 lb.	25 00
Sania Cruz Leather, 100 lb.	25 00
Country Leather, 100 lb.	24 00
Stockton Leather, 100 lb.	25 00
Jodot, 11 to 15 Kil, per doz.	55 00
Jodot, second choice, 11 to 15 Kil, per doz.	55 00
Corneillon, 12 to 15 Kil, per doz.	55 00
Corneillon Females, 12 to 15 Kil, per doz.	55 00
Corneillon Females, 14 to 15 Kil, per doz.	55 00
Beaumontville, 15 Kil, per doz.	55 00
Simon, 15 Kil, per doz.	55 00
Simon, 20 Kil, per doz.	55 00
Simon, 24 Kil, per doz.	55 00
Robert Kip, 1 and 9 Kil, per doz.	55 00
French Kip, 1 and 9 Kil, per doz.	55 00
French Sheep, all colors, per doz.	55 00
Eastern Calf for Backs, 100 lb.	1 00
Sheep Roams for Topping, all colors, per doz.	55 00
Sheep Roams for Lining, per doz.	55 00
California Ransett Sheep Linings, per doz.	55 00
Best Jodot Calf Boot Legs, per pair.	5 00
Good French Calf Boot Legs, per pair.	4 00
French Calf Boot Legs, per pair.	4 00
Harness Leather, 100 lb.	30 00
Fair Bridle Leather, per doz.	48 00
Shirking Leather, per doz.	30 00
Wool Leather, per doz.	30 00
Buff Leather, per foot.	19 00
Wax Side Leather, per foot.	17 00
Western Wax Leather	17 00

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HINTS FOR INVENTORS. We will send on receipt of stamp for postage, FREE, our 52-page Circulars containing 112 illustrated Mechanical Movements; a digest of PATENT LAWS; information how to obtain patents, and about the rights and privileges of inventors and patentees; list of Government fees, practical hints, etc. Address DEWEY & CO., Publishers and Patent Agents, San Francisco.

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BUSH STREET, ABOVE KEARNY.

JOHN MCULLOUGH, Proprietor and Manager.
MR. BARTON HILL, Acting Manager.

ENGAGEMENT OF THE CELEBRATED

AIMEE OPERA TROUPE,
IN OPERA BOUFFE.

Prices of Admission:

Dress Circle and Orchestra	\$1 00
Dress Circle and Orchestra, Reserved	1 50
Balcony	50
Balcony, Reserved	25
Family Circle	75
Boxes, according to location	\$10 & 50
Doors open at half past seven; Commence at eight o'clock.	ja24-41

Brittan, Holbrook & Co., Importers of
Stoves and Metals, Tinware Goods, Tools and Machinery;
11 and 13 California St., and 19 Davis St., San Francisco, and 178 St. Sacramento.
mt-17

W. L. CHURCH, OUR FORMER AGENT,
is requested to call at our office, or send his P. O. address, immediately.
DEWEY & CO.,
338 Montgomery street.
bpt

NOTICE.

We certify that the partnership of Dewey & Co., doing business in San Francisco, California, is composed of Warren B. Ewer, George H. Strong and John L. Boone, all of whom reside in the city and County of San Francisco, and Alfred T. Dewey, who resides in Oakland, Alameda County, Cal.
San Francisco, Cal., June 3d, 1874.

WARREN B. EWER,
GEORGE H. STRONG,
JOHN L. BOONE,
ALFRED T. DEWEY.

STATE OF CALIFORNIA,
CITY AND COUNTY OF SAN FRANCISCO.

On this June 3d, 1874, before me, F. O. Wegener, a Notary Public in and for said City and County, personally appeared Warren B. Ewer, George H. Strong, John L. Boone and Alfred T. Dewey, known to me to be the persons whose names are subscribed to the within instrument, and acknowledged to me that they executed the same.

Filled June 5. W. H. NEY, County Clerk,
By W. STEVENSON, Deputy.

In witness whereof I have hereunto set my hand and affixed my official seal, the day and year first above written.
JUN-4

F. O. WEGENER, Notary Public.

BRONZE TURKEYS.
GOBBLE, 43 lbs. HENS, 20 to 25 lbs.
Emden Geese.
(Fifty-eight to sixty lbs. at maturity.)
EGGS FOR SALE NOW.
Bramahs, Lephors, Hondans, Etc.
Send for Price List and Illustrated Circular. Address,
M. EYRE, Napa, Cal.
Eggs for Hatching, packed to travel safely by rail or stage and hatch after arrival.
17v28-2m



A LECTURE TO GENTLEMEN

-BY-

BARLOW J. SMITH, M. D.,
Of the Allo-Hygenopathic Institute, 635 and 637
California street, San Francisco, California.

On the "Causes of Nervous Debility and Premature Decline." Also, "Twenty Years' Experience in Reform Medication," treating upon disease in its various forms, the Cause, Prevention and Cure, home treatment, etc. The two sent postpaid upon receipt of 25 cents.
18v28-3m

To Mining Secretaries.

An amendment to Section 336 of the California Codes taking effect July 1st, 1874, provides that in addition to the regular publication of the assessment and sales notices as heretofore,

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sent through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where the principal office of the Corporation is situated."

The above refers to this ASSESSMENT NOTICE only. Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitable for serving personal notices under this law at short notice.

DEWEY & CO., Publishers.

June, 1874.

Mining and Other Companies.

Owing to the time necessary to mail the present large edition of the M. & S. Press, we are obliged to go to press on Thursday evening—which is the very latest hour we can receive advertisements.

Calaveras Gold Mining Company—Location of principal place of business, San Francisco, State of California. Location of works, Washington Mining District, Calaveras county, State of California.

Notice is hereby given, that at a meeting of the Directors, held on the 18th day of May, 1874, an assessment (No. 3) of fifty cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary, at the office of the Company, in San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 16th day of June, 1874, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 8th day of July, 1874, to pay the delinquent assessment together with costs of advertising and expenses of sale.

Office—No. 318 California street, San Francisco, Cal. (Room No. 13). m16

Continental Silver Mining Company—Location of principal place of business, San Francisco, California. Location of works, Hamilton, White Pine County, Nevada.

Notice is hereby given, that at a meeting of the Directors, held on the 18th day of May, 1874, an assessment (No. 4) levied on the fourth day of May, 1874, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J. R. Foster	67	1	\$1 20
A. W. White	108	11	13 20
G. O. Arnold	258	20	24 00
E. F. Oillespie	272	20	24 00
R. M. Clark	275	20	24 00

And in accordance with law, and an order of the Board of Directors, made on the 4th day of May, 1874, so many shares of each parcel of stock as may be necessary, will be sold at public auction at the office of the Secretary, on Tuesday, the 30th day of June, 1874, at the hour of 12 o'clock A. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

M. BLANKENBURG, Secretary.

Office—No. 118 Front street, San Francisco, Cal. jn13

Diamond Silver Mining Company—Location of works, East Tindie Mining District, Juab County, Utah Territory. Principal place of business, San Francisco.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 18th day of April, 1874, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Wm Sherman, Trustee	7	550	\$55 00
Thos W. Moore	15	550	55 00
H. T. Fildon	22	100	10 00
J. P. Chamberlain	23	110	11 00
S. L. Marston	34	110	11 00
S. L. Marston	207	110	11 00
H. C. Gregory	35	110	11 00
I. Salz	36	55	5 50

Names.	No. Certificate.	No. Shares.	Amount.
S. Salz	37	55	5 50
L. E. Osgood	38	110	11 00
Wm Walton	39	110	11 00
I. S. Marston	40	110	11 00
Solomon Jewett	43	550	55 00
Mrs. Angie Eager	49	22	2 20
John J. Dmly	50	11	1 10
Hartwig Bornemann	51	220	22 00
Hartwig Bornemann	53	330	33 00
Mrs. Hartwig Bornemann	54	11	1 10
Carl Leutner	55	11	1 10
E. S. Hamilton	59	55	5 50
W. M. Brewer	62	1150	115 00
F. Palmer	72	227	22 70
Medalion Mining Company	73	910	90 00
Oeo Helm, Trustee	33	275	27 50
Oeo Helm, Trustee	132	50	5 00
Oeo Helm, Trustee	134	25	2 50
Oeo Helm, Trustee	135	50	5 00
Oeo Helm, Trustee	136	50	5 00
Oeo Helm, Trustee	137	50	5 00
Oeo Helm, Trustee	138	50	5 00
Oeo Helm, Trustee	139	50	5 00
Oeo Helm, Trustee	140	50	5 00
Oeo Helm, Trustee	122	125	12 50
Oeo Helm, Trustee	129	100	10 00
Oeo Helm, Trustee	130	75	7 50
Oeo Helm, Trustee	134	75	7 50
Mary Van Reynegom	147	25	2 50
A. M. Vines	148	25	2 50
J. L. Ven Reynegom	149	50	5 00
J. L. Van Reynegom	150	50	5 00
J. A. Fairchild	154	100	10 00
R. J. Street	165	110	11 00
A. J. Stevens	186	100	10 00
R. M. Anthony	187	400	40 00
V. P. Terry	198	60	6 00
James E. Blenthen	199	50	5 00
Benjamin Corey	200	60	6 00
Benjamin Corey	201	60	6 00
Benjamin Corey	202	60	6 00
Benjamin Corey	203	60	6 00
Joseph Fowler	210	50	5 00
Joseph Fowler	211	50	5 00
O. A. Washburn, Trustee	221	150	15 00
O. A. Washburn, Trustee	222	100	10 00
O. A. Washburn, Trustee	223	25	2 50
O. A. Washburn, Trustee	224	25	2 50
O. A. Washburn, Trustee	225	150	15 00
R. M. Anthony, Trustee	227	60	6 00
E. C. Morton, Trustee	228	100	10 00
E. C. Morton, Trustee	229	100	10 00
E. C. Morton, Trustee	230	100	10 00
E. C. Morton, Trustee	231	100	10 00
E. C. Morton, Trustee	232	100	10 00
E. C. Morton, Trustee	233	100	10 00
E. C. Morton, Trustee	234	100	10 00
E. C. Morton, Trustee	235	100	10 00
E. C. Morton, Trustee	236	100	10 00
E. C. Morton, Trustee	237	50	5 00
E. C. Morton, Trustee	238	50	5 00
E. C. Morton, Trustee	239	43	4 30
E. A. Colson	244	50	5 00
M. Fandrick	251	25	2 50
M. Fandrick	253	25	2 50
M. Fandrick	254	25	2 50
M. Fandrick	255	25	2 50
M. Fandrick	256	25	2 50
M. Fandrick	257	25	2 50
M. Fandrick	258	15	1 50
M. Fandrick	259	15	1 50
M. Fandrick	261	12	1 25
Frank Emenegger	269	25	2 50
Chas. Munch	290	10	1 00
O. C. Miller, Trustee	76	50	5 00
O. C. Miller, Trustee	79	50	5 00
O. C. Miller, Trustee	81	50	5 00
O. C. Miller, Trustee	82	50	5 00
O. C. Miller, Trustee	83	50	5 00
O. C. Miller, Trustee	88	50	5 00
O. C. Miller, Trustee	89	50	5 00
O. C. Miller, Trustee	90	50	5 00
O. C. Miller, Trustee	91	50	5 00
O. C. Miller, Trustee	95	50	5 00
O. C. Miller, Trustee	153	100	10 00
O. C. Miller, Trustee	154	100	10 00
O. C. Miller, Trustee	155	25	2 50
O. C. Miller, Trustee	156	100	10 00
O. C. Miller, Trustee	157	100	10 00
O. C. Miller, Trustee	158	100	10 00
O. C. Miller, Trustee	171	100	10 00
O. C. Miller, Trustee	174	100	10 00
O. C. Miller, Trustee	178	50	5 00
O. C. Miller, Trustee	179	50	5 00
O. C. Miller, Trustee	180	45	4 50
O. C. Miller, Trustee	181	100	10 00
O. C. Miller, Trustee	213	100	10 00
O. H. La Grange, Trustee	215	100	10 00
O. H. La Grange, Trustee	216	100	10 00
O. H. La Grange, Trustee	217	100	10 00
O. H. La Grange, Trustee	218	100	10 00
O. H. La Grange, Trustee	219	100	10 00
O. H. La Grange, Trustee	220	50	5 00
O. H. La Grange, Trustee	221	100	10 00
O. H. La Grange, Trustee	270	100	10 00
O. H. La Grange, Trustee	275	100	10 00
O. H. La Grange, Trustee	276	100	10 00
O. H. La Grange, Trustee	277	100	10 00
O. H. La Grange, Trustee	278	100	10 00
O. H. La Grange, Trustee	279	100	10 00
Isaac M. Brower	123	1000	100 00
O. D. Hanson	118	100	10 00
N. Hamilton, Trustee	119	100	10 00
N. Hamilton, Trustee	120	100	10 00
N. Hamilton, Trustee	25	275	27 50
N. Hamilton, Trustee	27	55	5 50
N. Hamilton, Trustee	42	110	11 00
N. Hamilton, Trustee	53	55	5 50
N. Hamilton, Trustee	143	100	10 00
N. Hamilton, Trustee	144	60	6 00
N. Hamilton, Trustee	145	50	5 00
N. Hamilton, Trustee	193	400	40 00
N. Hamilton, Trustee	205	100	10 00
N. Hamilton, Trustee	112	100	10 00
N. Hamilton, Trustee	114	100	10 00
N. Hamilton, Trustee	115	37	3 70
N. Hamilton, Trustee	183	100	10 00
N. Hamilton, Trustee	172	200	20 00

And in accordance with law, and an order of the Board of Directors, made on the 18th day of April, 1874, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, No. 123 Post street, San Francisco, California, on the 25th day of June, 1874, at the hour of 12 o'clock A. M., of said day, to pay said delinquent assessment thereon, together with costs

Machine Builders.

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PACIFIC IRON WORKS,

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IRON AND BRASS CASTINGS

Mining Machinery of Every Description

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Foundry and Iron Works.

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TEAM ENGINES,

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James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE.....Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
24v17-97

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Established for the Manufacture of
RAILROAD AND OTHER IRON
—AND—
Every Variety of Shafting.

Embracing ALL SIZES of
Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames

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Of every description and size

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The highest price paid for Scrap Iron.

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Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for new and old cylinders.

And all kinds of Mining Machinery.

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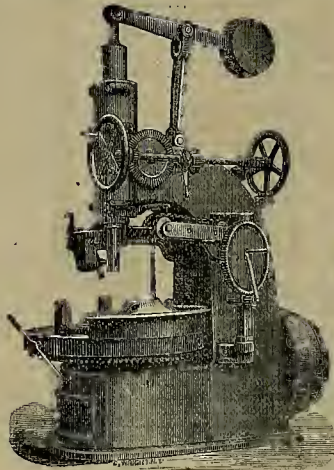
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The only Drilling Machinery that has ever done any successful Tunnel work in America, is being used upon the largest tunnels and mining operations on the Comstock lode; also in Placer, Mariposa and Nevada Counties, Cal. Sample machinery can be seen and further information given, by applying to

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WARING ROCK DRILL COMPANY.

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WARING'S IMPROVED SELF-FEEDING

Rock Drill,

BY FAR THE MOST

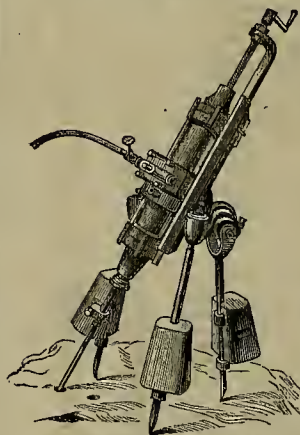
Simple and Effective Machine

FOR ALL DESCRIPTIONS OF

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10v28-6m

ADAMS, SPRINGER & CO., PACIFIC BRASS FOUNDRY,

LOCK FACTORY AND MACHINE SHOP,

No. 20 Fremont street, near Market, S. F.

Manufacture all kinds of Brass Goods, Brass Castings, Babbit Metal and Brass Ship Work, Ship Locks, Brass Padlocks, with Cylinder Keys, Railroad and Express Locks. Locks of every description made on receipt of Sample Key. All orders attended to with promptness, and satisfaction guaranteed. 14v7-tf

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IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Rolling Pan and Callahan Grate Bars, suitable for Burning Screenings. Notice.—Particular attention paid to making Superior Shoes and Dies. 20v26-3m

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LIGHT AND HEAVY CASTINGS,

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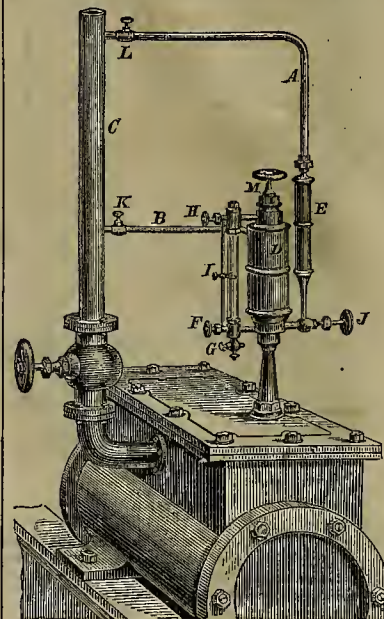
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First Street, bet. Howard and Folsom, San Francisco.

Machinery and Castings of all kinds.

Machinery.

N. Seibert's Eureka Lubricators.



THE HIGHEST PREMIUM

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passed to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stops; H, F, valves to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Made by California Brass Works, 125 First street, S. F. 24v28-tf

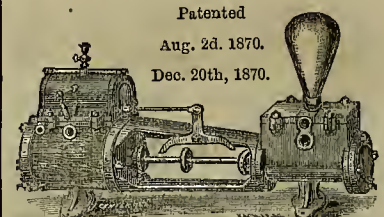
THE SELDEN DIRECT-ACTING STEAM PUMP,

A. CARR. Manufacturer & Proprietor.

Patented

Aug. 2d. 1870.

Dec. 20th, 1870.



Combining simplicity and durability to a remarkable degree. Its parts are easy of access, and it is adapted to all purposes for which Steam Pumps are used.

As a Mining Pump it is Unsurpassed.

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STEAM, GAS & WATER PIPE, BRASS WORK STEAM & WATER GAUGES, FITTINGS, ETC.

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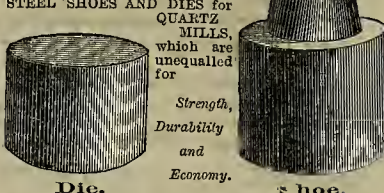
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STEEL SHOES AND DIES

FOR QUARTZ MILLS,

Made by our improved process after many years of patient research and experiment. We have succeeded in producing



Will wear three times longer than any iron Shoes.

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Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and general Mining Machinery in all its details and furnishers of Mining Supplies. All orders promptly filled.

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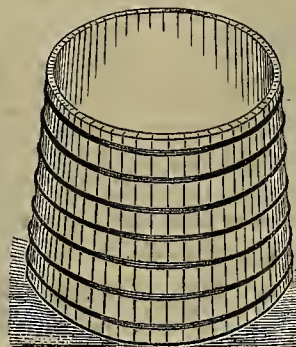
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Repairing done on very Reasonable Terms and in the best manner. No. 32 Fremont street, S. F. 29v23-3m



WATER TANKS of any capacity, made entirely by machinery. Material the best in use; construction not excelled. Attention, dispatch, satisfaction. Cost less than elsewhere.

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THE AMERICAN TURBINE WATER WHEEL.



Recently improved and submitted to thorough scientific tests by James Emerson, showing the following useful effect of the power of the water utilized, being

THE HIGHEST RESULTS EVER KNOWN.

Percentage of part gate, $\frac{1}{4}$ 69.08; $\frac{1}{2}$ 69.64; $\frac{3}{4}$ 78.73; $\frac{1}{8}$ 82.53; $\frac{1}{16}$ 82.90. Percentage of whole gate, 83.14.

Mr. Emerson says: "These are the best average results ever given by any Turbine Wheel in my experience."

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TO HYDRAULIC MINERS.



I warn Hydraulic Miners not to be misled by the advertisement of Mr. F. H. Fisher. Said Fisher has been beaten in every suit to which he has been a party (respecting Patent Rights on Hydraulic Machines), whether as plaintiff or defendant.

His patrons have already paid over Five Thousand Dollars for license to use machines purchased of the self styled

"Only Reliable Party in the Business Who Protects His Customers."

Fisher's Machine is worthless unless the discharge pipe is furnished with appliances, the patent for which is owned by Messrs. CRAIG, and which Fisher is enjoined from making.

The Machine itself is also an infringement on another patent owned by the same parties.

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I am sole LICENSEE to sell Machines manufactured under CRAIG's, Rice's, Macey's and Hoskin's patents.

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Machines of all sizes always on hand.

If you want a Machine that will give satisfaction, and do not want to pay for it twice over, buy an Improved LITTLE GIANT.

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This machine, complete, weighs 1,500 lbs. Has an iron frame, five steel arms with stamps weighing 17 lbs. each, which strike 2,000 blows per minute, in a mortar provided with screens on both sides, and crushes FINE 60 lbs. per hour, requiring one-horse power to drive it. Has been thoroughly tested, and is guaranteed to give good satisfaction. PRICE, \$900.

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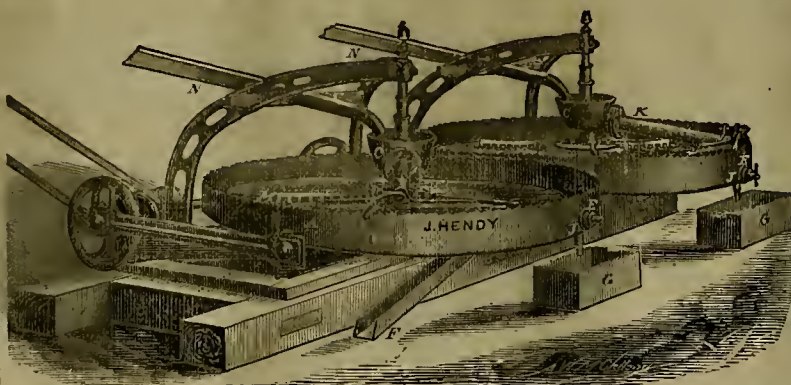
Bose's Quicksilver Pump saves labor and waste of metal. Address, M. P. BOSE,
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Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by
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California Assay Office—J. A. Mars & Wm. Ireland, Jr., Chemists and Assayers, Rooms 47 and 48 Merchants' Exchange, San Francisco. Analysis of Ores, Mineral Waters, Etc. 8v28-8m

OVER \$3,500 PER MONTH SAVED BY THE USE OF HENDY'S IMPROVED CONCENTRATOR.



Can be seen at the Manufactory, 32 Fremont Street, San Francisco.

JOSHUA HENDY, Esq.—Dear Sir:—As a practical miner and millman, I take pleasure in recommending the use of your Concentrators in all mills where gold or silver ores are reduced. No mills should be without them for the following reasons:

- 1st. They are good sizers (no perfect concentration in pulverized ores can be effected without first sizing).
- 2d. The best Concentrator I have ever known—(the concentrated stuff only containing 5 per cent. of sand).
- 3d. They are good amalgamators, light (feather) particles of amalgam and particles of coated gold, by attrition are brightened, and from their specific gravity and the action of the pan, fall to the bottom and adhere.
- 4th. They require but little power and attention to run them, and with ordinary care will last for years.

I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oaks and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,

Yours respectfully,

409 California street, or Cosmopolitan Hotel.

SAN FRANCISCO, April 27, 1874.

JAS. H. CROSSMAN, M. E.

OFFICE SUPERINTENDENT OF KEYSTONE CON. M. CO., AMADOR, AMADOR COUNTY.
MR. J. HENDY—Dear Sir:—In answer to your inquiries as to your concentrators furnished our company last July, I would say that I am more than pleased with them; and the saving to the company has been over \$3,500 per month more than with the blankets and buddies formerly in use.

O. C. HEWITT, Supt.

References:

Reference is made to the following mills, some of which have had HENDY'S CONCENTRATORS in use for over four years:

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NORTH STAR M. & M. CO. (3 Concentrators)	Grass Valley, Nevada County.
VULTURE CO. (3 Concentrators)	Prescott, Arizona.
NOYES & CO'S MILL (2 Concentrators)	Prescott, Arizona.
LUCY MINING CO. (3 Concentrators)	Owyhee District, Idaho.
EL TASTE CO. (3 Concentrators)	Sonora, Mexico.
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ST. PATRICK MILL	Newcastle, Placer Co.
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VIRGIL MILL	Oregon.
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CAUTION—All of HENDY'S PATENT CONCENTRATORS are marked thus: "J. HENDY, Patented April 17th, 1868, and May 19th, 1868."

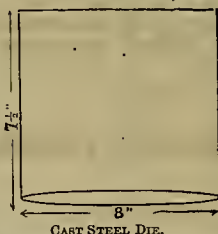
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CAST STEEL SHOE AND DIE COMPANY,

OFFICE—Room 28, Hayward's Building, 419 California St., S. F.
Patented CAST STEEL SHOES & DIES for Quartz Mills.
Price, 20 cents per Pound.

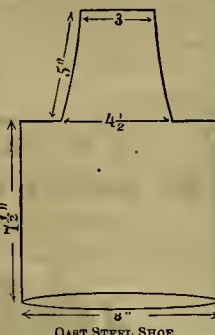


CAST STEEL DIE.

An improvement greatly needed—being Stronger, more Durable and Economical than Cast Iron; as the Dies, when worn down, can be welded to the Shoes as easily as bar steel; never break, keep their full striking surface. Battery of five shoes crushes one-ton more ore in 24 hours than Cast Iron Shoes, will wear as long as four sets of Cast Iron shoes, and can be worn down to $\frac{1}{8}$ inch in thickness. The studs can be welded into Picks, Hammers, etc.

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CAST STEEL SHOE.

Metallurgy and Ores.

Varney's Patent Amalgamator.

These Machines Stand Unrivaled.

For rapidity pulverizing and amalgamating ores, they have no equal. No effort has been, or will be made, to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits. They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows.
The pan being filled, the motion of the miller forces the pulp to the center, where it is drawn down through the aperture and between the grinding surfaces. Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular row between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.

Settlers made on the same principle excel all others. They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed.

Mill-men are invited to examine these pans and settlers for themselves, at the office, 229 Fremont Street, San Francisco.

Important to Miners and Mill Men.

Silver-Plated Copper Amalgamating Plates, for Saving Gold.



Of all sizes and in any quantity, furnished to order. Full instructions sent for operating. Particular attention given to plating goods for Builders, Plumbers, etc. Hotel and Restaurant work repaid.

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Purchase Silver Ores in quantities of ten tons and upward, delivered on board the cars at San Francisco or Oakland at the annexed Net Rates, WITH NO CHARGE FOR SAMPLING OR REDUCTION. On lots of less than 10 tons, freight to Reno will be deducted.

Special Rates for Gold Ores.
On Gold contained in Silver Ores to the amount of \$30 and upwards, 35 per cent. will be paid. When less than \$30, and above \$10, the amount will be added to the Silver value. Sacks promptly returned free of charge. Ores sampled by Battery or Sampling Mill as shipped may elect, and returns made promptly by cheque on San Francisco.

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Value.	Per Cent.	Value.	Per Cent.	Value.	Per Cent.	Value.	Per Cent.	Value.	Per Cent.
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65 27	93	129 48	175 58	263 67	500 77				
70 28	95	133 50	188 59	275 69	600 80				
75 30	98	137 51	200 61	288 70	700 82				
80 31	100	142 52	210 62	300 71	800 84				
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An important improvement in milling. Cheap, light, efficient and durable. Gains Quicksilver on working tailings. Is discharged from the surface in the center instead of the side, by means of a Siphon which extends to near the center of the Settler. Heaviest casting weighs only 135 pounds. The sides and bottom of the Settler are made of wood, as also Mullers, placed vertically—the friction of which brightens the quicksilver. One of these machines is in daily operation at No. 616 Merchant's street, (basement), San Francisco. Parties desiring information as to rights of use, purchase, etc., can address,
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616 Merchant St., S. F.
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ADVANCES MADE
On all kinds of Ores, and particular attention
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CONSIGNMENTS OF GOODS.
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LEOPOLD KUH,
(Formerly of the U. S. Branch Mint, S. F.)
Assayer and Metallurgical Chemist.
No. 611 Commercial Street,
(Opposite the U. S. Branch Mint.
SAN FRANCISCO CAL. 7v21-3m

Richardson & Co., Copper Ore Wharves, SWANSEA.

RICHARDSON & Co. have been for thirty years established in Swansea as Agents for the preparation, Sampling, Assaying, and sale of Copper, Silver, Gold, Lead, Zinc, and all other Ores and Metals, for which they have extensive Warehouses and Wharves under cover, 1,000 feet of Quay Frontage within the Floating Dock, and the most complete Machinery and Appliances. They are also prepared to make advances against Ores in anticipation of realization, and to guarantee all payments when required. 2v28-1y

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STRONG & CO.,
Metallurgical Works,
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We purchase high grade Gold and Silver Ore, Bullion, Etc. Ores worked and tests made with care; also, Ore Assays of Gold, Silver, Copper, Lead, Tin, Iron, Manganese, Chinchar, Nickel, Etc.

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Parties working Quicksilver Ores can obtain the right to use highly successful patented improvements for condensing fumes and working soot, by addressing
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PLATINUM
Vessels, Apparatus, Sheet, Wire, Etc., Etc.
For all Laboratory and Manufacturing Purposes
H. M. RAYNOR,
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Platinum Scrap and Native Platinum purchased.

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BLACK DIAMOND FILE WORKS.

G. & H. BARNETT,
Manufacturers of Files of every Description,
Nos. 39, 41 and 43 Richmond street,
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Sold by all the principal hardware stores on the Pacific Coast. 18v25-1y

THE KNOX & OSBORN QUICKSILVER FURNACE.

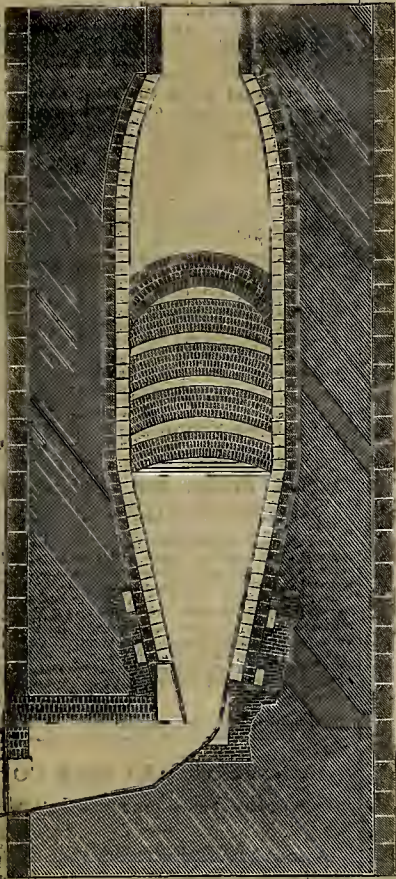


Fig. 1.—Cross Section of furnace, Walls and Vapor Way Arches.

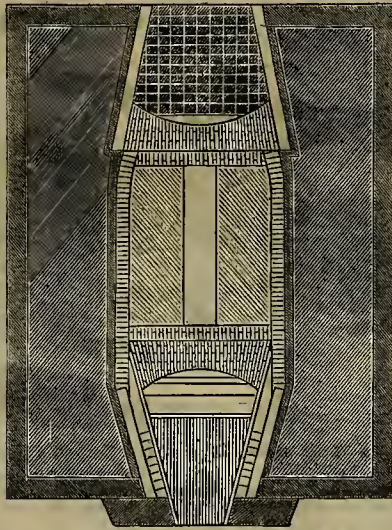


Fig. 3.—Horizontal Section at Fire-Grate Level.

THIS FURNACE REDUCES CINNABAR, AND

WORKS CLOSER TO AN ASSAY

And at LESS COST per ton than any other furnace. It will work continuously Twelve to Twenty-four months without stopping.

No Man Has Ever Been Salivated

Or otherwise affected by the mercury about the furnace, either in operating it or making repairs. For full particulars, plans, etc., apply at

19 AND 21 FIRST STREET, SAN FRANCISCO.

TO KNOX & OSBORN.

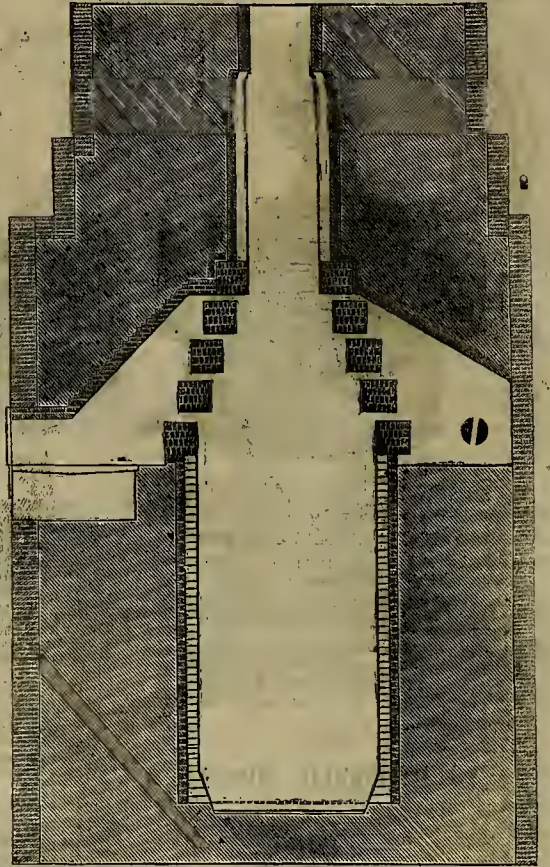
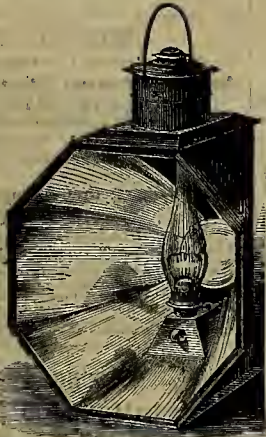


Fig. 2.—Cut Transversely from Fig. 1.

PACIFIC LAMP MANUFACTORY.

EMILE BOESCH,
PATENTEE AND MANUFACTURER OF
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New Mining & Mill Lights.
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Brass and Bell Founder,

Corner Natoma and Fremont Streets,
MANUFACTURERS OF

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CASTINGS.

Church and Steamboat Bells,
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FIRE ENGINES, FORCE AND LIFT PUMPS.

Steam, Lignot, Soda, Oil, Water and Flange Cocks,
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Hose and all other Joints, Spelter, Solder and Copper
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Gloves, Steam Whistles. HYDRAULIC PIPES AND
NOZZLES for mining purposes. Iron Steam Pipe furnished
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Particular attention paid to Distillery Work. Manufacturer
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THE ONE-PLUNGER JIG,

Delivered on R. E. Car at Denver, Col.,
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CONTAINING SIX SIEVES, END TO END.

Separate in one and the same operation—1. galena
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containing no valuable parts; or, 1. gold; 2. pyrites; 3.
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1. copper; 2. tailings, containing no valuable parts.
The One-Plunger Jig can be combined with existing
stamp-mills with highly important advantages, as after
amalgamation it will recover completely all fine metals
and all base ores and all mercury out of tailings. It
concentrates all fine metal ores to such cleanliness that
low grade ores can be shipped, after concentration, as
first-class ores. Its feed and discharge are automatic.
Its construction offers better guarantee against loss and
repairs than any other apparatus in use. For particulars,
apply to the inventor, F. CAZIN,
Mining and Civil Engineer, Denver City, Col.
L. Box 2226. 13v28-1y

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THE ONLY SAFE BLASTING POWDER IN USE.

GIANT POWDER, NO. 1,

For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

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For medium and easy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.

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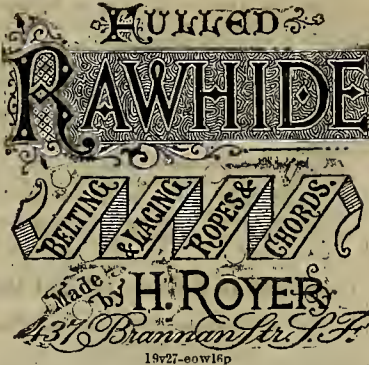
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OPERATION, and PROCESSES OF MANUFACTURE. The
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Steam Power, and Shafting free. Applications should
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JOHN P. REYNOLDS, Sec'y.

Chicago, May 25th, 1874.

jn6-1t



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AND GENERAL MACHINISTS.

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KABATH & LADD,

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HAVE JUST RECEIVED IN PRIME ORDER, PER
"OLEOPATRA" AND "SOLOMON,"

A FRESH SUPPLY OF

EASTERN IRON KEG POWDER,

Manufactured by the World-Wide Known

LAFLIN & RAND

POWDER COMPANY

PATENT SAFETY FUSE,

Electrical Blasting Apparatus, Electrical
Fuse, Rubber Tubing,

LEADING AND CONNECTING WIRE CAPS, ETC.,

AND EVERYTHING IN THE LINE OF

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An Illustrated Journal of Mining, Popular Science and General News.

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Patent Solicitors.

SAN FRANCISCO, SATURDAY, JUNE 20, 1874.

VOLUME XXVIII
Number 25.

Academy of Sciences.

The regular semi-monthly meeting of the California Academy of Sciences was held on Monday evening last. The President, Professor George Davidson, who has just returned from the East, was in the chair. The following new members were elected: Charles T. Dake, J. G. Lemmon, A. E. Head (Life), H. W. Hargrave and Jas. W. Winter.

Mr. W. N. Lorkington presented to the museum choice cases of insects and some alcoholic specimens.

Mr. Dameron presented a lizard, from China, used for medicinal purposes; also, fossil from Forest Hill, Placer county.

Maj. Wm. Ford presented, through Barry & Patton, a supposed weight for distension of thread used in spinning; an aboriginal stone implement, found 20 feet beneath the surface, in cement gravel, at Martinez, Contra Costa county, Cal.

James Lick presented some fragments or pieces of the battle flag, which waved over Fort McHenry, during its bombardment, on the 13th and 14th of September, 1814. This gift will be referred to more at length in another issue.

A number of donations to the library were received; among them, 100 volumes of books, from Chas. L. Weller.

Judge Hastings read a paper in reference to the late manifestations in Oakland.

Dr. Forgeaud read a continuation of his former papers on evolution.

The President called the attention of the members to some phenomena which he observed at the Naval Observatory, while looking at the artificial observation of the transit of Venus. At the time of the earlier observations of this planet, there was a doubt as to a phenomenon which showed an apparent adherence of the limb of Venus to the edge of the sun in the internal contact. This was known as the "black drop," when Venus showed an irregular ephemerical condition. As soon as Professor Davidson saw the artificial Venus, he recognized the cause of this thing. We see it every

day in the work of the Coast Survey. It is simply the undulation of the atmosphere when it is surcharged with aqueous vapor. At an elevation of 7,000 or 10,000 feet, where the atmosphere is attenuated, this is not apparent. In observations taken lately in the Sierras, the sun was sharply outlined, but this was at a high elevation. The President stated that he had no hesitation in saying that former theories on this subject were incorrect, and that the undulation of the atmosphere when filled with aqueous vapor is the true cause. If the morning is dark and cloudy, the artificial Venus can be seen with a sharp contact; but when the clouds broke away and the aqueous vapor was heated up, the "black drop" could be seen. The transit of Venus must accordingly be observed at a high elevation, for there they will be enabled to determine within eight or ten seconds the actual time of contact.

The President also stated that Mr. Mumford, of the Telegraph Co., had shown him an instrument for the transmission of musical sounds along a telegraph wire. He himself heard distinct musical sounds sent 800 miles. He has asked Mr. Mumford to extend a wire to the Academy's building, so as to show the members this remarkable invention. A detailed description of the instrument could not be given until patents were obtained.

The President then introduced Prof. E. S. Morse, of the Peabody Museum, in Salem, who spoke a short time, congratulating the members of the Academy in their prosperity. His remarks were well received.

In referring to the death of Leander Ransome, a member of the Academy, the President said: Col. Leander Ransome's name appears on the records at the second meeting of the organization of the Academy of Sciences, April 11th, 1853, and from that time onward took an active part in the work of the Academy. On January 5th, 1854, he was elected Second Vice-President. January 7th, 1856, elected President and continued to preside as first officer until January, 1867—11 years.

His scientific papers, though few, yet his labors in the cause of science and his warm

QUICKSILVER MINES are being worked in Santa Inez Valley, seven miles north of Santa Barbara, which are pronounced by Wm. D. Brown, an expert, who has seen all the well known cinnabar deposits in Mexico and the

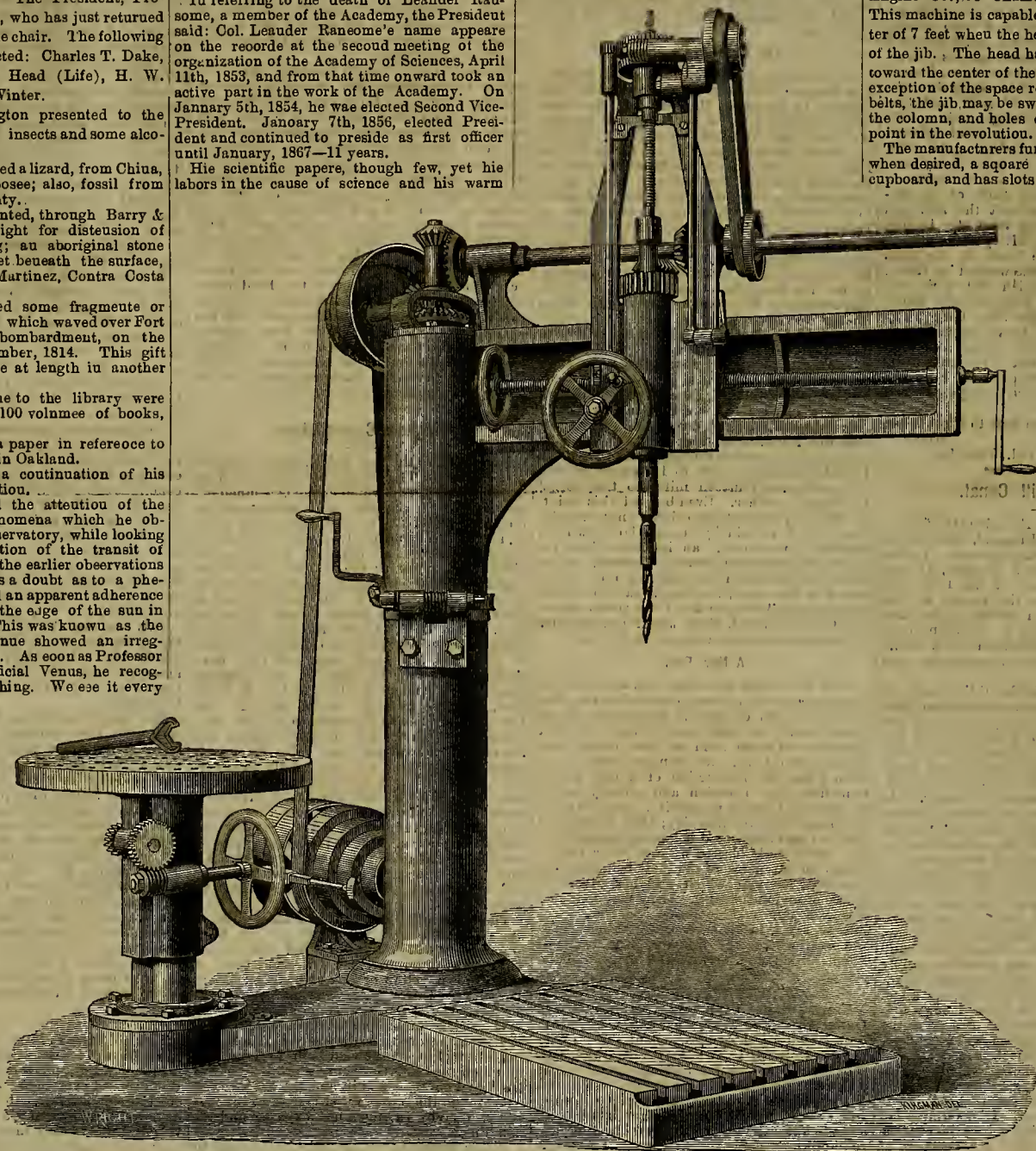
Improved Radial Drill.

We illustrate this week an improved radial drill, manufactured by the New York Steam Engine Co., 98 Chambers street, New York. This machine is capable of drilling to the center of 7 feet when the head is at the outer end of the jib. The head has a movement of 3 feet toward the center of the column, and with the exception of the space required for the driving belts, the jib may be swung completely around the column, and holes drilled at any desired point in the revolution.

The manufacturers furnish, with extra charge, when desired, a square table which acts as a cupboard, and has slots on four sides for holding

knees or angle pieces, or any irregular piece of work. The cone has four changes for a four-inch belt. The drilling spindle is of steel, 2 inches diameter, with 12 inches traverse. The ratio of speed between the cone pinion and the drilling spindle is over 6 to 1.

The feed is self-acting, with three changes; is so arranged as to be instantly disconnected and operated by hand, whenever desired. The base of this machine is fitted for bolting large work upon it, and is further provided with an adjustable revolving table 28 inches diameter, which can be raised 8 inches high from its lowest point. Tight and loose pulleys, 14 inches diameter, 4 1/2 inch face, wearing surfaces all scraped,—wrought iron work case-hardened. Steel wrenches, etc., are furnished complete, with the machine.



IMPROVED RADIAL DRILL.

sympathy and support of those more actively engaged in natural history studies, call forth our admiration, more especially when we consider, that in those early days of gold-seeking and local excitements of one kind and another, together with the cares of settling a family in an unbuild city; and when we find him regularly and punctually attending the weekly meetings of the Academy for so many years, we can but poorly award him the meed of praise. We might go on in words to extol his geniality, gentleness and liberality, yet we leave the records of the Academy, the objects he presented to the museum, and books he contributed to the library, to be a constant memorial of his worth to our institution.

United States, to be, if the surface indications continue below, the richest and most extensive in the world. These mines are located upon the Najalaynaga grant, and it is said that a Mr. Cassell, of San Francisco, has leased the ranch for the term of ten years, with the right to take possession of these mines, and any others that may be discovered, and work them, upon certain conditions. Unless some compromise can be effected with the present claimants, who are in possession, it looks as though a great deal of litigation will soon follow.

The Crown Point and Belcher mines consume two tons of ice per day. It is used to cool the water sufficiently for drinking purposes.

time. The rock is of very low grade. They work as low as five-dollar rock in the 16-stamp mill they have running. The Pi-Uto mill is still running on good rock, and is really a very prosperous mill and mine. The owners, the Bathen Brothers, are about to put up another battery of five-stamps, and also a saw mill, for their own use. They are "routiers." The St. John mine at this place is running along steadily, and with good results. The Long Tom is almost "played," and the mines in the immediate vicinity of Havilah are nearly or about all in the same condition. The Havilah tunnel is still being pushed ahead. Taking it all in all, there is comparatively little doing in the mines of this county at the present time."

MINING AFFAIRS IN KERN COUNTY.—A correspondent from Sageland, Kern county, under date of June 7th, writes as follows of mining matters in that county: "As near as I can learn, the Joe Walker is, or is about to be, abandoned; on account of the water on the ledge. The Big Blue, owned by the Sumner Mining Company, is working along slowly, and at present speed the big mill will not be completed for some

CORRESPONDENCE.

Kern County Mines.

EDITORS PRESS:—This camp is now laboring under a cloud, but not because the mines are not good or that they do not warrant capitalists seeking investment in this direction, but because miners show a lack of energy that is always necessary to insure success, even in the easiest worked mine—which, I, as a practical miner, believe these mines to be. The rock is of a character known as decomposed quartz and abounds in arsenical sulphide ore, which is known to be rich in gold wherever found, usually going when concentrated about 15 per cent, and valued at not less than \$200 per ton, and often much higher. Free gold has paid for all work done and a big margin besides; therefore those rich sulphurets have been entirely neglected and no attempt has been made to save a ton to ascertain their real value.

Rand has, in days gone by, made his mining property pay him the handsome sum of \$350,000, and the Howe mill and mines have paid \$150,000, and other mines have paid equally as well in proportion to the work that has been done.

I left your city on the 6th of May, to rebuild the Howe mill, and work the mines which are connected with the same, and from the discouraging reports given me, I must confess I had my misgivings as to future success, but relying wholly upon my past experience, I went to work; when I was told again that the mines were beyond a doubt good, and that there were parties only waiting to jump the mines, had there been no extension of the mining law of May 10th, 1872, to January 1st, 1875. Now, I do not doubt that there are many hundreds of disappointed sharks and drones similarly situated in the various mines of the Pacific coast. I have now rebuilt the mill and boarding-house, blacksmith shop, etc., besides putting in an entire new battery and amalgamating plates, etc. Have found in the main shaft, in the principal mine worked by Howe, a three-foot vein of ore, which will work from \$18 to \$30, about 60 feet down and not troubled with water. Also in the Blue Lode, a 2½-foot vein of \$90, where Howe extracted the most of the \$150,000 before spoken of. Also another mine within 300 feet of the mill, being a four-foot vein, which will of itself keep the mill running next year, if we may judge from appearances.

I will report to you from time to time if you desire it.

Havilah, Kern county, Cal., June 4th.

The Iowa Hill Canal.

A correspondent of the *Alta* gives the following account of the Iowa Hill canal, which opens up a large extent of mining ground: I offer no apology for sending a detailed, though somewhat lengthy account of the Iowa Hill canal, and the jubilee of the people in this section the other day, on receiving the first installment of water from it—an event duly celebrated with great enthusiasm by a salute of guns, fireworks, torch-light procession and ball.

Considering the magnitude of the work, its inevitable result and cost of construction, there can be no doubt it ranks to-day as one of the foremost works of the kind going on in the State. For many years, although vastly rich in hydraulic ground, both in extent and quality, this district has lain dormant, stagnant, impoverished from the amount of water. As year after year passed away in ruins and idleness, the hopes of the people who clung with tenacity to their property faded in proportion, until they departed almost of ever seeing it rendered profitable in their day and generation. In this dark hour a few men of very limited means, but with the courage and enterprise of the true Californian, took hold of the matter in earnest, organized a company, made a survey, and presented the scheme with such vigor that to-day a large and constant supply of water for most, if not all the year round, is no longer a problem of the future, but a fact assured. The conduct of these men, whose names I need not mention, is deserving the greatest praise. Their scheme was magnified, it is true, but of the utmost magnitude, and extremely costly. Financial difficulties, as well as physical obstacles, surrounded them on all sides. Success or ruin required each to be met in turn and conquered. If determination evinces true manhood, they were evidently the right men in the right place; for, heedless of senseless slander, evil croakings and unjust attacks, they pushed on from step to step, in a way only to be seen in California, until they made success certain. To-day they may well be proud of their exertions; long after our generation has passed away, their example will be cited by those coming after, as showing what perseverance in a good cause can do, and extolled as worthy equally of praise and imitation.

The Main Canal.

The main canal, seven feet on the bottom, four and a half feet deep, with a capacity of carrying 7,000 inches of water, was completed 25 miles last season, allowing three weeks' work more to complete certain minor points. The first large reservoir is about eight miles from town. This, now containing about 30 feet of water and covering 64 acres of ground,

will be raised this season at the wall to 50 feet in height, which will then give 43 feet of water and cover 100 acres of ground. The water in this reservoir is now available, and being used for mining purposes. From this point the main canal runs past the Forks and Secret Houses to Tadpole, New York, Sailor, Big and Long cañons, tapping each in turn, to the North Fork of the American river, making altogether a distance of 40 miles. The total cost including reservoir, will be \$500,000, of which \$95,100 have already been expended.

The Reservoirs.

To secure a constant supply of water to the capacity of the canal at least, throughout the year, the company have several excellent reservoir sites in different places; viz., one at Seilor's cañon, 25 acres; one at Big cañon, 25 acres; and several at the head of the canal, which, together, probably, will cover 500 acres more. If these reservoirs should prove insufficient for the purpose, a tunnel will be run through a gravel ridge 2,500 feet long to connect with the water of the middle fork of the American river. This district, centering, I mean, immediately around Iowa Hill, as already intimated, has only had water for years past, some three months in the season; and, yet, with miners working through short days, and under many other disadvantages, I find the hydraulic ground has paid from \$160,000 to \$200,000 per season. It is therefore safe to say that when this canal is thoroughly completed, the annual receipts of gold will reach \$1,500,000.

The Territory Covered.

Permit me, now, for the information of those at a distance, who may desire to examine this district, to glance at the territory this canal will eventually cover; a territory not speculatively rich and extensive, but proved to be both by actual development. From Bird's Flat to King's Hill, two miles below Elizabethtown, on the south side of Indian cañon, is three miles; from Smiley's store, through Iowa Hill town, to the second Sugar Loaf, on the north side of Indian cañon, is three miles; containing together, on a fair estimate, about 3,000 acres of ground, ranging from 40 to 150 feet deep, which has been proved by actual but limited washing, to be rich from the surface to the bedrock. Then there are Wisconsin and Prospect Hills; Snicker and Grizzly Flats; with other places lying intermediate of these points known to contain gold in paying quantity, all of which are now being covered by branch ditches from the main canal. Over and above all this territory already developed, there is on the line of the main canal a region containing a splendid gravel deposit, of which nothing more is known than that it carries gold strongly, and can be worked to a great advantage, stretching from Iowa Hill town ten miles to Damascus on one side, and some fourteen miles to the Forks' House on the other. Even beyond this point, to which my personal knowledge only extends, there is, it is said by those who know from personal observation, an immense field for successful hydraulic mining. Indeed, so extensive is the belt of auriferous ground intersected by this canal, it is safe to say, that if the water of the American and Yuba rivers united could be introduced, they would not together be sufficient to wash the whole in 50 years.

A New Era.

With these facts before us, it is not astonishing the people of this long deserted town, after so many years of patient endurance, should rejoice greatly in their hearts, when the first instalment of water from the new ditch came rattling into town. No wonder, indeed! To them it was the introduction of a new era—a transition from isolation and poverty to importance and lasting prosperity. Nor was there anything selfish in their joy; they knew, and felt, and said they could not as a community be thus individually blessed without their fellow-beings in all parts of the State being equally benefited; for that which enriches them is a source of national wealth. Long may that success continue and increase. Success, great success, say I, to all such undertakings, here and everywhere, the first and last results of which enrich and elevate the masses of the many.

NIGHT SIGHT VANE FOR SMALL-ARMS AND ORDNANCE.—Two English patents have recently been issued for this improvement. We quote the descriptions: 1. The first invention consists in a peculiar construction of night sight vane for rifles and other small-arms, and also applicable to ordnance, whereby when the rifle or other arm is cocked a light is produced so as to show the line of sight of the gun barrel, and thus enable the arm to be accurately pointed at night time. As soon as the arm is fired the sight vane closes and shuts out the light produced. 2. The second apparatus is intended for artillery especially. It consists of a cylindrical case containing a lamp or candle for illuminating the top of the case, which is made of glass or mica, and has a graduated arc round its circumference; the apparatus is provided with a standard and pointer, the standard having a graduated arc at the back; a shade and indicator are also provided.

NITROGLYCERINE freezes at 7 deg. or 8 deg., but dynamites well prepared maintain their plasticity at 0 deg., and even below. Once congealed the plasticity returns very slowly, but whether congealed or not they seem to be no more or no less dangerous in the one condition than in the other.

Placer Mining In Montana.

In an article on the gold mines of Beartown and Yamhill, the *New Northwest* says: Mr. Wm. Hyde returned on Wednesday from Beartown and intermediate camps. He reports heavy rain falls in Pioneer and Bear, previous to which water was never known to be scarcer at this season of the year. Lawrence & Bro. washed up \$300 last week in the lower part of Bear gulch and over \$200 the week before, which caused new ground to be taken up. Two young men, nephews of Mr. Murray, lately arrived in Bear from the lead mines of Wisconsin, have taken up claims and gone to work in the new ground which is 50 feet deep. Waterman & Cramer, just below Phelan gulch, cleaned up in one day from the winter's dump \$130; they expect to realize \$1,000 each. Several other dumps were being washed but he did not learn the result. Chinamen are ground-sluicing the lower part of Deep gulch. Joaquin Abascal is pipping a 30-foot bank at the head of Deep, but had only five hours' water a day previous to the rains. A visit to Clegg & Van Gundy's claim in Phelan gulch, found those gentlemen busy with five men and two hydraulic working down six feet of gravel on blue bedrock with good prospect. Van says he is coming to reside in Deer Lodge after the mining season is over. Messrs. Leshe & Kroeger have six reservoirs at the head of First Chance, and hydraulic diggings for 10 years to come; both gentlemen are married and happy. Grasshoppers threaten to destroy the crops in the Flint creek valley.

Mr. Hyde paid a visit to the Little Giant on Squaw Gulch which was attracting considerable attention, there being about 50 lookers on. It was working into position with a four inch nozzle and in a few days its capabilities will be tested on a 60-foot bank of gravel. Batterton's claim was also visited. They are pipping on a 40-foot bank with about 70 feet width of channel and are reported to have cleaned up \$896 in a four days' run. A new town is springing up in close proximity to the diggings called Batterton town. John Rogers was placing rocks in the lower part of his flume. Rogers & Broadbent were pipping down in a 60-foot channel, the sight of which makes the head dizzy and the perambulating visitor turns away lest he should tumble down head foremost into the abyss below. Yamhill is the best watered camp in the county as it lasts until the severe frosts about the middle of November. Board is \$6 to \$8 per week. There are more families in Pioneer and Yamhill than ever before.

Bingham Canon Mines.

In a letter to the Salt Lake Tribune a correspondent says: The mines of which we have heard so much, and which created so much excitement last year, are just commencing to open out richly. As they go down, they show an increase in value of silver, and in many of the mines the ore are found to contain gold. Take such mines as the Galena and Jordan which, without prejudice, have the largest bodies of ore exposed on the surface, and in their works, than any mine I have visited before. The Utah, American Flag, Neptune, Spanish and other mines also show large bodies of high and low grade ores, and they have thousands of tons in sight, of ore assaying from 18 to 50 ounces in silver, and 40 to 75 in lead, carrying from \$6 to \$25 in gold. But there appears to be a drawback to parties owning mines which are now in good shape; and the reason they are not more fully developed, is the fact they have not the means to prosecute the work, and are waiting for capital to come in. In my travels, though, I have seen some good mines, and prospects that would soon be mines, that are offered at very low and reasonable figures. The chances for the investment of capital here are most excellent. Although the ores are of low grade, with proper and economical management money can be made.

There are millions of tons of these ores in the mountains here that have not yet been found, and will require capital and labor. These ores differ in character—some being of either brown, yellow or gray carbonates; others galena, mixed with pyrites of iron and decomposed lead—the former predominating.

The theory of mining adopted here, generally appears to be to follow the vein of ore and run a tunnel to tap the vein in the lower works, by which method the vein is properly developed, and chutes are built and the ore wheeled out through the tunnel for shipment to the furnaces, thereby saving much expense and re-handling.

Placer mining is also carried on at present to a great extent, both in main Bingham cañon and Bear River gulch, some taking from \$8 to as high as \$25 to the man. At Bear River gulch some parties are engaged in removing the coarse gravel, and are confident of making \$25 dollars per day to the man out of the fine gravel. Quite a number of Chinamen and Mexicans are engaged in working these mines, and I am informed they are making good wages.

The big steam hammer at the Royal Arsenal at Woolwich, has a falling power of forty tons, and is driven by steam from the top. It has a striking fall of fifteen feet, three inches. The hammer is forty-five feet in height, and covers a base of about 120 feet square. Above the ground it weighs 500 tons, and the iron used in the foundation below weighs 665 tons. The hammer cost altogether about £50,000.

The Prospectors.

Man is the most restless of animals, and the miner is perhaps the least domestic of the whole tribe. Nothing and no place seems to him so good but there is a better where he is not. Mining excitements are largely due to this restlessness in men. By means of it new camps are started and new fields opened for more complete exploration. It is true many wild-cat schemes are started in this manner, run their brief race and die, but also many camps now prospering are established on a firm basis by the same means.

The miner or prospector is the true pioneer, braving all dangers and discomfort with a fortitude worthy of more praise than is generally awarded to him. He enters the wilderness, and with his pick lays the foundation, often, of other men's fortunes. It takes no small amount of courage to encounter the hardships and perils incident to the life of a true prospector, to pierce alone, or with a single companion, through the barriers to the unknown, and live in the lands heretofore given over to the red men. How rapidly are the regions marked "unexplored" disappearing from the maps, and little towns marking the sites of the Indian wigwags, while all over mountains hitherto only known by name, districts are being organized and mines opened. Arizona, until lately only heard of as the home of the Apaches, the most bloody of red murderers, and only figuring in the news columns as the scene of barbarous atrocities, is now becoming noted for its mines, and the fabulous stories of its rich gulch claims and gold ledges are exciting the curiosity and natural cupidity of the mining community. Slowly, it is true, but just as surely, the Indian is being dispossessed, and the white man is entering into his birth-right.

It is in this manner that the prospector works, not only for himself, but for all. Not only is it true that "westward the star of empire takes its way," but wherever and in whatever direction the prospector leads, civilization follows as a natural consequence. Though he may fall in the discharge of his duty, and an unmarked grave may be his only reward, still civilization sweeps on, and unknowingly hallows the resting place of the pioneer.

It is not so many years ago since the Missouri was the western boundary of the United States. The plains were the hunting grounds of the Indians, and the Rocky Mountains existed in the minds of most simply as a misty, half-hidden, fanciful picture, ranked almost as a myth. Their course was guessed at, their extent undetermined. Later even than that, Colorado, Utah and Nevada were one, and California, now one of the richest and largest of the States, was unknown. The geographers in the East, knowing sometimes even less than the least, sprinkled a few names over a vast extent of territory as a sort of seasoning, and complacently rested from their labors in their easy chairs. It was left for the prospector to do the real work, and every now and then some earnest heart and clear head, restless and energetic, would plunge into this *terra incognita*, and fighting sturdily with its difficulties and dangers, reveal some striking fact for the edification and wonderment of our easy-chair historians.

It is true that the motive he is generally actuated by is a desire for gain, not glory, but not the less is he deserving of praise, for he honestly labors for that which is often less a reward of merit in the East, than a result of favoritism.

His achievements need no historian; they speak and are continually speaking for themselves. California, almost unknown in '48, now a State immense in size and wealth, points with pride to its mines, vineyards and agriculture as the result of her pioneers, the 49ers.

Colorado can present not only her mines of gold and silver as testimony of the value of the labors of the boys of '59, the "Pike's Peak-ers," but her mountain towns, Denver, the city of the plains, her railroads and cattle ranges. And so it is throughout the West; wherever we look toward the borders of civilization we see the prospector just ahead, clearing the way with ringing blows of his axe or sturdy strokes of his pick. We seldom hear their names or (we children of a more complete civilization) see their faces, but simply know their vanguard of progress as "the Prospectors."—*Col. Mining Review*.

EXTRAORDINARY MINT WORK.—The melters and refiners' forces at the mint on the 10th, made forty-eight melts of silver ingots, which when turned over to the coiner will make 52,000 trade dollars. As the general public can have but little idea of the amount of labor involved, we may state that the greatest number ever before made in one day in the San Francisco mint was thirty-two melts. The entire amount melted and alloyed on the 10th, was \$1,444.82 ounces of standard silver and 3,345.15 ounces of gold. The necessity for this extraordinary crowding of work is partly in the great demand for trade dollars, which the capacity of the present mint is unable to supply, and also to place the metal in more convenient shape for entry in the annual settlement. In the new mint such a volume of work in a single day will probably not be of unfrequent occurrence should the necessity arise. In the present contracted melting room, however, the men working at the furnaces would be physically unable to continue such extraordinary labors for any length of time.

BIRMINGHAM makes about 1,000,000,000 steel pens annually.

SCIENTIFIC PROGRESS.

Nickel Plating.

Mr. S. P. Sharples, Massachusetts State assayer, gives a brief description of the process of nickel plating. The patent is still before the courts, and no decision has been reached in regard to it. The double sulphate of nickel and ammonium, which is the salt that is generally used, may now be had in commerce almost pure. Cast nickel plates for anodes should be obtained from the same source; the anodes should considerably exceed in size the articles to be covered with nickel. Any common form of battery may be used. The battery power must not be too strong, or the deposited nickel will be black. A strong solution of the sulphate is made and placed in any suitable vessel; a glazed stoneware pot answers very well if the articles to be covered are small. Across the top of this are placed two heavy copper wires, to one of which the articles to be covered are suspended, to the other the anode. The wire leading from the zinc of the battery must then be connected with the wire from which the articles are suspended, the other battery wire being connected with the anode. In order to prepare the articles for coating, they must be well cleaned by first scrubbing them with caustic soda or potash, to remove any grease, and then dipping them for an instant in aqua regia and afterwards washing thoroughly with water, taking care that the hand does not come in contact with any part of them. This is accomplished by fastening a flexible copper wire around them, and handling them by means of it. The wire serves afterwards to suspend them in the bath. If the articles are made of iron or steel, they must be first covered with a thin coat of copper. This is best done by the cyanide bath, which is prepared by dissolving precipitated oxide of copper in cyanide of potassium. A copper plate is used as an anode. After they are removed from the copper bath, they must be washed quickly with water and placed in the nickel bath; if allowed to dry or become tarnished, the nickel will not adhere. Great care must be used through the whole process to keep all grease, dust, or other dirt from the articles to be covered, or else the result will be unsatisfactory. The whole process is one of the most difficult that is used in the arts, it being far easier to gild, silver, or copper an article than to nickel it; but if due care be taken the result will amply pay for the trouble.

EFFECT OF PHOSPHORUS ON STEEL.—At the February meeting of the French Society of Civil Engineers, M. Euverte, director of the steel works of Terrenoire, communicated some details relative to the experiments which have been in progress for the past two years at those works, in order to ascertain the point at which the presence of phosphorus in steel becomes injurious. They were led to these experiments by the difficulties they encountered in freeing the metal from this substance. The metal containing the phosphorus was treated in a Siemens-Martin furnace, in the usual way, the charge of ferro-manganese added containing 42 per cent. of manganese. Not only in the first experiment, but in all the subsequent ones, the metal obtained was malleable and of excellent quality. Hence M. Euverte concludes that phosphorus may exist in the steel without injury, provided that the carbon be at the same time proportionately diminished. The amount of phosphorus which may be present without affecting either the tensile strength of the steel or its malleability is variable; rails of great excellence are made of steel containing 0.3 per cent. of phosphorus and 0.15 of carbon. Though not recommending the addition of phosphorus, M. Euverte believes that, for special uses, steel which contains it, provided the carbon is low, will take an important place in the arts.

THE EARTH'S TEMPERATURE.—We have always defended the idea that changes of temperature which different parts of the earth have undergone need not be explained by the hypothesis of a change in the position of the ecliptic, or the absurd notion of a change in the position of the terrestrial poles and equator, the latter being an assumption of which already Laplace proved the impossibility. Our theory has always been that a simple upheaval of say 4,300 feet (which is a trifle when compared with the earth's diameter of say 43,000,000 feet, being only its one-10,000th part) is sufficient to explain all changes in temperature, also that of the glacial period, which we hold not to have been universal, but local in different regions during different periods of time. We now see with satisfaction that Prof. Dana expresses the opinion that the Canadian water-sheet must once have been 4,500 higher than at present, and that the transformation of northern Canada into a plateau as high as Mount Washington gives a sufficient explanation for the cause of the glacial period for the eastern half of North America. Prof. Dana thinks also that when this plateau subsided, it sank below its present level, and that this was followed by a return movement.—*Manufacturer and Builder.*

The principle of dephosphorizing iron by the Jacobi process, consists in dissolving out the phosphatic impurities of the ores by treating them with sulphurous acid, the wash-water being utilized to extract therefrom the phosphate of lime.

The Magnetic Metals.

It is well known that, besides iron, there are a few other metals possessing magnetic properties, viz., nickel and cobalt in a strong degree; manganese and chromium in a feeble one. In the *Philosophical Magazine* we find a remarkable article on this subject, by Mr. W. F. Barrett, F. C. S., in which he endeavors to point out the similarity of these metals to each other, in their physical and chemical properties. Thus, as to specific gravity, that of the 38 known metals ranges from lithium 0.50 to platinum 21.5, a difference of nearly 21; whereas those of the three strongly magnetic ones are, iron, 7.8; nickel, 8.3; cobalt, 8.5, where the extreme difference is only 0.7. Their specific heat is nearly identical, their atomic one is the same, so, also, their conductivity for sound, heat and electricity. Their dilation by caloric and the amount they lengthen by mechanical strain are also identical. The enormous cohesive power of iron, nickel and cobalt in the solid state signifies these substances as the most tenacious of metals, and their melting point is only exceeded by the platinum group of metals. They are not volatile at the temperature of the hottest furnace, but only by the electric spark, when they yield very similar spectra. As to their chemical properties, the combining weight of iron is 56.0; nickel, 58.5, and cobalt the same. Chemists class these three metals in the same group from the similarity of their chemical behavior, and also the identity of their combining energy or atomicity. What has been said concerning the likeness of iron, nickel and cobalt in many respects, hold true of manganese and chromium. The former has latterly been used to replace nickel in the alloy of German silver. The compounds of all these five metals are conspicuous for the brilliancy of their colors. This uniform coincidence suggests the practical inference that nickel and cobalt might be obtained in a malleable and ductile condition when submitted to a process similar to that by which wrought iron is produced.

A Stratified Atmosphere.

We have heretofore assumed that the gases which originally composed the aerial envelop of the earth took up separate positions therein, according to their specific gravities. This might seem to be controverted by experiments on the diffusion of gases, in which those of very different weights, as chlorine and hydrogen, will intimately commingle, even against gravity, when brought into contact. This may be true in the narrow compass of a laboratory experiment, and yet not apply to any considerable thickness of the gases. Such a diffusion of one mile in depth of chlorine, would be equal to lifting up to the hydrogen a shell of solid iron two feet thick. Whether we explain the distinguishing principle of the constitution of gases as a mutual repulsion of their molecules, or, according to a late theory, as an incessant motion and clashing of atoms, there is nothing in either to warrant the supposition of the lifting or overcoming any considerable weight in the diffusion of gases. Under the first theory diffusion to a limited extent would be accounted for by the small residuum of chemical or cohesive attraction that would remain between the atoms when separated as they are in gases; and under the last theory by the mechanical impulsion of the molecules, through their hitting against each other. Evidently it is a principle which operates only within narrow limits and in the lower temperatures of the gases. The sun gives no indications of such a commingling of its gaseous elements. Spectrum analysis, when applied to its outer edges, shows first hydrogen, then the vapors of sodium and magnesium, and lastly those of calcium and iron. The same fact and order of position are found to exist in the more condensed layers of the sun spots.—*Popular Science Monthly.*

EXPANSION OF GASES.—That gases expand by heat is shown by the ascent of a hot-air balloon, and by the draught up a chimney. Since the balloon rises it must be urged upwards by a force greater than its weight. Its weight is the weight of the fabric together with the hot air in it. The upward force of the weight of the cold air which the balloon displaces, and hence the ascensional force of the balloon is the difference between the weight of the fabric together with the weight of the hot air, on the one hand, and the weight of the displaced cold air on the other. Accordingly the balloon full of hot air must be lighter than the balloon full of cold, or air must expand on being heated. Heated in a flask, provided with a vertical tube pointing downwards, the heat-expanded air forces its way out of the tube and will force down against the pressure of the air a liquid in the tube. Exposed to different temperatures such an apparatus forms an air-thermometer, but being exposed to the constantly-varying pressure of the air, cannot show exactly variations in temperature alone. If two such flasks be connected together by a tube containing a liquid, the liquid will be driven away from the flask which is most heated; and a "differential" air-thermometer is thus formed which is thus shut off from atmospheric pressure, and which is not affected by a general change of temperature, but which shows a difference in the temperature of bodies surrounding the two flasks.

CARMINE acid, according to Guignet, gives a black lake with lime, the combination formed differing in respect to color from all the other lakes formed with this substance.

MECHANICAL PROGRESS.

Cleaning Water Mains.

The following description of the means employed in cleaning out the water mains supplying the city of Brisbane, Australia, will be of interest to all who are connected with public water-works in this country. The main pipes supplying water to the city of Brisbane is 8 in. in diameter for 5 miles, and 9 in. for 2½ miles. Shortly after its completion it was found that, in consequence of the high temperature and the small quantity of mineral salts, the interior of the pipe became covered with moss, especially for the first half mile; and this, with the corrosion of the metal along the whole length, not only greatly diminished the quantity of water conveyed, but also deteriorated the quality, as portions of the incrustation became detached, and, floating down the main, caused much inconvenience to consumers, and even choked the service pipes. The scum valves, which had originally been placed at the lower points on the line of main, proved inadequate to the removal of the deposit, as it adhered to the surface of the iron, and therefore, the officer in charge of the works, suggested that it would be desirable to scour the interior of the main by the use of a machine to be propelled through by the pressure of the water. The subject being one of great importance, and involving much difficulty from the deficiency of precedents, several examinations were made of different parts of the main where it was accessible by the valves, and it was found that the incrustation was as much as 2 in. thick in parts of bottom of the pipes, and that for the whole length the metal was very rough from corrosion. The engineer having been authorized to carry out his suggestion, proceeded to construct a suitable machine for scraping the interior of the pipe, and after several experiments on different forms, completed a very efficient machine tube, which consists of a central shaft of 1 in. gas pipe 3 ft. 4 in. in length, with ferrule junction for the convenience of introduction into the openings of the main. Attached to this central shaft are a number of steel springs 1 in. wide, and 1-10th in. thick, inclined about 30 deg., so as to press on the sides of the pipe, and act both as scrapers, and to support the shaft in the center. At about equal intervals on the central shaft are fixed four pistons, each formed of a disc of India-rubber, one half in. thick, and supported in front by eight radiating plates, or flat arms, attached by hinge joints, so as to fold back on meeting any obstruction or irregularity of the internal surface of the main, any leakage of one piston under such circumstances being met by the other three, while circumference of each piston and its radiating plates also act in a very effectual manner to remove the softer deposit. For the insertion of the scraper, special castings were fitted at intervals of about one mile in the main pipe, each having a plate bolted on, and covering an aperture 2½ ft. long, and the same width as the diameter of the pipe. The object of having several openings is to afford convenient means of removing impurities, and allowing of short portions being cleaned without interfering with the supply to the city. The effect of the scraper has been very satisfactory, as it has increased the delivery of the main; while the quality of the water is so greatly improved that it is now used for manufacturing purposes, for which it was previously unfit through impurity.

NEW MARINE PROPELLER.—Probably few inventions have been more useful and simple than the screw propeller, and few have been the subject of more modifications in form, and simply in form, without any in principle, than Mr. Pettit Smith's valuable contrivance. A new propeller has been introduced by Dr. Browne, which differs considerably from any other in use, somewhat resembling when at rest the letter X, and claiming to offer many advantages over those commonly employed. These are absence of vibration, reduction of wear and tear to machinery, ready adaptability to any screw steamship, and facility of checking a ship's way with the power of driving her full speed astern in a few seconds on reversal, as well as giving considerable increase of speed and effecting a great saving of coal.

ELECTRICITY VS. THIEVES.—A novel door-fastening has been recently contrived in Berlin. It consists of electro-magnetic machinery for bolting the office doors from the manager's or cashier's desk, a knob being fastened to the desk or counter, by pressure on which the electric current is made to push a heavy bolt across the doors. The effect is instantaneous. The short period employed by a thief or forger in gaining the door, in some cases suffices for his detection; and, in that event, his escape might be effectually cut off. The machinery has been constructed to the order of a large banking firm in Berlin, in whose office it is now in use, though there has been no occasion as yet to test its powers otherwise than experimentally; but, when so tried, it has given satisfaction.

TINFOIL DECORATIVE PAINTING.—An effort is being made to introduce on a large scale in England a novel industry, well known and appreciated in Paris—that of mural decorations executed in sheets of tinfoil. The process is that of Messrs. Daniel and Co., of Paris, and it is proposed to acquire the various patents in different countries for the process.

Mammoth Cotton Press.

The new press of the Standard Compress Co., of New York, is an immense press, weight 100 tons, with 1,600 tons pressure, costing \$80,000, calculated to squeeze a bale of cotton or hay almost out of existence. The machine will press cotton or hay to any size required or desired, to 9½ inches for an ordinary bale of cotton of 500 pounds, or two ordinary bales of hay of 250 pounds each. In applying the iron ties it is almost impossible to get them tight, and the result is that the bale expands some six inches, measured at the thickest part, after withdrawal from the press. But once it expands the ties to their limit, the size is fixed not to exceed 18 inches. This press has a great advantage by reason of the uniformity in size of the bales after they are pressed. In railroad packing it has been found that a 28-foot car is entirely filled with 16,000 pounds of cotton, while its capacity for weight is 22,000 pounds. If cotton can be pressed in this way, cars will employ all their capacity when they carry cotton or hay, and be enabled to do it cheaper than now. In regard to ocean forwarding, the custom is to pack cotton as light, bulky freight. By crowding it into half the space, the carrying capacity is doubled, and the result will probably be a greater amount of such forwarding across the ocean by steam vessels, instead of the slower method of forwarding by rail. Two bales of hay, measuring in width on top of each other six feet and two inches, were unhooped and thrown together into the compress. In a moment they were hooped and taken out as one bale, and the whole mass, after expansion to the ties, measured only 20 inches at the thickest part. Cotton or hay may be thus pressed at the rate of a bale a minute, and put in such shape that a sailing vessel, instead of ballasting, may with perfect safety carry her full complement of cargo in cotton or hay.

PAPER BAGS.—Not many years ago these articles, so necessary in every description of retail business, were generally made by the consumer, and were but rarely purchased. Now the reverse is the case. They are but seldom made by the person using them, and, in consequence, a great trade is done in them, many persons being wholly employed in the business. Many patents have been taken out to produce them by machinery. They are thus made not only of the ordinary old-fashioned shape, but also with square bottoms, with rounded bottoms, with gusset-aides. They are also made in endless tubes, and cut off in lengths. Perhaps the latest invention is that of Mr. L. W. of Chatham, N. Y., and is described as "a mechanical device for making paper bags in one piece from a roll of paper." The paper is folded in the direction of its length from the two sides, so that the edges overlap one another about an inch in the center, the edges being pasted together. The paper is drawn through a folding machine, with the seam on the upper side, centrally, by a pair of rollers, which feed it along to the devices for forming the bottom of the bag. The feed-rollers then stop until the bottom is formed and the bag cut off the required length, when they again feed it forward, pushing out of the machine the bag already formed, and so on, making a bag at every revolution of the machine.

RAISING SUNKEN SHIPS.—At a meeting of the Inventors' Institute, London, a paper was read by Mr. T. Vafea, on raising sunken ships or vessels, and also prevention of foundering of same. The main features of the plan were, first closing hermetically the hatches, port-holes, and all other openings in the deck or upper or side parts of the sunken ship, and after having so closed the opening to pump down air to the bottom of the ship through tube or tubes which are inserted either through the bottom of the ship's hull, or through the ship's deck, each tube being passed down close to the bottom of the ship. The air thus introduced into the bottom of the ship rises by itself inside of the ship towards the underside of the deck, and not being able to escape presses the water contained in the ship down and out of the ship through the hole made by accident, or through holes made in the ship's bottom to allow of such escape of water. The vessel by this means will be rendered buoyant, and cause the same to rise to the surface. To prevent foundering of ships, or reduce the risk to a minimum, the ships are provided with air-tight covers, which, when fixed over the openings in the ships, confine the air therein, and keep the ship always buoyant by preventing the entrance of water.

MACHINE FOR BUILDING EARTHWORKS.—This invention consists of a strong frame, mounted on casters or wheels, for moving along the ground readily, and having an elevated platform hinged at one side, and held down at the other side upon powerful springs, on to which the earth is scraped up an ascending way, or otherwise delivered upon it. The earth is finally discharged in the direction of the place where it is to be spread by tripping the platform and allowing the springs to throw it up with sufficient force to project the earth from it. A windlass is employed for forcing the platform back for re-loading, with ratchets and pawls for holding it. The machine is more particularly designed for levee building and, it is believed, will be found very serviceable in building up banks of considerable height, by saving much of the labor of the animals in moving themselves and the scrapers up and down the banks.

Weekly Variations in Stocks.

(Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.)
For 6 days ending Wednesday, June 17, 1874.

NAME OF COMPANY.	FEET IN MINE.	SHARES IN MINE.	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.						
Alamo	300	6000	17W	13TH	4W	
Alpha Con.	3600		85W	82TH	3W	
Alta	65	24000	72W	67TH	5W	
American Flat	1040	10400	83S	78TH	5S	
Bacon M. & M.	224	22400	105W	102TH	3W	
Baltimore Con.	1040	10400	83S	78TH	5S	
Belcher	224	22400	105W	102TH	3W	
Best & Belcher	224	22400	105W	102TH	3W	
Bowling	224	22400	105W	102TH	3W	
Buckeye	224	22400	105W	102TH	3W	
Bullion	224	22400	105W	102TH	3W	
Caledonia	224	22400	105W	102TH	3W	
California	224	22400	105W	102TH	3W	
Chollar-Potosi	224	22400	105W	102TH	3W	
Confidence	224	22400	105W	102TH	3W	
Consolidated	224	22400	105W	102TH	3W	
Crown Point	224	22400	105W	102TH	3W	
Dardanelles	224	22400	105W	102TH	3W	
Dayton	224	22400	105W	102TH	3W	
Eclipse	224	22400	105W	102TH	3W	
Empire M. & M.	224	22400	105W	102TH	3W	
Exchequer	224	22400	105W	102TH	3W	
Fairmount	224	22400	105W	102TH	3W	
Flower	224	22400	105W	102TH	3W	
Globe	224	22400	105W	102TH	3W	
Gould & Curry	224	22400	105W	102TH	3W	
Hale & Norcross	224	22400	105W	102TH	3W	
Imperial	224	22400	105W	102TH	3W	
Indus	224	22400	105W	102TH	3W	
Insurance	224	22400	105W	102TH	3W	
Jacob Little	224	22400	105W	102TH	3W	
Justice	224	22400	105W	102TH	3W	
Kentuck	224	22400	105W	102TH	3W	
Kennecott	224	22400	105W	102TH	3W	
Kossuth	224	22400	105W	102TH	3W	
Lady Bryan	224	22400	105W	102TH	3W	
McKenna	224	22400	105W	102TH	3W	
Mercury	224	22400	105W	102TH	3W	
Nevada	224	22400	105W	102TH	3W	
New York Con.	224	22400	105W	102TH	3W	
Occidental	224	22400	105W	102TH	3W	
Overman	224	22400	105W	102TH	3W	
Phil. Sheridan	224	22400	105W	102TH	3W	
Rock Island	224	22400	105W	102TH	3W	
Sage	224	22400	105W	102TH	3W	
Seg. Belcher	224	22400	105W	102TH	3W	
Seg. Caledonia	224	22400	105W	102TH	3W	
Seg. Rock Island	224	22400	105W	102TH	3W	
Senator	224	22400	105W	102TH	3W	
Sierra Nevada	224	22400	105W	102TH	3W	
South Con.	224	22400	105W	102TH	3W	
Succor M. & M.	224	22400	105W	102TH	3W	
Taylor	224	22400	105W	102TH	3W	
Union	224	22400	105W	102TH	3W	
Woodville	224	22400	105W	102TH	3W	
Yellow Jacket	224	22400	105W	102TH	3W	
NEVADA.						
Alps	224	22400	105W	102TH	3W	
Amador Tunnel	224	22400	105W	102TH	3W	
American Flat M. & M.	224	22400	105W	102TH	3W	
Arkansas	224	22400	105W	102TH	3W	
Belmont	224	22400	105W	102TH	3W	
Bowling	224	22400	105W	102TH	3W	
Chapman & M.	224	22400	105W	102TH	3W	
Chollar-Potosi	224	22400	105W	102TH	3W	
Chief East Extension	224	22400	105W	102TH	3W	
Consolidated	224	22400	105W	102TH	3W	
Crown Point	224	22400	105W	102TH	3W	
Dardanelles	224	22400	105W	102TH	3W	
Dayton	224	22400	105W	102TH	3W	
Eclipse	224	22400	105W	102TH	3W	
Empire M. & M.	224	22400	105W	102TH	3W	
Exchequer	224	22400	105W	102TH	3W	
Fairmount	224	22400	105W	102TH	3W	
Flower	224	22400	105W	102TH	3W	
Globe	224	22400	105W	102TH	3W	
Gould & Curry	224	22400	105W	102TH	3W	
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Seg. Rock Island	224	22400	105W	102TH	3W	
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Union	224	22400	105W	102TH	3W	
Woodville	224	22400	105W	102TH	3W	
Yellow Jacket	224	22400	105W	102TH	3W	
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Yellow Jacket	224	22400	105W	102TH	3W	

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt. Levied.	Delinq't.	Sale.	Secretary.	Place of Business.
Alps S M Co	Ely District	7	25 April 23	May 25	C D Squire	426 Montgomery st
Arizona & Utah	Washoe	9	10 June 11	July 15	Joseph Maguire	419 California st
Baltimore Cons M Co	Washoe	10	10 May 7	July 25	D T Bagley	419 California st
Buckeye C & S M Co	Washoe	10	50 May 7	June 9	C A Sankley	331 Montgomery st
Bowling Cons M Co	Ely District	5	20 May 14	June 28	C E Elliott	419 California st
Calaveras G M Co	Cal	5	50 May 15	June 16	T B Wingerd	318 California st
Gold Mt G M Co	Holcomb Valley, Cal	5	50 May 15	June 20	J P Covelier	419 California st
Globe Cons M Co	Washoe	2	100 June 11	July 15	Joseph Maguire	419 California st
Globe M Co	Washoe	7	100 June 11	July 15	Joseph Maguire	419 California st
Hale & Norcross S M Co	Washoe	45	50 June 8	August 4	J F Lightner	438 California st
Imperial S M Co	Washoe	19	100 June 5	July 8	W E Dean	419 California st
Ingotary S M Co	Ely District	15	25 May 4	June 19	C S Neal	419 California st
Justice M Co	Washoe	15	100 May 23	June 29	A Noel	419 California st
Mahogany G & S M Co	Idaho	12	50 May 8	June 12	W F Bogart	411 California st
Mint G & S M Co	Washoe	10	10 May 1	June 3	D A Jennings	401 California st
New York Cons M Co	Washoe	9	10 May 12	June 12	H C Kibbe	414 California st
Overman S M Co	Washoe	29	300 June 9	July 13	W W Stetson	419 California st
Quintero M Co	Nevada	2	10 May 27	June 30	H C Kibbe	419 California st
Rock Island G & S M Co	Washoe	2	10 May 13	June 16	J W Clerk	418 California st
Sage M Co	Washoe	14	50 May 22	June 24	E B Holmes	419 California st
Sierra Nevada S M Co	Washoe	33	50 May 14	June 19	H Weger	414 California st
Senator S M Co	Washoe	10	50 June 3	July 11	H Boyie	Stevenson's Buildings
Spring Mountain Tunnel Co	Ely Dist	8	10 May 22	June 3	J M Brimington	Merchants' Ex
St. Lawrence M & M Co	Cal	6	40 May 1	June 1	R B Noyes	418 Kearny st
Tecumseh G & S M Co	Cal	10	25 April 25	June 6	F J Hermann	Merchants' Ex
Tyler M Co	Washoe	5	30 June 4	July 9	G D Kihuro	Merchants' Ex
Washington & Creole M Co	Ely District	11	100 May 6	June 9	F D Cleary	Merchants' Ex
Woodville M Co	Washoe	7	100 May 23	June 27	A Noel	419 California st

OTHER COMPANIES.—NOT ON THE LISTS OF THE BOARDS.

Amador Cons S M Co	Nevada	8	15 May 18	June 22	July 13	S E Holcombe	422 Montgomery et
Cherokee Flat Blue Gravel Co	Cal	32	5 May 18	June 23	July 10	H Pichoir	603 Washington st
Dutch Flat Blue Gravel Co	Cal	3	10 April 28	May 18	August 5	W B Helman	401 California st
Electric M Co	Cal	10	10 June 10	July 15	August 5	A E Paul	318 California st
Gravel Co	Cal	10	10 June 10	July 15	August 5	J T Fowler	318 Montgomery et
Grava Cons M Co	Cherry Creek	21	21 May 18	June 8	June 23	J T Milliker	302 Montgomery et
Gold Mountain G M Co Holcomb Ore	Cal	13	21 May 15	June 20	July 10	P P Cavalieri	413 California st
Gravel Co	Cal	10	21 May 18	June 20	July 20	W J Palmer	407 Market & Spear st
Great Eastern G M Co	Cal	1	1 00 May 18	June 8	June 23	F J Stuckert	419 California st
Hertford M Co	Washoe	10	20 May 1	June 4	June 23	E F Stone	419 California st
Independence Cons M Co	Cal	15	15 May 17	June 13	July 3	F J Hermann	418 Kearny st
Independence Gravel G M Co	Cal	6	50 May 18	June 3	June 23	W B Helman	240 Montgomery et
Kearnsare G M Co	Cal	10	50 May 4	June 16	July 8	W M Helmen	401 California st
North Bloomfield G M Co	Cal	32	1 00 June 15	July 20	August 10	Thomas Berby	820 Essing on st
North Star Tunnel & M Co Butte Co	Cal	12	10 May 11	June 13	July 14	A M Reilly	520 Washington st
Ohio Cons Co	Celarasos Co	10	20 May 30	July 1	July 20	W Aug Knapp	118 Liedesdorff st
Prospect Hill Cons S M Co Enreke Nev	Cal	1	15 May 26	June 20	July 9	A Noel	419 California st
Prospect Hill M Co	Nev	1	15 May 26	June 20	July 9	H Brown	409 California st
Soledad G & S M Co	Cal	12	10 May 8	June 13	July 4	E Barry	415 Montgomery et
South Fork M Co	Pleaser Co	10	5 May 30	July 6	July 27	P R Blake	306 Montgomery et
South Fork M & M Co	Cal	6	5 May 26	June 13	July 4	W M Haffington	Merchants Ex
Tallie Mountain B G M Co	Cal	5	50 May 8	June 16	July 8	W M Haffin	534 California st
Valley Conper M Co	Nevada	10	10 June 15	July 15	August 1	Wm H Martin	534 California st
Yarnus G & S M Co	Cal	1	30 May 5	July 18	August 8	S Pettee	328 California st
Yarnough S M Co	Cal	5	1 00 Mar 27	May 5	June 1	W H Ford	415 Montgomery et
Yarnough S M Co	Cal	4	50 April 27	June 1	June 22	E Barry	415 Montgomery et

was assayed a short time ago, and showed a yield of \$45 per ton in gold and silver, besides a large quantity of copper.

RICH ORE.—A large body of unusually rich ore has lately been struck, both in the Oneida and Little Amador mines.

ORIGINAL AMADOR.—*Ledger*, June 13: A very valuable discovery has been made in the Original Amador mine, at Amador city. A vein four feet in width of very rich rock has been discovered at a considerable depth below the surface east of the old works, which is pronounced to be the regular vein or ledge. This mine, some time ago sold for a high figure, but in working what was supposed to be the lead, proved to be an unprofitable investment, but the recent discovery, from all we can learn, will re-establish the good name of the mine.

CALAVERAS COUNTY.

LOYD'S MILL.—*Citizen*, June 13: This mill has been pounding away on rock hauled from the North Fork mine for the last few weeks. The rock now being crushed is taken from a new mine near McFall's ranch, and the plates indicate that it is paying well. One hundred tons will be worked for the purpose of testing the question of "pay or no pay."

SHEEP RANCH MINE.—One day this week we had a peep at the result of the last ten days' run at this mine. Placed in the sealest notched equilibrium at \$4,014 50, which is a big yield for the ten days and five stamps.

INAUGURATION OF ANOTHER NEW MINING ENTERPRISE.—*Chronicle*, June 13: Tuesday last, everything being in readiness, piping was commenced in the Emerson hydraulic claim in Happy valley. The claim was purchased by Emerson of Mr. Drumm, by whom it had been worked, on a moderate scale, for a number of years. The new proprietor has supplied the mine with all the modern appliances known in connection with hydraulics. A new flume, 720 feet in length, two feet wide, with grade of six inches to the box, has been laid. The hydraulic has a pressure of 140 feet, the water—250 inches—being conveyed to the mine in a 13-inch iron pipe. The claim is several acres in area, the gravel varying from 60 to 100 feet in depth. Everything worked first-rate when water was turned on last Tuesday.

QUAKER CITY.—Very favorable developments are being made in the old Quaker City mine, near the Junction. In running a level at the depth of 53 feet, the ledge shows from four to five feet in width, the ore being rich in free gold.

BLUE MOUNTAIN.—The Heckendorn mine is paying handsomely, and is reaching an advanced stage of development. The ore is getting richer as the shaft increases in depth. More level galleries are going to be opened immediately. The mill is running day and night.

EL DORADO COUNTY.

MINING ITEMS.—*Republican*, June 13: The active operations now inaugurated seem to make it certain that the El Dorado Water and D. G. M. Co. will construct their new ditch. A large force of surveyors have been at work on the line for several weeks, and now large numbers of Chinamen are being pushed forward to do the excavating. We do not expect the work can be completed this season; but such a beginning is being made that we are warranted in asserting that the new ditch is now a fixed fact, and the only question about it is as to the time of completion, and that can hardly exceed another year.

The so-called "Boulder Claim" has recently been sold to the California Water Company. The ground has passed into the hands of thirty Chinamen, the water company reserving all the water rights. This company has just completed and laid down about 4,000 ft. of iron pipe, to furnish a permanent supply of water to the claim. It will take about 15 years to work the claim out. Pilot Hill will now have a large, permanent supply of water, which will not only give a new impetus to mining, but will be of great benefit to the farming interest, affording a chance to raise alfalfa, fruit, etc.

HYDRAULICINO at the Excelsior is progressing very favorably; two streams, from six-inch nozzles, are kept constantly playing upon the banks of the claim. A \$20,000 or \$30,000 clean-up will soon be made.

INYO COUNTY.

MINING MATTERS.—*Independent*, June 6: A tunnel is being driven in on the Silver Sprout, which, it is expected, will tap the ledge in about 20 days, and about 50 ft. below the bottom of the deepest shaft. Captain Chase is still perseveringly hammering away, solitary and alone, as for the last three or four years, on his tunnel over at the Chryseopolis. He is now in about 150 feet, every inch of it his own labor, and full in the faith that he will strike the ledge in a very few feet more. We hope so, and a second Mono in value.

NAPA COUNTY.

THE EMMA MINE.—*Register*, June 13: We were shown some very rich specimens of rock from the Emma, a quicksilver mine in the Pine Flat district, and lying alongside the Geyer. Work was commenced two months ago, and a large quantity of ore is already out. Ten to fifteen men are employed, and it is thought that the prospects are excellent.

CINNABAR AT THE REDWOODS.—*Meers*, S. Wing, E. Nichols and J. Wilson are engaged in opening out a mine discovered some time since on the land of Mr. W., at the Redwoods, and have good prospects of making a rich find.

ANOTHER QUICKSILVER DISCOVERY.—Mr. Swartz, driver of the St. Helena and Pope valley stage, brought over on his last trip from the latter place specimens of quicksilver ore just

taken out from a newly discovered mine between Pope valley and Putah creek. The discovery was made a few days ago, and the mine is located by Messrs. Van Ardale and others. Much excitement is said to prevail.

BROTHER JONATHAN.—*Reporter*, June 13: This quicksilver mine, recently discovered by a party sent out by Dr. C. E. Davis, of St. Helena, is now being worked. A company has been formed and a tunnel is being run, and from the ore shown us, this mine presents every indication of being one of the best in that region. The mine is situated on Government land, with living water and plenty of timber in the immediate vicinity, is easy of access, and the ledge runs from Bear creek eastward over a hill 500 feet high.

NEVADA COUNTY.

NEW YORK HILL.—*Tidings*, June 13: This mine still continues to turn out the stuff of which gold bars are made. A bucket full of quartz just from the face of the work in the lower tunnel was brought to our notice which was literally, without exaggeration, filled with the yellow, precious metal. It does us more good to chronicle from time to time this steady improvement in the development of a mine which has for years lain idle, and been condemned as worked out, than the regular work of the big mine, like the Idaho, Empire, etc. Let work start up on the other end of Massachusetts hill—say in Scadden's Flat—on the Kentucky, Lukermann, or any one of a hundred, once well thought of, but now neglected or idle mine, and one by one the five hundred mines hereabouts, which are almost sure to pay sometime, would come to the front. The hills here are interlaced with a net work of gold veins and work will make them valuable.

At the Idaho mine this week all has been bustle and activity getting in the new Burleigh drills, four in number, and the air compressors to drive them. At the time we were out there they were pretty well along, and will be ready to run about Tuesday next. The large, double-acting compressor is driven by a 15-inch engine, and the whole machinery is of the best manufacture, and most approved pattern.

IMPORTANT WORK.—Some of the best hydraulic gravel mines in the State are to be found at Chimney hill, near Cherokee, in this county. They are very extensive, also; but, for want of an outlet, only 50 to 90 feet of the top ground can now be worked. A tunnel, to run from the Yuba river up under this hill, would open the same ground to a depth of three hundred feet, and also render available many thousand square yards of surface now impossible to reach. Such a tunnel has long been talked of as desirable, but capital was necessary, and has not heretofore been fit to undertake the work. We are glad to learn from the *Transcript* that the Milton Water and Mining Company recently had a survey made, and expect to begin work on such a tunnel very soon. They are said to be abundantly able to push it to completion.

OCCIDENTAL MINE.—The Nevada *Transcript* says: This mine was purchased by Bruce Lee some time in April last. It is located about three miles from town on Brush creek. The surface had been prospected a little, but no depth could be obtained on account of water. Mr. Lee erected hoisting works on it soon after its purchase, and has since been engaged in sinking on the ledge. This week he has struck the south chute of rock, and from the specimens we saw, which were numerous, it is likely to eclipse all the mines in the vicinity. The ledge is from two to four feet thick, and the rock is full of iron pyrites and galena, through which free gold is plainly visible. The depth now reached is 110 feet.

ANOTHER RICH STRIKE.—The Nevada *Transcript* seems to be kept busy in chronicling rich mining strikes, and the business, we add, is a good one. The last issue of that paper tells the following: Hamilton McCormick, who owns a hydraulic surface claim on Hitchcock ravine, at the head of Gold flat, has, by sluicing off the surface dirt, discovered a ledge, the rock of which is very rich. From 20 ounces of the rock he yesterday obtained 14 ounces of gold. The surface dirt all over the ravine below the place of discovery, has been rich, and the gold is supposed to have come from quartz, as there is no gravel higher up the hill from which it would come.

PLACER COUNTY.

MONTANA MINE.—*Placer Herald*, June 13: This mine, located in Colfax district, is now lying idle. Every indication goes to prove the mine a good one, but it wants depth, and to acquire depth requires capital.

The Rising Sun mine, at Colfax, is being worked as usual with good results. Hundreds of thousands of dollars have already been taken out of this mine, and still the commencement of its greatness is a matter of to-day. Continued developments are bringing to light better prospects, and under the management of ex-senator J. H. Neff, who has now charge of the works, we may expect to hear of bigger dividends than ever.

PLUMAS COUNTY.

MINING NOTES.—*Argus*, June 13: A large number of claims in the neighborhood of Light's cañon are being worked, and we are informed that the prospects are first-rate for a big yield. The New York and Buckeye claims, at Sawpit, are doing a big business, lately, and the miners in the lower part of the county are all making good use of the water season.

SAN BERNARDINO COUNTY.

NEW YORK DISTRICT.—*Guardian*, June 6: Mr. Rouchon came in this week from the New York district and showed us some of the richest silver ore we have seen yet. This ore is from a

new mine of his, the Clara Rouchon, and some of it was assayed a few days ago by Mr. Joseph Craig, making the return of \$1,206.71 in silver, per ton. Mr. R. reports encouragingly from that district and believes it to be the richest mining district in Southern California.

SIERRA COUNTY.

A YEAR FOR STRIKES.—*Mountain Messenger*, June 13: This seems to be a year for "strikes" in mining in this section. First the Oak Ranch Co. found a fine body of rich pay gravel; then the York Bros. commenced taking out gold in large quantities, and now Thatcher & Co. have struck it rich. The boys in the State Castle have been making a good thing, having taken out \$300 in one week. The American Hill Co.'s ground is paying exceedingly well. Alexander & Co., near Deadwood, have good diggings, recently discovered, and the Grizzly boys are taking out good pay.

GOON PAY.—The York Bros., it is said, took out sixty ounces of gold from their claim, last week, which is pretty good for a mine with only four shares. We understand they intend to drift after water leaves them, and wash the dirt when the fall rain comes.

CINNABAR.—They have got a quicksilver mine down at Brown's valley.

GETTING READY.—J. K. Code is getting a site ready for Manson's quartz mill, which he will put to work as soon as possible.

SANTA BARBARA COUNTY.

GOLD.—*Index*, June 13: Mr. Benjamin Miller, yesterday, while deepening a spring upon his place on one of the foot-hills northeast of the city, discovered gold. An old experienced miner went to the place in the afternoon, and after making satisfactory examinations declared that the prospects were flattering. This discovery has caused a good deal of excitement, and we are informed a number of persons went out this afternoon to examine the gold-bearing premises.

SONOMA COUNTY.

THE MINES OF SONOMA.—*Democrat*, June 13: The spring work on the mines in Pine flat more than fulfills the promise on their first discovery. The work of development progresses rapidly. Upon a number of claims furnaces and retorts are at work. Shipments of metal are made daily, and it is not improbable that the product of Cinnabar district will reach 600 flasks a month, within the year. A network of roads connect the mines with each other and with Pine flat. The graded road from Healdsburg up the Sonoma is fast approaching completion. This will be the best and most direct road to this great mining center. It will command their travel, freighting business and trade.

TUOLUMNE COUNTY.

THE SOULSBY MINE.—*Independent*, June 13: The rock continues to look well in the new chute at the Soulsby mine.

THE KNOX & BOYLE.—At Quartz mountain, owned by an English company, is a splendid mine. They are now down 400 ft. on a vein four ft. wide, and at the last clean-up it paid \$60 per ton.

TULLOCH & KNOWLES SILVER MINE.—Idle the intention of the owners of this lode to commence operations for its further development in about a week, or as soon as practicable.

WITH FORTUNE.—We are informed from several sources, that Thos. Myler has been favored by the fickle goddess. After many years of toil in Table mountain he has at last come upon extra good gravel—supposed, by some, to be the old "Saratoga lead."

Nevada.

WASHOE DISTRICT.

SIERRA NEVADA.—*Gold Hill News*, June 11: Daily yield 60 tons of ore, keeping the mill steadily running. The ore breasts are showing considerable improvement, and the ore crushed is yielding better than for some time past. The new engine and other machinery for hoisting and pumping one being overhauled and put in position for use as fast as the nature of the work will allow. The new hydraulic works were started up day before yesterday, and although some little delay was experienced in getting everything to work well in the beginning, all the troubles have been overcome and everything in connection is now working splendidly. The power of the water is even greater than was expected and washes the bed of cement and quartz out into the sluices almost as though it was only a bed of sand. The shipment of bullion for the month of May was \$6,391 67.

CHOLLAR-POTOM.—Daily yield, 90 tons of ore, the assay value of which is \$31 per ton. The west cross-cut from the south drift, at the fourth station level, has cut a fine, solid body of quartz over 50 feet in width, but which carries no ore of consequence as yet. The yield of bullion for the month of May was \$42,815 06.

HALE & NOBECROSS.—The 2,000-ft. station in the main incline is completed and a drift started to cross-cut and prospect the ore vein on that level. Sinking the main incline below the 2,000-ft. level for the purpose of opening still another, has been resumed, and is being vigorously prosecuted. The streaks and strata of ore found on the 1,900-ft. level are being worked and the ore extracted, and are opening out and yielding much better than was expected at the time of their discovery.

OPHIS.—The ore dumps are full, there being now about 700 tons of ore on hand, and just enough is being extracted from the ore breasts on the 1,300-ft. level to keep the supply good and the Empire State mill running. The ore now being crushed at the mill is giving much

better returns than was at first expected, the bullion being rich in gold.

ANDES.—The machinery being found inadequate for the proper working of the mine, more powerful has been purchased, and is now in progress of erection. Workmen are now engaged in grading a site for new and more extensive buildings to take the place of the present structures.

CALEDONIA.—Sinking the shaft has been progressing 3 ft. per day, the rock in the bottom working finely. Sinking the winze east of the ore vein, to connect the third and fourth station levels, is making rapid progress.

GOULD & CURRY.—Sinking the double incline below the 1,700-ft. level is making the usual good progress, the bottom in fine looking quartz, and much more favorable indications of ore developments than on the level above.

OVERMAN.—A north drift has been started from the main west drift on the 1,200-ft. level, which is making a favorable progress.

CROWN POINT.—Daily yield, 550 tons of ore, which is being extracted from the 900, 1,000, 1,200 and 1,400-ft. levels. The ore breasts on the 1000 and 1200-ft. levels are still yielding well and looking finely. The 900-ft. level shows an improvement, and the ore breasts on the 1,400-ft. level are opening out much better than anticipated, especially those of the east ledge, where the ore is of a very rich quality. The north winze from the 1,400-ft. level has made the connection with the 1,500-ft. level, giving a fine and much needed circulation of good air in that portion of the mine. The middle winze from the 1,400-ft. level is down 65 feet, the bottom still in ore of a very superior quality. The flow of water continues steady and strong from the south drift on the 1,500-ft. level, indicating that the ledge is wide and extensive on that level. The foundations for the new hoisting and incline machinery is being laid, and the machinery is being placed in position for use as fast as the durability and perfection of the work will allow. The mills are all running up to their full crushing capacity, and the future of the mine looks prosperous and lasting.

CONSOLIDATED VIRGINIA.—The ore breasts on the 1,200 and 1,300-ft. levels continue to look well and yield splendidly; the ore not only holding out finely but increasing in richness as the opening out progresses. On the 1,400-ft. level the ore breasts are opening up with a richness and extent that exceeds the utmost expectations of the most sanguine believers in the value and permanency of the development.

BELCHER.—Daily yield, 550 tons of ore, which is being extracted from the 1,000, 1,200, 1,300 and 1,400-ft. levels, the ore breasts on all of which are looking well and yielding splendidly. About 150 tons per day of the ore is being hoisted through the Yellow Jacket shaft.

IMPERIAL-EMPIRE.—Sinking the main incline is making the usual good progress, the rock in bottom working finely. The main east drift, on the 1,850-ft. level, is passing through a much more favorable formation for ore developments than has heretofore been encountered on that level.

DAYTON.—Preparations for resuming the sinking of the main shaft are about completed. Daily yield 60 tons of ore. The hullion shipment of the 1st amounted to \$88,116 66.

MINT.—Sinking the shaft is making the usual good progress, the rock in the bottom working finely. During the past week the shaft past through a very favorable streak of clay and quartz four ft. in thickness, which is supposed to be a spur of the main ledge, and which carried some ore with excellent indications of leading to something better.

SILVER HILL.—Taking out ore on the third level has been commenced. The ore on this level is of fine quality, the average assay of car samples running from \$100 to \$150 per ton.

GLOBE CONSOLIDATED.—The main north drift at the head of the incline is in 136 ft., the face still in ore. The ore stopes on this level, just being opened are looking finely. Daily yield 25 tons of ore.

UTAH.—Sinking the shaft is making good headway, the rock in the bottom blasting out finely. It is now down 82 ft. below the 400-ft. level.

SAVAGE.—Driving the main east drift for the 2,000-ft. ledge is making steady progress, with favorable indications of soon reaching the west wall.

SUCCESS.—Framing the timbers and getting ready for the erection of the new hoisting works building, is being carried forward with all the vigor possible.

WOODVILLE.—Sinking the main incline below the 400-ft. station for a pump is about completed. As soon as it is finished, drifting both north and south at the 400-ft. level will be commenced. Laying the foundations for the new engine and boilers was commenced last Monday.

SUTRO.—Driving the main west tunnel is making steady progress, the rock in the face blasting out well, with a slight increase in the flow of water, but not enough to impede or interfere with the progress of the work.

KOSUTH.—Sinking the shaft for a new level is making rapid progress.

NEVADA.—Sinking the winze on the cross lead, 200 ft. south of the main west tunnel, is making good progress, the bottom still in good ore.

DANEY.—The main west drift on the 400-ft. level is in 115 ft., the face in good working ground.

LADY BRAXAN.—Sinking the new shaft is progressing.

JUSTICE.—The erection of the new pumping and hoisting machinery is progressing rapidly.

The Russell Separator and Engine.

A few weeks since we gave the readers of the *RURAL* a description of the Improved Hoadley Engine imported and sold by Messrs. Treadwell & Co., of this city, and this week we lay before them two cuts showing the Engine and the Russell Separator mounted and ready for the field. We have not the space this week for a detailed description of the improvements on the Hoadley, and would refer those of our readers who are interested in the matter to No. 20 of the present volume of the *RURAL PRESS*. We wish, however, to again call attention to the claims of the inventor and the selling agents, who guarantee a saving of 50 per cent. in fuel and 20 per cent. in weight over engines of equal power of the old style.

The running gear and manner of mounting are of the finest character. The hind axle is bent, and instead of straining the boiler, acts as an actual support, and is attached without the use of a single bolt. The forward axle is entirely of iron, and by a novel arrangement of the bolster can be turned very short and with but a trifling amount of friction. The bolster is hollow and contains several springs, thereby materially reducing the jar on the engine when traveling over a rough road.

It seems almost superfluous to say anything commendatory of so well known a machine as the Russell Separator, which has been so long and successfully used on this coast. Of some of the later improvements, however, we wish to say a few words. The greatest of all is the "Laufenberg End Shake Shoe." By this valuable invention the capacity of the machine is very much increased, and the grain is so cleaned as to be marketable as it comes from the spout, thereby saving the farmer the trouble and expense of running it through a fan mill.

The agents inform us that from the testimony of all farmers and threshers who have used the Laufenberg End Shake Shoe these facts are proved. First—There is no jar created on the machine or separator using the End Shake. Second—There being no stakes used in putting down the separator for work, it requires but one-half the time for setting. Third—It requires less power to run the separator in consequence of there being no opposite motion or jar to overcome. Fourth—It cleans the grain better and faster, the sieves seldom if ever clogging, even in damp weather. Fifth—There is more space or room on the sieves for cleaning, consequently more capacity for the grain. Sixth—The tailings being carried by an auger evenly into the elevator, it will not clog or be overrun as in the old shoe. These facts will commend themselves to every one familiar with the requisites of a good separator, and we would recommend parties about to purchase, to see these machines at Messrs. Treadwell & Co's before doing so.

Pomona in San Francisco.

We are now enjoying the glorious succession of fruits, which the country spreads before those who hunger and thirst after the good things which Pomona dispenses. Strawberries have had, for them, a long, and of course a glorious reign. Cherries are now in full supply, exhibiting a great diversity of size, color, price, and even of flavor. Apples are common on our fruit stands, their blooming cheeks displaying a delicacy of tint which the ladies of San Francisco can hardly equal, with all their skill at painting. Green apples, for cooking purposes, are already in market, and ripe ones are announced to appear within a few days. No postponement on account of weather. Then we shall have blackberries, raspberries, peaches, pears and grapes, crowding into the city in thick profusion. But while this rich abundance of fruit is thus poured into the lap of San Francisco, how is it that her children are stinted? Families can probably purchase fruit at prices sufficiently low; but San Francisco, proper, takes its meal at the restaurant; and here it pays ten cents for about the third part of a pound of strawberries, which cost the restaurant keeper five cents a pound. Is there not something rotten in the fruit market, as well as the fruit itself, which is allowed to rot there while waiting for purchasers?

Let those who are writing essays on the healthful effects of fruit-eating, give a thought to the healthfulness of the fruit market.

SAN DIEGO MINES.—Of mining interests in San Diego the *Union* of the 3d instant contains the following: Things are moving briskly in Banner district. The new stores are being rapidly gotten ready for business. Both the Count and Frary & Schultz are laying in heavy stocks of goods to supply the demand of the rapidly growing population in the cañon. The Chariot mining company's new ten-stamp mill started up last Monday. It runs to "admiration," as the engineer says, and is doing all that was expected from it. The new mill crushes at the rate of about a ton per hour—a decided gain over the old machinery. It is running night and day. We are informed that the old "McMechan" mill, further up the cañon, is also running steadily, crushing Chariot ore.

DURING the past week about 20 tons of chrome iron ore have been unloaded daily at McNear's wharf, from Mr. Barnes' mine, near Cloverdale. There are now more than 400 tons of ore on the wharf.

The Stickeen Mines.

The following letter from the famous Stickeen mining region, was received a day or two since by James Shay, Esq., Morgan mill, Carson river, from an old friend of his. He kindly permits the *Gold Hill News* to publish it:

FORT WRANGLER, May 7th, 1874.

FRIEND JIM SHAY: I arrived here on the 4th from Victoria, and to be up to promise drop you a few notes. I came up on the "Isabel" and this letter on the same boat. About 100 miners are here that came from the mines (Cassiar) and are returning to Oregon, California and Nevada. The mines are very limited, and from what I can learn it is a terrible country to come to. There won't be anything doing in the mines for the next two months; in fact it is impossible to get there from Buckbar. Men coming from there give very bad accounts.

Lewis, arrived at Departure bay yesterday afternoon, from Stickeen and way ports, with 44 passengers. Rev. Mr. Duncan came as passenger. She arrived at Fort Wrangel on Sunday. The "California" arrived the same day. The "Hope" went alongside of the "California," loaded and started up the river. The "Glenora" had made a trip as far as the Hudson Bay post, about 70 miles below Buck's Bar, but being too heavily laden to proceed further, landed her cargo and returned to Fort Wrangel. She again loaded and proceeded on her second trip up the river, this time with a good prospect of reaching within seven miles of Buck's Bar. She had not returned when the "Otter" left, but was hourly expected.

Provisions are scarce in the mines. Those going in without grub would have to return. At the mines flour is \$1 per pound; sugar, \$1.50; beans, \$1.12½.

It is now very difficult to pack into the mines,



PORTABLE THRESHING ENGINE.

The season is very short, and the country is steep cañons and swamps—mostly mountains of rocks. If any of your friends contemplate coming up here, I am afraid that they will be disappointed. The chances will be better next season. There is a big rush now getting out of the country. Upon the whole the miners are pronounced a *bit*. I think I shall come down, for the chances are too many against me. It is impossible to get hold of any mining ground that is worth anything, and there are very few

a great deal harder than when the snow was on the ground.

There is still great dissatisfaction at the manner in which the trail is being pushed forward.

From those who left the diggings on the 4th of this month, we learn that the snow and ice had nearly disappeared, and that sluices were then running.

The general opinion is that the claims taken up last year are paying tolerably well, but that they constitute all the paying country so far



THE RUSSELL SEPARATOR.

claims that pay to work. The people in Victoria and of the steamers do all they can to keep up the excitement. I am now about chuck full of running to these big excitements.

Everything has to be packed to the mines from Buck's Bar by Indians, and they get 50 cents per pound. There are a few mules on the way to the mines, but they will not get in before the last of June, as they have to cut a trail and bridge a number of swamps. I can't advise any of my friends to come up here. A good, steady job in Nevada is worth more than a big uncertainty in this northern country. Be sure and stick to your position and let better alone. I think I shall make my way back to some part of Nevada. Provisions are cheaper here than in Victoria. I have nothing of importance to write you. I see a good many from Nevada that are on their way back. Without doubt, the next boat will take me out of this. The month of June is about the time to start for this part of the world. I believe there are some places here where the ground never thaws out. The mines are too far north to make it profitable to mine. You need not answer this, for I am undecided, but in all probability shall go south on the next boat. Respectfully yours,

C. A. TURNER.

The *Nanaimo Free Press* of May 23d has the following particulars from this country: The H. B. Co.'s steamer "Otter," Capt.

discovered. Thibert creek has been prospected and with very unsatisfactory results. The new creeks, Delore and Cañon, they say nothing has been found in them.

The country is not a gravel country, and the report about the hill or bench diggings is without foundation.

The water is now rising and the best of the season will soon be over, as the water rises too high to allow the claims to be worked.

They say that they believe there is gold in the country, but that it is very spotted and extremely difficult to find, and that the country is very rough and the season short. They report that those who are working are running in debt for grub; in fact their report of the country is very discouraging, but such has been the history of all gold excitements, a great rush and then the reaction.

It is highly probable that the Cassiar gold-bearing country is very spotted, and the paying ground is not of any great extent, but this season's prospecting may open up new creeks that will yield the precious ore more readily than any of those at present known.

From what we can learn there is a large number who will return, as they are not in a position to stay in the country, unless paying diggings are struck.

The Con. Virginia yielded \$416,000 in May.

The K K Mine.

In an article on mining matters last week, the *Eureka Sentinel* speaks as follows of the K K: We stated last Sunday morning that the mine had opened out finely wherever worked upon, exposing large masses of high grade ores in its slopes, breasts and raises. These items of intelligence we gather from its courteous superintendant, Mr. Keyes; but to-day we write from personal knowledge and can therefore largely discount whatever we then said of it. The mine has very considerably improved in appearance since our last report of it was issued, and each succeeding day will but add to its value and permanency. Of this we are now thoroughly convinced, and the predictions we have heretofore made concerning its resources will ultimately become established facts.

The ore body which has been developed in the vicinity of the winze at the extreme northeastern end of the workings on the second level has opened out in all directions since we last saw it. The lateral and longitudinal dimensions are at present unascertainable, for the ore limits have not been as yet reached, nor are there the least indications that they soon will be, either. From the northeastern chamber, which shows finely in ore, two cross drifts were commenced at the period of our last visit, one running east and the other west. The latter has since then been pushed 150 feet ahead through solid ore of a very "fine" quality—top, bottom, sides and breasts all showing well in it. The former, facing east, has not as yet made much headway, nor will it for a while either, though it has been driven through ore the whole distance. These two drifts have thus far penetrated ore a lineal extent, east and west, of 65 feet. Stopping or raising has been also very vigorously pushed forward and upward, southwestwards towards the Marcelina east incline, with which a junction will soon be effected. When this is accomplished, which will be in a few days more, a current of pure fresh air will then fan the cheeks of the grateful miners, whom it will freshen and invigorate, as it does all who labor below the surface of terra firma.

The raise, which is a large one, has already been driven over 60 feet from the winze chamber mentioned above, and its whole distance thus far is in ore to which there appears to be no visible limit. Six sets of timber, eight feet apart, perpendicularly and laterally, have been lately placed in position without the apex of the ore body being yet reached. The depth of the ore from the level of the chamber is at present indicated by the 65 feet which the winze has attained, ore being visible the whole distance. Operations have also been hurried forward on the third level. For we found the northeast drift in on its course about 250 feet from the shaft to where it is expected it will intersect the winze run from the upper level. It is about 100 feet as yet from its objective point, and the ground through which it is being driven is soft and easily worked, and is besides very favorable for ore being soon found to the eastward of its course. About midway in this drift a crosscut has already been advanced 50 feet to the northwest, disclosing patches of ore and lumps of galena at its farthest extremity. We are of the opinion that ere we make another visit to this locality ore will have been developed in good quantities. The ore bodies in the immediate vicinage of the shaft are looking and yielding admirably, 45 tons per diem being shipped per teams to the Hoosier furnace for reduction.

The recent strike in the neighborhood of Cunningham shaft, Marcelina West, is also looking and doing well. A large amount of superior ore has been taken, within the past two weeks, from the breastings hereabouts. We must admit that we have never before seen this fine property in a better condition than it is at the present writing; and we can also say that we believe it to be eminently worthy of the truest confidence of the public. About 50 men are employed in the mine.

AGASSIZ' SUCCESSOR.—The London correspondent of the *Cincinnati Commercial* says he heard an "eminent man of science" in that city, an intimate friend of Huxley, remark that Harvard College couldn't find any living man except Huxley, capable of carrying on the work from the point where Agassiz had left it. When asked if he thought Huxley would refuse the offer, the same gentleman responded: "I'm not so sure of that. It doesn't make much difference with such a man as that from what spot on the earth he speaks—the world will hear him. They would have to make it worth his while—I mean in money; for to him money means the furtherance of knowledge and the increase of opportunity. It would not be very difficult for the Americans to supply him with larger means for the accomplishment of his aim than England does, and if so I believe he would go."

MINING INTELLIGENCE.—The work of hydraulic mining the surface of Cedar hill will be prosecuted vigorously. The pipe, which was damaged by a heavy pressure of water, will be repaired so that working operations can be resumed to-morrow. The water, which has already been turned upon the hill, has unearthed a number of bowlders, which when broken were found to be lousy with gold.—*Gold Hill News*.

Work has been suspended in the North Star mine, Nevada county. It is understood that a change of management is soon to be made.

USEFUL INFORMATION.

Gun-Cotton.

Gun-cotton is produced by steeping cotton fibre in a mixture of nitric acid and oil of vitriol. The cotton does not sustain any change in appearance by this treatment, but it increases considerably in weight. The cotton, in fact, parts with a quantity of water, and absorbs in its stead the elements of the nitric acid, which are much heavier than the water displaced. In this way the cotton is impregnated with a large amount of oxygen, which is thus ready, on the application of heat, to form gaseous compounds with the carbon of the cotton.

When this explosive substance is made according to the Abel process, it possesses three characteristics which render it peculiarly adapted to military engineering operations. It can be stored and transported in the wet condition—that is, saturated with moisture—in which state it is absolutely non-inflammable. While in this wet state it will explode with terrific violence if a small portion of dry gun-cotton be detonated in contact with it. Lastly, it may freely be brought under fire without fear of accidental explosion.

One of the characteristics of gun-cotton which contributes to its applicability to military purposes is that it may be freely brought under fire without fear of accidental explosion; that is to say, a package of compressed gun-cotton would not explode if struck by a rifle-bullet. If the gun-cotton were dry, the heat caused by the impact of the bullet would set it on fire, and it would then merely burn away with more or less fierceness, according to the amount of gun-cotton in the package. But if the gun-cotton were damp, the impact of the bullet would have no more effect than it would have on wood, earth, or any like inert substance. In the case of nitro-glycerine compounds, however, exposure to musketry-fire would be attended by far more serious results. Under these circumstances, and at all ordinary infantry ranges, a package of dynamite or lithofracteur will explode with considerable violence.—*London Times*.

VENTRILLOQUISM EASILY LEARNED.—According to a writer in the *Chicago Advocate*, the ventriloquist's art is as easily learned as falling off a log. He maintains that there is no difficulty in acquiring the power. In the first place, he says, speak any word or sentence in your own natural tone, then open your mouth and fix your jaws fast, as though trying to hinder any one from opening them further or shutting them, draw the tongue back in a ball, speak the same word, and the sound, instead of being formed in the mouth, will be formed in the pharynx. Great attention must be paid to forming the jaws rigid. The sound will then be found to imitate a voice from the other side of the door when it is closed, or under a floor, or through a wall. To imitate a sound behind a door partly open, the voice must not be altered from the original note or pitch, but be made in another part of the mouth. This is done by closing the lips tight, and drawing one corner of the mouth downwards or towards the ear. Then let the lips open at that corner only, the other part to remain closed. Next breathe, as it were, the words out of the orifice formed. Do not speak the words distinctly, but expel the breath in short puffs at each word, and as loud as possible. By so doing you produce the illusion in the minds of your listeners that they hear the same voice which they heard when the door was closed, but more distinctly and nearer on account of the door being open. The lips must always be used when the ventriloquist wishes it to appear that the sound comes through an obstacle, but from some one close at hand.

BLEACHING SHELLAC.—Shellac may be bleached by dissolving it in boiling caustic potash lye, filtering, and then passing chlorine gas through it till the gum is entirely precipitated. The precipitate should be well washed with hot water. While soft it may be modeled into sticks, which, when thrown into cold water, will harden. Varnishes made with gum thus purified should not be used on cabinet work inlaid with brass, as it acts chemically upon brass. Shellac may also be bleached by dissolving it in 85 per cent. alcohol, in the ordinary manner, making the solution rather thin, and then adding animal charcoal, until the whole forms a thin paste. It should then be exposed to the sun for a fortnight, or longer, if, when a small sample is filtered, the solution is not of a light yellowish brown color, and does not give a fine clean polish on light-colored woods. If, however, it is found to be sufficiently bleached by such a trial, the whole may be filtered. A second treatment of the charcoal with alcohol will recover more of the gum, a portion of which will of course be wasted in the process. If the operation be well performed and the solution be used sufficiently thin, its color will be so slight as not to perceptibly stain the lightest colored woods.—*Artisan*.

PLASTER-OF-PARIS for picture frames is mixed up with weak alum water, or a solution of one ounce of gum-arabic to the pint of water. It is applied as usual, and moulded when soft. When dry, it has a hard and smooth surface, ready for bronzing.

TALLOW may be bleached by prolonged exposure to sun or daylight. This is in fact the way in which tallow candle manufacturers bleach and improve their freshly made and very yellow looking candles.

Nothing Like Leather.

There are people who think that leather is used for boots, shoes and gloves only, others better informed, know that it is also used for harness, carriages tops, helms, velises and trunks, but then their information about it is very stop. We can inform the latter, that at present, leather jewelry is manufactured on a large scale in Vienna, also leather flowers and fruits, as clusters of grapes, etc., embellished picture frames, brackets, work-boxes, also Paris fancy articles and bijouterie.

The people of Northern Europe, as Russia and Sweden, use leather as the chief material for clothing, while leather tapestry, a century ago so much in vogue, is getting in the fashion again. For furniture coverings it is much better than rush, velvet plush or silk, as it does not wear out. The Hessian soldiers during the 30 years' war, wore cuirasses of leather, while the French gunboat *Provence*, used during the Crimean war, was plated with leather, but it was found rather expensive. The natives of the Arctic Regions, navigate in leather canoes, while our Patent Office can boast of a dozen expired patents for portable leather boats. There is a leather gun in the arsenal of Copenhagen, Denmark, left from a battery of 12, which Charles XII. brought from Sweden, to attack Copenhagen. It consists of a smooth light steel tube, many times tightly wound round spirally with tough leather straps two inches wide, the whole wound with a single piece of smooth leather, giving it at a distance the appearance of an old bronze piece; this gun weighs less than one-third of ordinary guns, and the battery was intended to cross the ice, and well adapted for that purpose, being literally and really a light artillery.—*Manufacturer and Builder*.

HOW TO REPAIR LEAKY ROOFS.—Melt together in an iron pot, two parts by weight, of common pitch and one part of gutta-percha. This forms a homogeneous fluid much more manageable than gutta-percha alone. To repair gutters, roofs or other surfaces, carefully clean out of the cracks all earthy matters, slightly warm the edges with a plumber's soldering iron, then pour the cement in a fluid state while hot, finishing up by going over the cement with a moderately hot iron, so as to make a good connection and a smooth joint. The above will repair zinc, lead, or iron, and is a good cement for aquariums.

FIXING SLATES.—Slates, instead of being nailed to the roof, may be fastened by movable hooks, about two inches long, which are soldered to conically formed zinc plates, four to six inches long. The slates are thus kept securely between the hook and zinc plate, and can be removed simply, with the greatest facility, by turning the hook. Thus one or more of the plates can be taken out for repair, or new ones inserted, without interfering with the rest. The method is said to make a roof watertight.—*Scientific American*.

SUBSTITUTE FOR BRISTLES.—The fibrous bark of the sugar palm (*arenga saccharina*) proves to be a good substitute for bristles and animal and human hair. The treatment is simple. The bark is first immersed in water and boiled for some time in an alkaline solution; the fibers are then soaked in an emulsion of fat, alkali and water for about 12 hours, after which time they are sufficiently hard and elastic for the above named use.

TO RENDEW WOVEN FABRICS NON-INFLAMMABLE.—M. Patena proposes, instead of sodic tungstate, a mixture of four parts borax with three parts magnesic sulphate. One hundred grammes of the mixtures are to be dissolved in 300 to 400 cubic centimetres of water, and in this solution the fabrics are placed until soaked, then wrung out, dried, and ironed. Another mixture proposed for the purpose is that of ammoniac sulphate and gypsum.

A REDDISH BROWN PAINT FOR WOOD.—The wood is first washed with a solution of 1 lb. cupric sulphate in 1 gallon of water, and then with ½ lb. potassium ferrocyanide dissolved in 1 gallon of water. The resulting brown cupric ferrocyanide withstands the weather, and is not attacked by insects. It may be covered, if desired, with a coat of linseed oil varnish.

It has been discovered that a small cylindrical point of steel when made to rotate upon glass in such a manner that its longitudinal axis shall make an angle of 45 deg. with the surface of the glass, approaches in effect so nearly to that of the real diamond, that it is a very cheap and effective substitute as a glass-cutter.

FOR BURNS—BEST AND QUICKEST.—Oil, if you have it,—linseed, almond, olive, or any other—linseed is best. Pour it over, then sprinkle a thick coating of flour; then lay over a coat of cotton-battling, or wadding. If you have no oil at hand, apply the flour at once without it.

PROF. HIRZEL, of Leipsic, recommends as a lute for covering the corke of vessels containing volatile substances, as benzole, light petroleum, etc., a mixture of finely ground litharge and concentrated glycerine. Common glycerine, if concentrated, will answer the purpose.

It is a well-known fact that gum-arabic will not cause some kinds of blotting-paper to adhere. This may be remedied by adding to eight ounces of the concentrated solution, sixteen grains of aluminum sulphate. Alum answers also, but not as well.

MISCELLANEOUS.

Improvements on the Comstock.

In the remarks accompanying the last weekly mining review of the *Virginia Enterprise*, that paper says: "The work of opening and developing mines along and in the neighborhood of the Comstock range, however, is being prosecuted with unusual and almost daily increasing activity. Machinery is constantly arriving from California for mines both great and small, and is being put in operation as rapidly as possible. The feeling prevailing among our mining men is excellent, and shows that there exists among them the utmost confidence, in the great mineral belt which is now being mined and explored. Those engaged in the development of mines seem only anxious to push forward the work upon which they are employed, having faith to believe that sooner or later they will find deposits of ore that will richly reward their labors and amply compensate them for all their outlays. The number of new and costly hoisting works that are now going up is astonishing. They are almost as numerous as were common windlasses and whims in the early days of Washoe. Good work, too, is being done wherever mining operations are being carried on. Aided by giant powder, nitro-glycerine and other new powerful explosives, and by tools the finest in the world, with Burleigh drills and other machinery never before brought to bear in our mines, our miners now make twice as rapid progress in all mining operations as they did in the early days.

A large three-compartment shaft, fully and substantially timbered, is now sunk to the depth of 800 or 1,000 feet in about the same time that was formerly occupied in sinking a common round hole to the depth of 300 to 400 feet. Tunneling and drifting are also pushed forward twice as rapidly as in former times, and we hear much less said about hard rock than some years since. In the early days rock was occasionally encountered in shafts and tunnels, which for weeks came near checking all progress. Now, however, with nitro-glycerine and giant powder, our miners crash through these flinty strata in a very short time, and at a tenth part of the former cost. With our new and powerful explosives it is not necessary to bore into the rock to be blasted the huge holes that were required when the common black powder was used. Then a great hole was necessary, as a great quantity of explosive used had to be introduced to produce the desired effect; whereas, with the explosives at present in use, small, keen drills, may be used and a hole of sufficient size may soon be made to accommodate the quantity of giant powder or nitro-glycerine that is required to do the work. Thus it will be seen that we have taken a new departure in all mining operations, and to this new departure is doubtless owing, in no small degree, the remarkable activity observable throughout the country in all manner of prospecting operations.

ANTELOPE DISTRICT.—From a party who has recently been in this district, which is situated some forty miles north of Eureka, we learn that the mines generally are looking as well as could be desired. The names of the principal lodes are the Monitor, Evening Star and Kearsarge—three parallel locations. Work is being prosecuted on the Kearsarge, and the ore extracted assays \$234, and is abundant in quantity. The vein is six feet wide, with smooth, well-defined casings, its pitch being to the east at an angle of 45 degs. On the dump there are 100 tons of good ore, taken out in sinking fifty feet. The evening Star opened 160 feet down; the lode at that point being six feet wide—the grade of ore being estimated as good for \$70 per ton, actual haulion yield. On the Monitor a fifty-foot incline has been opened, its inclination being slightly towards the west. This vein is also six feet in width, and its grade of ore about \$60; there being 100 tons on the dump. The district is profusely supplied with heavy timber, and about half a mile from the mines there is sufficient water for a twenty-stamp mill. It is believed that wood can be delivered at the mill for \$3½ per cord. The district was discovered and brought into prominence by Daniel McMurphy, a pioneer of Gold Hill—in 1859—and White Pine in 1868. It is to be hoped he will make a fortune out of the property, which, according to all accounts, is of great value.—*Eureka Sentinel*.

OREANA SMELTING WORKS.—The Oreana smelting works, built originally for smelting ores from the Montezuma mine, and run for some time by an Eastern company, when charcoal was worth 60 cents a bushel, will shortly be in full blast again. The works are now owned by Gen. P. E. Connor, who intends to run them on ores from Utah, with sufficient of the Arabia ores for a flux. Several car loads of coal and wood have arrived on the ground, and the works will start on or about the 15th instant.

The *Marin Journal*, of June 5th, states that operations on the North Pacific Coast Railroad are being actively commenced this week. A gang of 400 men is to leave the city by ocean steamer this morning for Tomales, to commence the work of grading at that end, coming this way. During the week a similar force will strike in at the paper mill, and work down the bay, and other gangs will set in along the line. Mr. Buchanan will also start the work on the trestles, between here and Saucelito, employing large forces, and spanning the several gaps with the greatest possible expedition.

Pioche Mines.

The *Pioche Record*, of the 7th, has the following to say about mining matters in that camp: Mining matters, during the past week, have, if possible, been duller than the week preceding. The situation in the leading mines in this region is almost without any change. In the Raymond & Ely quite a small force is at work. They are engaged in opening the east and west drifts on the 11th level, in which fair progress has been made during the week. The face on either side does not look more encouraging than at the period of the last report. For the past few days no ore has been taken out or shipped, and the mills will be occupied on tailings, of which there is an enormous quantity on hand, and appear to pay every time they are worked.

At the Meadow Valley, the crosscut from the lowest station of No. 3 shaft has cut the ledge, on which a drift is being opened in a westerly direction towards the Raymond & Ely ground. The easterly drift has also been commenced. In the levels above there is little change to report. The connection with the ninth and the drift from No. 5 shaft has not been made, but must be close at hand. Ore is still being taken from the western stopes above the ninth level, and on the east above the 625-foot level. The work of sinking shaft No. 5 is going on as usual, and also the drift to connect with the ninth level of No. 3. At the mill at Dry valley matters are without change.

At the Pioche, the connection between the new shaft and the old works has not been effected. Parties of workmen are engaged on both sides, and it is expected that an opening will be made in but a very few days. The drift running southerly from the bottom of the shaft is now 130 feet in length, and is being prosecuted as rapidly as circumstances permit. The old workings and dumps are being carefully cleaned up by men working on shares, and are a source of profit both to the company and the men.

The Washington & Creole presents no new features. The sinking of the Mazepa shaft is being urged forward as speedily as possible, and is the principal operation now going on in the mine. The main drift is being opened easterly towards the shaft, and the work of sinking the middle winz is still continued. During the week the Floral mill recommenced work on ore from this mine, and we are informed will continue until the ore that has been brought to the surface is reduced. The pulp assays are satisfactory, so far.

Much activity still prevails at the American Flag, and some considerable quantity of ore is being taken from the upper stopes and reduced at the mill. The shaft is being sunk with all convenient speed.

The Newark mine is supplying the mill of that company with considerable ore, with which and some custom rock the mill is kept constantly at work. In the old works of the mine the lower level is being opened out, and above that from the upper stopes from four to six tons of ore are raised daily. The work on the new shaft is progressing satisfactorily. This company last week shipped bullion to an amount of something over \$6,000.

The Portland, Chief of the Hill, Bowery, Havana and other mines this week are in a condition so similar to that of last that they do not call for any more extended remark.

Last week we observed that some teams were engaged in hauling rock from the Silver Peak to the Floral mill. The ore looked of good quality, and we are informed that quite a quantity of it has been found in the lower levels of the mine.

The total shipments of bullion for the past week, per Wells, Fargo & Co., amount to \$28,591.

A SAN DIEGO MINE.—There has been received at the office of the Chariot Mill and Mining Company, for a 12 days' run of Pioneer mill, \$5,002.64, being the proceeds of 108 tons of ore crushed. From this date shipments will also be made from the company's new mill, which has a capacity of 20 tons per day, averaging \$45 per ton. The prospect for this mine, which has been making improvements in opening lower levels, building new mills, etc., is of the most flattering character, and were the mine located in the Comstock lode, would-to-day sell for 500 per cent. more than present price.

SURFACE MINING AT SILVER.—The different parties working gravel claims in the vicinity of Silver City are meeting with good success. Matthews & Co., who are working a claim in Nigger gulch, a short distance west of the town, are making from \$15 to \$20 per day to the man. Messrs. Jones & Cook, who are working another claim situated northeast of the town, are also making wages.

The dry leaves of the beech yield 20.8 parts of extract to boiling water, and this gives 2.44 parts of ash, which contains a sensible quantity of manganese. It is suggested by Wanklyn that an examination of the ashes of leaves might lead to the discovery of a new element, or at least that many might be found to contain cesium and rubidium.

HAMILTON McCORMICK, who owns a hydraulic surface claim on Hitchcock ravine, at the head of Gold flat, Nevada Co., has, by sluicing off the surface dirt, discovered a ledge, the rock of which is very rich. The ledge has been stripped for about 100 feet, and gold is plainly visible all over the surface. From 20 ounces of rock he obtained 14 ounces of gold.



W. B. EWER..... SENIOR EDITOR.

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San Francisco:

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RICH STRIKE.—A strike has been made in the Prussian South mine, Jefferson canon, which has caused some excitement in Belmont, Nev. The *Courier* says that in the incline shaft, at the depth of 180 feet, a body of ore was struck that excels in richness anything ever before encountered in any mine in the State. A small quantity of ore was sent over from the mine to this place, an assay of which was made by Semmel Mcmasters, superintendent of the Monitor-Belmont mine, that yielded at the rate of \$20,307 86 per ton. At this rate of yield the ore is considerably more than one-half silver.

SOME new mines have been discovered between the head of the Columbia lake and the bend of the Columbia, and attracting a good deal of attention. As yet there is not much known of either their extent or richness, but it is believed they will prove to be good paying diggings. They are situated in British Columbia, and are three or four hundred miles from Walla Walla.

A VERY valuable discovery has been recently made in the original Amador mine, at Amador city. A vein four feet in width, of very rich rock, has been discovered at a considerable depth below the surface east of the old works, which is pronounced to be the regular vein or ledge.

CLAY STREET RAILROAD.—Two dummies have been added to the plant of the Clay Street Hill Railroad. They are of commodious construction, with the seats at right angles to the track, and each will afford seats for from twenty-five to thirty passengers.

The Kohler Reduction works to be erected at Damon's Landing, near San Leandro, will cost about \$150,000, of which about \$30,000 has been expended. About three hundred men will be employed. The company proposes to purchase ores on its own account.

SMELTING operations are to be inaugurated in White Pine, Nevada. One thousand tons of rock have already been engaged to commence with.

FLATTERING accounts are received at Los Angeles on the recent discovery of gold in mountains to the north of that city.

The Mining Laws.

The new Bill, introduced by Pratt, providing for the compulsory patenting of all mining claims which had produced as much as \$5,000, has been indefinitely postponed by the Senate Committee on Public Lands, to which it was referred. The vote for indefinite postponement stood: Ayes—Windom, Kelly, Oglesby, Bontwell and Stewart. Noes—Sprague, Tipton, Hervey and Pratt. It seems hardly probable that either this or the Negley amendment will pass, over the adverse reports of the committee.

The Committee on Mines and Mining have as yet taken no action on the Ward Mining Bill.

A circular is being prepared at the General Land Office, containing instructions to the Register and Receiver, with reference to the Act recently passed, extending the time for making the first expenditure on mining claims. The circular says, by this legislation the requirements of the fifth section of the Mining Act of May 10th, 1872, and the amendatory Act of March 1st, 1873, are changed, by extending the time for the first annual expenditure upon claims located prior to May 10th, 1872, to the first day of January, 1875. The requirements in regard to expenditure upon claims located since May 10th, 1872, are in no way changed by the above amendatory Act.

Of course the miners have understood that the extension of time applied only to claims located prior to May 10th, 1872, and it was explicitly stated in the amendment, which we have published several times. Claims located since the passage of the Act, were compelled to make the annual expenditure of \$100 or be liable to re-location. Complaints come from Napa county that snits have already been commenced in the Sonoma District Court in consequence of the passage of this statute, involving the title to seven of the new cinnamon mines in that region. The *Register* says that parties who equated on the mines thirteen years ago but did not work them, now put in a claim after the present owners have expended a considerable sum in their development. This is the first complaint against the amendment that we have heard; but it is hardly probable that the law will permit the abuse mentioned above. If these mines were virtually abandoned and then taken up by other parties and worked for some time, without molestation by the original locators, until they became valuable, it is of course proper that the parties making the developments should have the mines. In most mining districts there are laws as to the time a mine can lie idle without being open to re-location, and the law of Congress recognizes these miners' regulations; but as it is only lately that Pine Flat has become a mining section, there was probably no local regulation on the subject. The question will shortly be decided by the Courts.

Sticken Mines.

No authentic contradictions have been made to this discouraging reports from the Sticken mines. Some advices from that part of the country state that there is very little gold but plenty of coal; others again say that there is plenty of gold, but the weather interferes with working the claims. Some few miners have made money, but by far the larger portion of the would-be-millionaires will return with a smaller stock of money and a larger stock of experience. No news of importance has recently come from the mines, although report says the California company have washed up over \$3,000 in four days, and that the Moore company are doing well on Tibbet creek. Freight from Fort Wrangle to Buck's Bar is \$80 per ton, while the passage money is \$25.

One correspondent from these mines states that as far as he sees there has not been a hole sunk in the channel of the creek, although it is shallow and can be worked by wing dams. He says that there are about 5,000 inches of water and any amount of ice. There are no bars in the creek, and only about two miles of it that looks well. He says that a great many men are going away from the mines, and that little work can be done there before August. This correspondent concludes his letter as follows: Things are looking blue, but I will try and etch her out till fall and see how things will end. I don't consider men going back now know anything about it. There may be something struck this summer. There is very little said about Tibbet's creek. I have not been there. Claims there are not selling for anything; they are deep. The truth is it is impossible to prospect in this country at this season of the year. What little provisions there are for sale here, and they are mighty scarce, are a dollar a pound; sugar is worth two dollars.

The Victoria *Colonist* of the 9th contains the following information from the mines: Provisions at Buck's Bar were cheap, but in the mines they were getting scarce, though flour was still sold at \$1 per pound. The health of the miners was good, but at Fort Wrangle there had been some sickness, owing probably to the bad water there. The general opinion was that the mines were rich, but no new discoveries had been made. There were about 600 men actually at the mines, about 300 on the road, and about 50 at Fort Wrangle.

San Diego Mines.

The principal mines of San Diego county are in Julian and Banner districts, which adjoin each other, in the mountains about 60 miles inland from the town of San Diego. These mines were first discovered in 1870, and for a time attracted some attention. But the popular prejudice against mining in the southern part of the State, and the cloud thrown on the title of the property by a neighboring Spanish grant, together with want of capital, have prevented these districts from being very prosperous. Several hundred men, however, have been working and prospecting in that part of the country since the first discovery, and a few of the mines promise to be permanent paying institutions.

When the first mine was discovered—the Washington—in Julian district, the ore was very rich; and as several other promising veins were soon struck, Julian bid fair to be a prosperous camp. As is usually the case, but few of the claims proved to be worth much, and these few have been worked at intervals ever since. Time has demonstrated, however, that with few exceptions the rich ore run in chimneys, and that these once worked out, the remainder of the ore was of a much lower grade. In fact, at present there are, perhaps, not more than half a dozen of the original discoveries made in Julian district being worked at a profit to any extent.

About seven or eight months after the discoveries of Julian, a rich ledge was accidentally found in San Felipe canon, by parties hunting for wild grapes. This canon is only a mile or two from Julian City. Immediately after this discovery a number of others were made, some of them being exceedingly rich. The canon was soon filled with busy miners and prospectors; cabins were built, claims staked out, and a number of arrastras were set running. The ledge was situated up on the side of the canon, and the ore was selected and carried down to the creek in the canon; was there burnt, slaked, and put through the arrastras. Some of these claims paid three ounces handsomely by this method, and "feet" in the canon were above par.

A new district was laid out and called Banner; and a Wilson steam stamp mill, formerly at Julian, was brought down to the canon end set up there. Shortly after the Antelope Company put up a fine five-stamp mill, and George McKean built a wooden five-stamp mill to work rock from his mine. Some of the arrastras were abandoned, and the rock crushed at the mill. After this was done the miners expected greatly increased returns, but in this they were disappointed. It was found that many of the richest claims, the Antelope, Madden, Kentuck, Chaparral, City of Richmond and others, were mere pockets, and that while the rock was selected and crushed in arrastras it paid well enough; but when not sorted and milled, it fell below expectations. Several of the mines that were richest then are not worked now. The Redman claim, once the richest in the canon, and the first discovered there, did not turn out as well as was expected. Mismanagement, or want of knowledge of the business, prevented the owners from realizing much from it, although a capitalist from this city took it in hand.

After a while the Golden Chariot mine was discovered, several miles to the southward, but on the same mineral belt. This mine is the best in the "lower country," and has paid well ever since it was discovered. They have had a number of crushings that showed exceedingly rich ore. The writer remembers one run of 50 tons, yielding \$162 per ton; another of 52 tons, yielding \$257 per ton. This mine was a short time since put on the Stock Board, in this city. A fine mill has been put up, a wagon road built to the mine, and numerous improvements have been made. Advices from San Diego this week state that the last clean-up from this mine, after a two weeks' run, gave a yield of \$10,000.

The Owens mine, in Julian, has made some pretty good clean-ups, and in the eight months ending 1872, turned out \$42,319.50 from 920 tons of ore, with an average of 12 men at work. The eight owners made a profit on these eight months of \$18,109.25. The mine now has a fine set of hoisting works, and some gentlemen in this city are now interested in it.

Neither of these districts have had the advantage of the aid of much capital, and the developments made have been accomplished by their hard work and pluck. While the camps are not now particularly flourishing, there is enough work to keep a goodly number of men employed. One day last week \$13,000 in gold was received at San Diego, from these mines. There are five or six mills in the country, one small one on the Ready Relief mine, in the canon, being run by water power. The town of Julian, which supplied the miners, is being moved down to the canon, there now being more business done in Banner than in Julian district.

NEW COAL MINE.—F. M. Stone, of Monterey county, discovered some veins of coal on his ranch, about eighteen miles from San Benito, in 1870, which he has recently been prospecting with gratifying results, the indications being that they will be developed into extensive and valuable mines. One of them is eight feet in width, another nine feet, and the third about twenty-two feet. A shaft is being sunk on each of the veins.

An Important Invention for Quartz Mills.

The Cast Steel Shoe & Die Company, of this city, have just received through the MINING AND SCIENTIFIC PRESS Patent Agency, a patent on the application of cast steel to the manufacture of shoes and dies for quartz mills. This valuable invention was thought of about two years ago, by Mr. J. G. Kittredge, who is a well known iron and steel worker of this city, and who has since been quietly experimenting and laying his plans to fully perfect and bring the shoe and die into use. Numerous plans have been tried to crush ore by other methods than the old style of cast iron shoes and dies, for the purpose of lessening the expense, each better of five stamps wearing out about 1,000 pounds of cast iron every 30 days. Nothing has been found an improvement upon the iron shoes and dies until the application of steel to the same articles was hit upon.

The Cast Steel Shoe & Die Company was formed last year for the purpose of manufacturing and supplying quartz mills with these steel shoes and dies, and after many experiments in the methods of casting, forging and tempering the steel, they have succeeded in producing shoes and dies that they affirm will do the work of six sets of cast iron, costing about half the amount. The company now guarantee the steel shoes and dies in all cases to do the work of four sets of iron and save at least ten per cent. on the cost.

In some of the Crown Point Co.'s mills and at other mills where they have been experimenting, they have been found superior in every way to iron. First there is a saving in freight of about 75 per cent., then a saving of time in changing and setting up the shoes and dies, and of time lost by frequent breakage of the iron. It is estimated that each better of five steel shoes will crush at least a ton per day more rock than iron, as the steel wears uniformly and always presents a flat striking surface, while the iron wears hollow and uneven in the center of the shoes and dies.

In crushing gold rock the company are es- senced by mill men, that the steel are cheaper than iron at no cost at all, as the presence of the iron dust and chippings in the amalgam deteriorates from the value enough to more than pay the cost of steel, as by wearing so slowly the amalgam is not materially affected by the chippings. The steel shoes may be worn down to within an inch of the stem, much closer than the iron, without fear of breaking; the refuse steel may be used for pointing picks, facing hammers and other purposes.

The company are about to place their shoes and dies in all of the Crown Point mills, besides several large gold quartz mills in this State. They are now in use at the Chariot and Stone-wall mills, San Diego county, Idaho and North Star mills, Grass Valley, Phoenix mill, of Amador county, and a number of others, and the superintendents all give testimonials of their excellence.

Scientific Lectures and License.

Prof. Denton will no doubt return East with a huge disgust at some of the "ways that are dark," practiced on the Pacific Coast. He was arrested in Sacramento and put in jail because of his refusal to pay the license required by the city ordinance for lecturing. He had given a course of lectures on "Geology," and commenced another course of scientific lectures, when the city collector called on him for \$25, the sum required for permission to lecture one week. Prof. Denton refused to pay the demand, stating that it had been unusual all over the land, and he was accordingly arrested and put in jail. He refused bail, but accepted it on the next day, and was released.

The Professor published a card in the *Record* of Monday, in which he says: "I have lectured for twenty-two years in more than twenty states of the Union and in Canada, and I never before had such a demand made, except at Stockton, when I refused to pay it, and the city attorney found that the city charter did not allow them to enforce it. In many cities the City Hall has been given me for the expense of warming and lighting it. Sacramento alone has had the had distinction of making it a crime to enlighten the people, and of putting the man in prison who is guilty of it and will not allow himself to be fleeced by the city of the just reward of his labors. I ask for the sake of your city, for the sake of its people, for the sake of scientific lecturers, who have never yet been fairly remunerated for their services, to repeal this obnoxious law, and in so doing, I shall feel that my imprisonment has not been in vain."

The Sacramento ordinance under which the arrest took place, prescribes that a licensee shall be paid for an "exhibition, amusement, show, or performance." We do not remember hearing before that scientific lectures came under either of these heads. The State of California is just now receiving compliments the world over because one of her citizens has done so much in aid of science; but this little occurrence will dampen the ardor of our enthusiastic admirers. However, the press and public unite in a sentiment of indignation at the treatment experienced by Prof. Denton. The over officious collector is severely censured, and the people of Sacramento do not at all approve of the arrest. Scientific lectures are sorely ever remunerative enough to stand very much license tax, and if this officer is upheld, Sacramento will hereafter be omitted in the lecture engagements of others beside Prof. Denton.

Improved Method of Observing Altitudes of the Sun at Sea.

The science and art of navigation stand among the proudest achievements of modern thought and research. The accurate determination of the places of the fixed stars, and of the motion and position of the members of the solar system, gave the navigator numerous well determined points for observation. But the attainment of a corresponding perfection in fashioning instruments has ever baffled human skill, and ever will. For although we are entitled to look for wonders, at the hands of the artist, we cannot expect miracles! And we hence see that the demands of the astronomer, and even the nautical astronomer or navigator, will always surpass the power of the instrument maker. They must therefore so combine their observations, so familiarize themselves with all the causes which may produce instrumental derangement, and with all the peculiarities of structure and material of each instrument used, as not to allow themselves to be misled by its errors, but to extract from their indications all that is true and reject all that is erroneous.

It is true that the astronomer can so weigh his observations in the balance of the method of least squares, and so thoroughly sift them by Peirce's criterion, that hardly the trace of a large error remains; and the more minute errors being casual and accidental, sometimes lie one way, sometimes the other; sometimes diminishing and sometimes tending to increase the results. And, inasmuch as the theory of probabilities tells us that these accidental errors are as liable to lie one way as the other, we hence have but to greatly multiply our observations under varied circumstances and take the mean or average of the results obtained and we have this class of errors so far subdued, by thus setting them to destroying one another, that they no longer sensibly vitiate our practical results.

This principle of repetition, though so simple in theory and so beautiful in practice, when the instrument and observer are upon a firm basis, utterly fails of application where the observer and his instrument are tossed alike on the ocean's wave, and the object observed is "on wing." It becomes therefore imperative upon the navigator, if he would trace accurately his ship's path over the trackless ocean, that he attain rigorous correctness in the results of "each" of his instrumental measurements; and to this end his constant care and vigilance must be directed to the detection and compensation of errors, either by annihilating or taking account of and allowing for them. This latter method of taking account of and allowing for errors, is that ordinarily pursued by the navigator; but it has navigated so many noble ships to the bottom of the sea, that the voice of humanity and the interests of commerce alike demand such a modification of the methods of observation, and the forms of the instruments, as to annihilate effectually and alike errors inherent in the observer, in the instrument and in the atmosphere.

In the method of taking observations now generally practiced by the navigator, instrumental adjustments, atmospheric refraction and the impressibility of the optic nerve are all depended upon as constant and invariable during the observations; while, in fact, they all are ever fluctuating. The ever-varying fluctuations of heat and cold are continually changing the amount of atmospheric refraction, as also that of every instrumental adjustment. And it is a well known fact in optics that the irradiation (which causes bright objects to appear larger than they really are) varies with the length of time during which we look upon the object, during the first few moments of observation gradually decreasing; and then, as the optic nerve becomes fatigued, the optical illusion (irradiation) reappears magnified ten-fold. These are not mere speculative sources of errors, but practical annoyances which every observer has to contend with—the incompetent navigator, of course, slurring them over as refinements too delicate to deal with, while he attributes the error thus introduced into his position, to the action of imaginary ocean currents; but the thorough navigator meets these errors fairly, and sets about annihilating them. Yet it may be interesting to those navigators who insist on neglecting these finer instrumental errors, to know that very many of the sextants used in navigating vessels have an eccentricity ranging from one to four minutes, which is often aggravated by parallax of index-glass; and his positions are vitiated to the full extent of these neglected errors.

By the ordinary method of observing excessive contacts of the opposing limbs of the sun with the horizon, even if the mind from one observation to the other retains fresh and full the vision of the contact, still the observer will fail to make the contact of the horizon with the perimeter of the sun at equal distances from its center, because he makes these contacts at different instants of time, when the eye is differently affected by irradiation and fatigue. And hence, what would appear one moment a delicate contact would one minute afterward be wide of the mark. And thus it is, in the observations thus made with an instrument that is varying, with a vision that is varying and through an atmosphere that is varying, we can clearly see the source of the errors which have lured many an unsuspecting ship fatally onward against rocks and reefs.

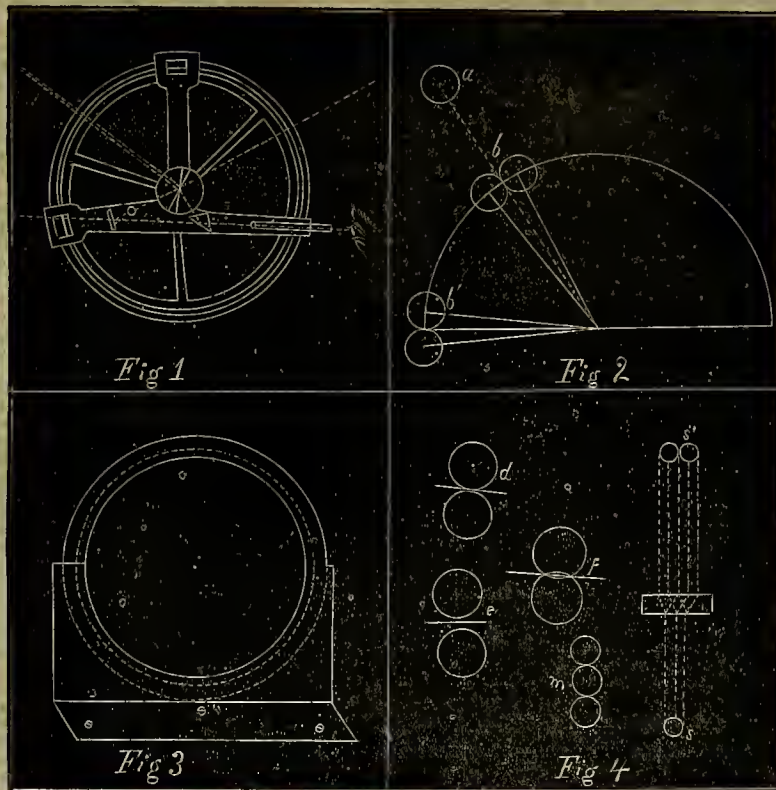
But by the method of observing proposed by Mr. T. J. Lowry, of the U. S. Coast Survey,

and described by him at a recent meeting of the California Academy of Sciences, and with the form of instrument herein designated, we avoid in part, and in the remainder essentially annihilate these most fruitful sources of errors. By placing within the instrument itself the means of

Self-Correction

We have the most effectual checks upon its errors of construction and the changes of its adjustments. Thus, from very simple geometrical considerations it may be easily shown that the errors of eccentricity and of graduation are totally eliminated by the mean of the readings of two verniers 180 deg. apart, and by measuring the angles on different parts of the arc; and by using an index-glass susceptible of reversal between the parts of a set of observations we banish every trace of error from parallax of index-glass from our results. And every error of observation—such as arise, for example, from inexperience, defective vision, slowness in seizing the exact instant of occurrence of a phenomenon, and from atmospheric indistinctness, and insufficient optical power in the instrument—are all alike essentially checked by observing the contacts of the two opposing limbs of the sun with the horizon at the same instant. Now, since we have the contacts of the upper and lower limbs of the sun in the field of view at the same moment, we have before our eyes a most thorough check on the character of the contacts, since by direct and instantaneous optical comparison we make each of them equally well.

frame, so connected with a micrometer that its most delicate movements can be read off. In Fig. No. 2, a is the sun, and b , its duplicated image, as seen in the horizon glass; and c is this same duplicated image brought in contact with the horizon; d is the position of the observer. Now, in observing, it makes but little difference whether these duplicated images are exactly tangent, slightly overlapping, or slightly separated, (as shown at d , f , and e , in Fig. No. 4); for in the first case we have but to bring the horizon to the point of tangency; in the second, to bisect the two exterior angles; or in the third, to bisect the space between the adjacent limbs of the sun. It is obvious that this method of observing the contacts of both limbs of the sun at the same instant is equally well adapted for double altitudes; the appearance of the images then is shown at m , in Fig. No. 4. Other improvements devised by Mr. Lowry are: 1st. A reversible double reflecting index glass, (see Fig. No. 3,) which eliminates the error due to its parallax; and the 2d is making both faces of index glass reflectors, and fixing a glass prism, with silvered hypotenuse, on the line of sight behind the index glass and at such an angle as to reflect the rays first reflected from the back face of index glass parallel to the line of sight. This device enables us to measure any angle, (shown in Fig. No. 1.) It is obvious that any two angle reflecting instrument may also be made to give this duplication of images; and also give an altitude and its supplement at the same instant, and thus give us the algebraic sum of the existing refraction and dip. These improvements are all



IMPROVED INSTRUMENT FOR OBSERVING SOLAR ALTITUDES

And, moreover, since we make the contacts of both limbs of the sun with the horizon at the same instant, we have in "each sight," an altitude, complete in itself, without the aid of a supposition of the constancy of atmospheric refraction, or the stability of instrumental adjustments, or the constancy of the impressibility of the optic nerve, or the aid of memory.

But, as we cannot measure what we cannot see, it is obvious that by the ordinary method of successive single contacts those errors, too minute for low optical power, enter and vitiate the results to their full extent. But by Mr. Lowry's method of double contacts at the same instant, we detect and avoid these errors which would otherwise elude our vision. As for example, suppose we make what appears to be a contact of the upper limb of the sun with the horizon, and then by glancing at the other contact, of the lower limb and the horizon, in the same field of view, it will appear a contact equally nice as the other, if the first contact was exact, but if it was at all in error, then the second will be in error twice as much as the first; and thus it is, by doubling these errors, which the eye cannot discern nor the touch perceive, are we enabled to sift them from our observations. Still the observer should use this most powerful telescope available. The improvement now proposed by Mr. Lowry, (besides a few other matters of detail), in the ordinary reflecting angular instruments, is a device for duplicating the image of an object by optical means. This he accomplishes by fixing an extra index-glass directly above, or in the same plane with that of the ordinary one of the reflecting repeating circle, and at an angle therewith, equal to the apparent semi-diameter of the sun; or, perhaps, a more complete solution of the problem, is to fix a small sphere of Iceland spar on the direct line between the index and horizon glasses, (see Fig. No. 1,) and thus obtain two images of the sun equally distinct, (see s , Fig. No. 4.) This sphere to be mounted in a light metallic

equally adapted and easily applied to any reflecting angular instrument.

By making these attachments to the French reflecting, repeating circle (see Fig. No. 1) we have an instrument capable of not only eliminating its own errors, but those of observation, as well as those due to sudden atmospheric changes, and we have an instrument theoretically almost perfect.

Through the efforts of Laplace, Newton and Peirce the theory of nautical astronomy has reached a point of perfection that only awaits the determination of the true dimensions of the solar system (which it is hoped the next transit of Venus will give) to make it all that can be desired. The invention of the chronometer has practically solved the problem of longitudes. And the needle of the mariner's compass has felt the touch of a Ritchie and trembles no more. Whilst Beecher and Davidson have given the navigator artificial horizons that leave but little to be desired in that direction. But still improved methods of observation are wanted to decrease the frightful number of marine disasters. And though the ideas here advanced are believed to be a step in the right direction, yet they are also thrown out with a hope of eliciting from others a more complete solution of this problem, than which none other more interests mankind. And the complete solution of it—that would make practical navigation one of the exact arts—would evoke the lasting gratitude of civilized man the world over.

GRAVEL claims in the vicinity of Silver City are yielding liberally. Matthew & Co., who are working a claim in Nigger Gulch, a short distance west of the town, are making from \$15 to \$20 per day to the man.

ST. HELENA, Napa county, sent away 31,329 pounds of quicksilver during the first five months of this year.

Working Claims by Tunnels.

Willis Drummond, Commissioner of the Land Office, decided, Aug. 27th, 1872, that work done and expenditures made in constructing a tunnel, intended for the development and improvement of lodes, would not satisfy the legal requirements of the Act of May 10th, 1872, as to expenditure on claims; but that such expenditure or labor must be made in good faith upon each lode claimed; otherwise the same would be subject to re-location by other parties, as provided by law. The case which brought forth this decision was that of the Helmick Silver Mining Company, who were the claimants of nine separate lodes, all of which it was their purpose to develop and improve by a mining tunnel. This decision of the Commissioner was approved by W. H. Smith, Acting Secretary of the Interior. In consequence of this decision, a bill was introduced in Congress, which changed this law and amended it so as to read: "That the fifth section of the Act be and the same is hereby amended so that when a person or company shall run a tunnel for the purpose of developing a lode or lodes, owned by said person or company, the money so expended in said tunnel shall be taken and considered as expended on said lode or lodes, whether located prior to or since the passage of said Act; and such person or company shall not be required to perform work on the surface of said lode or lodes, in order to hold the same, as required by said Act." As far as we have learned, the bill has not yet been acted upon, although it is a just and necessary one.

However, it does not matter much, as W. W. Curtis, Acting Commissioner, has changed the ruling of Commissioner Drummond, as the following note to Senator Sargent will show:

GENERAL LAND OFFICE, WASHINGTON, D. C., May 23, 1874.—Hon. A. A. Sargent—Sir: Referring to your recent personal call, I have to state that where a tunnel is run for the development of a particular vein or lode, it is held by this office to be work upon that vein or lode within the meaning of mining Acts of Congress. The required expenditures may be made either from the surface of a mining claim or in a tunnel run for the development of such mine.

Very respectfully, etc., W. W. CURTIS, Acting Commissioner.

This is as it should be—only if it had been so decided before, it would have saved many miners considerable money.

THE PALACE HOTEL.—The new hotel now being erected on Market street, opposite the Grand Hotel, will cover an area of 95,250 square feet. The frontage on New Montgomery street will be 350 feet; on Market, 275 feet; on Annie, 350 feet, and on Jessie, 275 feet. It will be seen by this that our new hotel covers an area of ground nearly three times that of the New York "Windsor Hotel," which covers 36,000 square feet, and more than three times that of Leland's "Sturtevant House," which rests upon 30,000 square feet. About 4,000,000 bricks have been used already; when finished there will be 16,000,000 bricks in it; 16,000 barrels of lime and cement; and 600 tons of iron. There are now 300 men at work on the building, and 200 carpenters will be put at work when the structure is ready for them. There will be 30 miles of gas, steam and water pipe. The building will be six stories high and cost \$1,000,000.

TRANSIT OF VENUS.—Professor George Davidson, of the U. S. Coast Survey, and President of the California Academy of Sciences, will sail for Japan about the 15th of August or 1st of September, to take observations of the transit of Venus. O. H. Tittman, of the Coast Survey, who will be his chief assistant, is expected to arrive in San Francisco shortly with the outfit. Three photographers will accompany the party, all of whom are now practising with Dr. Dresbe and Professor Newcomb in Washington. The Professor has not decided on the exact point of observation, but intends to make his selection when he arrives in Japan.

PIPING COMMENCED.—Last week piping was commenced in the Emerson hydraulic claim in Happy Valley, Calaveras county. A new flume 720 feet in length, two feet wide, with a grade of six inches to the box, has been laid. The hydraulics has a pressure of 140 feet, the water—250 inches—being conveyed to the mine in a 13-inch iron pipe. The claim is several inches in area, the gravel varying from 60 to 100 feet in depth.

THE Brother Jonathan quicksilver mine, recently discovered by a party sent out by Dr. C. E. Davis, of St. Helena, consisting of T. Walker, W. C. Davis and B. E. Hunt, is now being worked. A company has been formed of the four above named gentlemen, a tunnel is being run, and the ore is said to be very promising.

BILLS of lading were received Monday by the Directors of the San Francisco Smelting Works for 345 tons of ore from Salt Lake, which will probably reach here Thursday or Friday. Operations will probably commence at the works the first part of next week.

EBERHARDT & AURORA.—It is rumored that a body of \$70 ore has been found under the old Peerless chamber in the Eberhardt & Aurora mine, White Pine. The mine is turning out 40 tons per day.

RICH discoveries of silver are reported about 10 miles north of Wells, Nev. The vein is large and the ore assays almost \$400 per ton.

Rock rifles are coming in vogue with miners in Montana, and are well liked.

Gold and Silver on the Pacific Coast.

How the Precious Metals are Prepared for Shipment.

When the gold and silver belongs to any of the great mining companies it is usually made up in bars and forwarded by express. Most of these companies have particular banks, either here or in New York, to which they sell all they have. But there are many small companies of white and Chinese miners who sell their dirt to the storekeeper with whom they deal, or to small country banks or brokers, who make a business of it, and who sell it to the big banks. Nearly all the banks have agents for purchasing in this way. The Bank of California claims to receive two-thirds of the bullion coming to the market. A comparatively small proportion of dust and nuggets is now received, as most of the country banks convert their receipts into bars. Gold was formerly sent along in its original state by nearly all these banks, but is seldom done now, as there is an assay office in nearly all the mining towns, where it is melted into bars. The average silver here weighs from 2,400 to 3,000 ounces, and the gold bars are worth from \$50 up to \$5,000. A few months ago the Anglo-California Bank received one of the latter value. The bars range in fineness from 600 to 950, the average being about 850. A great proportion of the fine bars come from Victoria, British Columbia. Silver comes in bars of all sizes. The Bank of California has had one bar of 1,801 ounces, or 124 pounds, sent to it. The gold and silver from the bank are sent to the refinery to be refined. Formerly, a good deal of silver used to accumulate at the banks, but now it is shipped quickly by the railroad. What remains over night in the banks is, being in the shape of bars, placed on trucks and run into the vault, till it is sent away next day. The silver is shipped principally to China, Japan and England. It is interesting to detail

How They are Shipped.

At the country banks it is received in all conceivable shapes, in plain bars, packed in buckskin bags, in tin boxes, and even in old tin cans. Silver coin for export is always put in square, dovetailed boxes. Silver bullion comes in plain bars. When sent from the bank it is put into a large bag, from which it is taken when brought to the railroad cars and placed on the floor of the car. In this way it is brought to the city. Most of the gold and silver is coined here and shipped away by the firm of Wells, Fargo & Co., which has agents at every principal point on the railroads, whose duty it is to receive it and check it. On the car are a number of men armed with small arsenal shot-guns and navy revolvers. They accompany the treasure. When shipped East it is put up in little boxes of pine wood with screwed lids, each containing about \$20,000. Wells, Fargo & Co. have about 600 offices on the coast and employ about 1,050 men. The offices extend from here to the Missouri river, and they have regular agents in Liverpool, Hamburg, Bremen, etc. They have agents on all the trains. It takes fifteen men to run a treasure car through from here to Ogden, and there are from two to six or eight on all the same of the smaller lines, while on the days when there is any considerable amount of treasure they have an armed guard. In sending to Mexico, a treasure-room is engaged on the steamer, in which the treasure is packed in boxes or bags. These are put in a square safe, which will hold \$250,000. Silver is almost always shipped in bars. For the carriage of gold from Fort Shaw in Montana, near the boundary line of British Columbia, to this city the charge is 1.45 per cent.; for carrying silver it is 3½ per cent. on the value. For shorter distances there is, of course, a reduced scale of charges.

What becomes of all the Gold and Silver?

In the first place, \$1,034,537,245 has been sent away from San Francisco through regular mercantile channels during the last quarter of a century. Nearly all this went by sea, though the amount exported in that way has been growing smaller, being now only a small portion of what it was a few years ago, before the overland railroad was completed. The balance, about \$40,000,000, on the Pacific Coast; \$60,000,000 has 000,000 worth, exists in the shape of coin, jewelry sent East by express, post-office and drafts, while the balance has been shipped from Utah, Nevada, Montana, Idaho, Colorado, New Mexico, Arizona and Wyoming, Oregon, Washington and British Columbia on the railroad since its completion, or by other means of conveyance previously, and carried away by private hand. Of the whole amount more than \$1,100,000,000 has reached England, chiefly by way of New York. Of that exported by sea more than half has gone directly to New York, about \$200,000,000 direct to England, nearly \$120,000,000 to China and Japan, and the balance to various other countries.

One Noticeable Change.

Occurring of late years, is in the character of our bullion product. Formerly it was all gold, or nearly so. In 1859 we began to obtain silver, when the yield of the argentiferous lodes of Nevada astonished the world more than did the placers of California; and ever since, year by year, the quantity of silver has been increasing while that of gold has nearly all the time steadily decreased. Last year the yield of silver on the Pacific Coast slightly exceeded that of gold. We have furnished the world with gold; we shall furnish it with silver. That the silver is needed may be well understood, when it is known that India alone requires \$500,000,000 worth of silver to supply her wants in this re-

spect. As to the future prospects, the silver yield of Nevada, Utah and Colorado is continually increasing, and the gold yield of the Coast will increase as soon as the vast unworked and almost unknown resources of this State are developed. It, in fact, may be considered that the resources, auriferous and argentiferous, of this Coast have as yet only been tested, and that the development has yet to come. The Rocky Mountains, the backbone of the continent, the Sierra Nevada and the connecting ranges, have, as yet, been but partially prospected and may be considered the inexhaustible storehouse of the precious metals.

Abroad there exists a kind of a vague idea that one has but to come to California and stay a dozen years to go forth a millionaire; but as to the total yield since the first miner struck the first pick in the soil of the valley of the Sacramento—as to the annual yield, whether it is increasing or decreasing—as to what becomes of it when mined, where it goes to and the part that it afterward plays in government and commerce, comparatively few are aware. And notwithstanding the expanded ideas of California wealth that exist abroad and at home, it will surprise not a few to learn that one-third of all the gold and silver coined and uncoined in circulation in the world, and a half of that used in America, Europe and Australia, has been the product of the Pacific Coast from 1848 to 1874.

The Precious Metal Product of the Coast.

Says the *Chronicle*, has nearly equaled a value of \$1,000,000,000, the exact figures being \$1,583,644,934, of which \$1,347,509,503 was gold and \$236,135,431 silver. But for this immense product poured into the coffers of commerce it is difficult to imagine how the latter could have been carried on, enormous as its increase has been, without a general and corresponding depreciation in prices, or a vast expansion of the system of credits and paper money. To the United States in particular it has supplied nearly \$900,000,000 of all the precious metals used in coinage and the arts since the foundation of the government. The total amount coined up to the end of 1873 was nearly \$860,000,000, of which \$750,000,000 has been from California gold and silver. What would have been done without this, and how commerce could have been carried on with foreign nations, are questions that are puzzling. It seems, indeed, that the general progress of not only the Pacific Coast, but of the whole nation, would have been very sensibly retarded. England, since 1848, has loaned eight thousand million dollars to the nation, and this she has been enabled to do by means of the gold and silver product of America and Australia—mainly of the former. At least five thousand millions of this sum, bringing a yearly interest of two hundred and fifty millions of dollars, has been derived from the Pacific Coast. Nearly all that we have sent East, and \$190,000,000 more, has gone thither, and has been loaned some half a dozen times. England lends gold and silver obtained from the United States, in exchange for goods, to France. France pays it back again for merchandise. Then it is borrowed by Germany, and by that nation paid back for manufactures, when it is again loaned to Russia, and so on. By this system one dollar in coin is sometimes made to perform the work of a dozen, and hence it is that the capitalists of England grow rich on the handling of the product of our lodes and placers.

The Product of Each Section of the Slope.

Of the whole yield California has produced three-fourths, or \$1,094,919,098, nearly all gold, with a small sprinkling of silver. It is thought that there exist mammoth silver lodes in various parts of the State, but they all pale their ineffectual fire before the wondrous ores of Nevada. This State comes next, having produced since 1860 upwards of \$221,402,412 in gold and silver, three-fourths having come out of the wonderful mines of the Comstock. The greater portion of this has been silver, although in many mines the gold forms at least one-third of the precious metals yielded in the assay. Utah, though long known as a country rich in the precious metals, has only lately been a producer of them. The Territory has produced \$18,527,537, principally silver, and is increasing in production at a great rate. In fact, its resources in this way are simply inexhaustible. Montana first became known in 1862, and for two or three years its placers gave great promise, but they have lately ceased to yield much, and quartz mining is not being pushed with sufficient vigor to make amends for the failure of the placers. It has produced altogether up to the present time \$119,308,147. The same may be said of Idaho, which has produced \$57,249,197. Colorado, as a mining field, is just about being developed, and will make for itself, by and by, as great a name as Nevada or California. It has produced about \$30,000,000. Oregon and Washington have a history very similar to that of Idaho. They have produced \$25,501,250. British Columbia has added about \$9,000,000 to the riches of the coast, and Arizona a small sum; but that Territory is capable of being made to export a large mining population. Its being named at present as a mining Territory is a seeming misnomer, as its yield is very small, but it has great and undeveloped mining capacities.

For the last seven years the yield of the precious metals on this coast has been increasing steadily, last year having increased about fourteen per cent., being \$80,287,436 against \$70,236,914 in 1872. This was principally due to Nevada, the increase of which, last year, was unprecedentedly great. But the yield of Idaho and Montana has been for some years decreasing,

on account of their placers being worked out and their quartz lodes not being efficiently developed. With the modes of working placers, hydraulic diggings and quartz mines, it is presumed that most readers have more or less acquaintance.

Trustees and Stockholders.

At a meeting of the stockholders of the Globe Consolidated Mining Company, to take into consideration the propriety of building a mill to be used for their especial benefit, 32,827 shares were represented, the number of shares in the company being 37,200. The president, M. D. Townsend, opened the meeting by stating in a brief speech the call for the meeting, which was, as before stated, for the purpose of hearing an expression of the different stockholders upon the subject. In the course of his remarks he stated that he had just returned from Virginia, and had taken a good deal of pains to look into matters connected with the Globe Consolidated Company, and he found upon investigation that there were some 20,000 tons of ore in sight, which would mill from \$15 to \$19 per ton, taking the average working of ores extracted from the same levels as a guide. Also, that the mills where they were now sending ore were about to increase the rates of crushing to \$14; that by building a mill of their own, the cost of milling would not exceed \$7 per ton. The extraction costing only \$1.50, there would be enough ore in sight to pay for a mill of 20-stamps, costing, according to estimates, from \$40,000 to \$50,000; and in conclusion, for himself, thought it would be a profitable investment.

To bring the question up for discussion, Thomas J. Smiley made a motion that the trustees be authorized to make a contract for the construction of the mill under the lowest responsible bid. The subject was then generally discussed, a Mr. Hunt, who claimed to know the poverty of the mine; being about the only person opposed. (He, however, still held his shares in a stock-gambling proposition). After considerable talk, the question of mill or no mill was put, which resulted in there being 20,982 shares in favor of a mill, and 1,965 against. The trustees, therefore, are ordered to make a contract to build the mill. As the secretary stated, there was nearly \$12,000 on hand up to the first of the month, and the expense of working the mine per month does not exceed \$5,000. There will need be an assessment of \$1 per share to secure the desired property.

It is rather of unusual occurrence for the trustees of mines to call a meeting of stockholders for the purpose mentioned, but considering the interest of outside holders, and their general want of confidence in mine managers, it was decided upon by the trustees to go out of the old beaten track and give all of the stockholders an opportunity to express their opinion, which, by the way, is an act of justice not commonly met with in mining companies. —Post.

The Hungarian Hill Claim.

A correspondent of the *Post*, writing from Quincy, Plumas county, says: There are large hydraulic diggings three miles from Quincy. Mr. J. D. Goodwin invited me to visit his Hungarian Hill claims yesterday. The route was about a mile by the stage road, toward Meadow (Shannon's) valley, and then up a very steep and very often sidling wood road until the summit of Hungarian hill is reached—a distance of two miles. The immense artificial cavern, formed by the process of washing away, has its awe-inspiring effect upon a person not in constant or frequent proximity to such perpendicular banks. We made a circuit around the "ecoop" of at least a half mile, and guided by a boy, whose principal business seemed to be to gauge the water gate, we made the rough and often slippery descent to the sluice-boxes. Here we found C. Gurnee, Esq., of San Francisco, attorney and counselor at law. In half miner's garb, and smoking a meerschaum pipe, he sat by the edge of the sluice and told us of the claim. He owns six-eighths in the claim, Mr. Goodwin being proprietor of the remaining one-seventh. I witnessed the taking up of a pan of the dirt and the gradual washing out, until \$500 dollars in gold were collected and cuddled at the bottom. The claim was purchased a year ago for \$30,000. Gurnee and Goodwin took \$30,000 from the bed-rock scrapings before they moistened a particle of the banks. By their better appliances they are drawing an immense revenue from the hill. They have expended \$60,000 in new ditches, reservoirs and pipes. They clean up, on an average, every twelve days, and it is easy to estimate the gathering at \$1,000 a day. They employ between thirty and forty men, inclusive of the watchmen for the ditches and sluices. They have 280 feet of water pressure; and the play of the "Little Giants" upon the rich red bank of the mammoth excavation seems to make the mountain tremble. This is a sight worth seeing many times; it is three miles from Quincy.

SURVEY.—A survey has been recently made for a tunnel to run from the Yuba river to Chimney hill, situated about half a mile from Cherokee, in Nevada Co. The hydraulic gravel claims in that vicinity, which are very extensive, for want of an outlet can now only be worked to a depth of from 40 to 100 feet. When the prospect tunnel is completed, the same ground can be worked to a depth of 300 feet, and over two miles of surface will be opened which it is now impossible to develop.

How the Pulse of the State Beats.

The pulse of the whole Pacific Coast beats through San Francisco. It is the financial and commercial heart of the country as far east as the Missouri river. The state of trade and manufacturers in it therefore correctly gauges the general prosperity. If the country is prosperous its stores are crowded with buyers, and its factories are busy from morning till night—cheerful with the sounds of labor. If the country is depressed, then so is San Francisco, its business men stand listlessly at their doors, their clerks lounge idly in the stores, the factories are half deserted, and the workmen squaltering by idly and hopelessly about the streets. The best sign, therefore, for returning prosperity to the coast is the tone and temper of business and manufacturing managers of this city. Judged by the prospect for trade generally, the condition of the State never was better. Almost every merchant now reports business lively, and the prospect for the future exceedingly encouraging. So also the manufacturers. To begin with

The Iron Foundries.

The Union reports three hundred and forty now employed, with a first-rate prospect for the balance of the year. The Pacific Foundry has one hundred and twenty-five men at present employed. The Risdon Iron Works have three hundred men at work, and the balance of the foundries a proportionate number. The proprietors all state that the prospective demand for mining machinery is good, as the rains of the winter and early spring have supplied enough water for mining purposes. If the expected demand is realized, there will be fifty per cent. more men employed than there are at present, and of course the demand for Pig Iron will increase accordingly.

The Boot and Shoe Trade.

Is growing more and more exclusively Californian every day. At least two-thirds of the boots and shoes sold in San Francisco this year will be of home manufacture. All the large factories are now actively at work, and the trade for the next four months is expected to be excellent. Rosenstock's factory has over two hundred and fifty white men at work. The United Working Men's Co-operative factory have sixty to seventy hands. Einstein Bros. are employing four hundred, and in their new factory is completed they have put on two hundred more. Hecht Bros. employ five hundred and thirty-five hands, two hundred more than last year. Hobart, Wood & Co. employ three hundred and fifty hands, one hundred more than the previous year. All the others report an improvement more or less, marked with a good outlook. In

The Lumber Manufacturing Business

There is more activity than there has been for years past. This is caused by the unrivaled demand for manufactured lumber; that is, lumber made into moulding, doors, casings, blinds, etc., for the hundreds of new buildings now being erected in this city. And before the year has closed it is anticipated that the requirement will be at least fifty per cent. ahead of what it is now, and that the labor employed will have to be increased proportionately. The manufacture of

Furniture.

Not long since, promised to be one of the healthiest and most flourishing of all that had taken root amongst us, but the State Prison Contract system, by which the labor of a couple of hundred men was obtained for one-eighth or one-tenth of the wages of a free mechanic, or for one-half those of a Chinaman, struck a mortal blow at it, and one which has produced very undesirable effects. It has certainly thrown back the business very considerably, notwithstanding which the same hopefulness as among manufacturers in other departments is now observable in this also, though all in the trade are a little disheartened at the renewal of the contract. The manufacture of

Cane Goods

Is going to be one of the greatest that can be carried on in California. There is no other State in the Union that offers such facilities for fruit growing as this, and few, where in three or four years more fruit will be grown. Even this year the yield is anticipated to be enormous, in many places fully doubling that of last year. Of course, only a small portion will be needed for local consumption, most of it being packed in tins for sending abroad. The Eastern people have only just begun to acquire a taste for California fruit, and Europe has as yet hardly been tried, so that the future of this industry is bound to be most brilliant. This year there will be at least 2,000 hands employed in this city, as opposed to 1,500 employed during the packing months of 1873.

The Cigar Manufacture

Too, owing to the great Eastern demand will be fifty per cent. more than in 1873; and, of course, a proportionately larger number of men will have to be employed. The increase in the manufacture of Cigars will give a needed impetus to Tobacco cultivation on this coast. In all

Other Manufactures

The outlook is very favorable. The car and carriage makers will employ three hundred more men this year than they did last, and several hundred new men will be needed for the necessary repairs to the coming Wheat fleet. On the whole, not less than five thousand men, or fully fifteen thousand of population will be added to our city through manufactures and building, during the coming year.

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The building will be open day and evening, and every facility will be extended to exhibitors and visitors.

Application for space must be made without delay to the Secretary of the Board of Managers, 27 Post street, San Francisco, and all inquiries will be answered and information extended promptly.

No space can be secured unless applied for before the 20th of July next. A. S. HALLIDIE, Pres.
13v28-3m J. H. CULVER, Sec'y.



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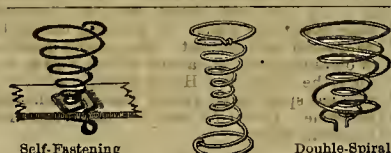
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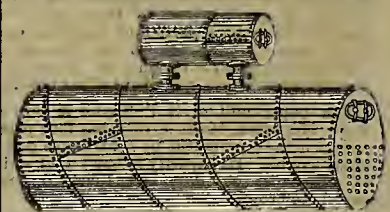
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PURCHASERS please say advertised in Scientific Press

General News.

THE CURRENCY QUESTION IN THE U. S. SENATE appears to be in very much of a muddle. The probable workings of the currency bill now before that body appears to be very differently understood. The bill fixes Jan. 1st, 1878, as the period for the beginning of the conversion of the United States notes into bonds of the three descriptions authorized by the Act of 1870. The theory of the bill, as understood by one party, is that a five-per cent. bond will be then at par in coin, and that United States notes, being convertible into them, will also be at par; that in the meantime United States notes will gradually appreciate to par, and that the appreciation will be gentle and slow, not exceeding three and a quarter per cent. per annum, so that specie payments may be brought about without oppression to the debtor class or the derangement of the business of the country. Others claim, on the contrary, that the bill is in favor of expansion; while still others hold that it is a fair compromise between the inflationists and resumptionists. Mr. Sherman says if the bill would settle the vexed financial question, if it would stop people talking about what kind of money they were going to have, and go to work to earn it, it would be a blessed thing; but he did not believe it would have any such effect. It is still doubtful what action the Senate will take upon the matter of the bill, if it passes as it stands.

ROYAL ENDORSEMENT.—It is said that Queen Victoria has sent an autograph letter to President Grant, fully endorsing Mr. Sartoris as one every way worthy the hand and heart of the daughter of a President of the United States. It is also hinted that the royal heart will probably be moved to give some special mark of approbation of this union, by inviting the couple to visit Windsor Castle and conferring some title of nobility upon the bridegroom. It is also said that this action has been prompted from the sincere personal attachment which the Queen formed for Miss Grant, during the brief visit which that young lady made to the palace on her former visit to Europe, and also for the esteem she feels for the President of this Republic in his official capacity.

BEET SUGAR IN FRANCE.—The amount of juice expressed in France from beets, for manufacturing into sugar, for the year ending in October, 1873, at which time the grinding for that year's crop is being prepared for, is represented to be 485,746,810 gallons, being less than that of the previous year, by 38,642,523 gallons. In 1872, the density of the juice was 3.9, while that of 1873, was 4. The sugar produced in 1873, was 224,268,210 pounds, less by nearly 20,000,000 pounds, than in 1872. French sugars are also stated to have become a formidable rival to Austrian sugars. It is not improbable that beet sugar will yet drive cane sugar from the market, unless the planters of cane devise some means to reduce the cost of cultivation.

SOUTH CAROLINA UNDER RULE OF CRIMINALS. A special correspondence from Charleston says South Carolina has more criminals in office than any other State, and that the official records show that one-third of the persons holding minor positions have been indicted for offences during their term of office, and a much larger proportion of offences committed prior to election or appointment. In Charleston county nearly every State officer, from the highest to the lowest, has been charged, and many convicted of one or more offences.

THE RAILROAD COMPANIES between this city and St. Louis have tendered the ladies of this State free transportation for 20 tons of provisions to St. Louis for relief of the Louisiana sufferers. The Mail Steamship Company has also made a similar tender of free transportation for the same amount. Forty tons of provisions may thus find free transit, if the people of this State who cannot afford the money, will thus furnish the substantial need.

CROPS ON THE TULE LAND.—Circumstances that have favored crops this season in the valley and the foothills, the latter especially, have been rather unfavorable to those on the tule land, though the average production of these lands, will, it is said, still be large. In some cases the estimate is placed as high as 70 bushels to the acre. The breadth of tule land sown to wheat and barley is greater than that of last year.

A GREAT storm visited the Eastern States, and particularly Rhode Island, on Monday of last week, which did an immense amount of damage in causing freshets throughout the central and southern portion of New England. Seven inches of rain fell at one locality on Sunday night, the 7th instant, the largest fall of water ever before recorded in that locality.

THE paper mill of S. P. Taylor & Co., on Paper Mill creek, Marin county, has four paper or rag engines propelled by a 100-horse power steam engine. Its capacity is one ton of white or newspaper per day, and 1,600 to 1,800 pounds of brown.

SUN STROKE.—Two cases of sun stroke have been noted in this State during the past week; one in this city and one in Petaluma. Such cases have heretofore been almost unknown in this State.

DEAD LOCK.—There is a dead lock in the election for United States Senators from Rhode Island.

The reported discovery of immense deposits of guano in Southern Peru is confirmed.

Arizona Mining Prospects.

Chas. O. Brown took out to the Oro Blanco mine this week a complete outfit to commence work on the northern extension of the Oro Blanco mine, which is owned by C. O. Brown, E. M. Pearce, J. W. Hopkins and Gov. Safford. The company have built four arastras and will at once commence reducing the ore. Careful tests warrant the belief that the ore will pay \$100 per ton in free gold, and the company have sent out animals and a good set of practical miners to commence the work, with sufficient supplies to last two or three months. The prospect is encouraging for good returns.

The original Oro Blanco mine owned by Messrs. Handy, Leatherwood, Hewitt, Bartlett, Hopkins, Brown and Ferguson, has been worked for several weeks, and arastras are now in successful operation on this mine. Several other valuable mines have been discovered in the vicinity, and more or less prospecting is being done on them.

Good reports continue to come in from the Sacaton and Quajata mines. Small lots of gold and silver are constantly being brought to town by prospectors, and these lots aggregate from \$500 to \$1,000 per week.

The miners are now thoroughly in earnest. They have waited long enough for capitalists to come and help them, and they find the mine extensive and rich enough so that they can with strong arms and willing labor help themselves.—*Citizen*.

THE FISHES FROM THE EAST, AND WHAT HAS BEEN DONE WITH THEM.—The aquarium car, as already announced, has this time made the transit of the continent, safe, and its assortment of fishes has been safely delivered at appropriate points throughout the State. Its first stopping place was at the Truckee river, where three cans of fish were safely transferred to that stream. Another lot was left at Summit Station, to be deposited in the head-waters of the Yuba. The Western bass and Mississippi catfish were dropped in the San Joaquin at the point where the railroad crosses that stream. Seven cans of horn pout and fresh-water eels were placed in the Sacramento river, near Sacramento city. The perch were sent to the lakes at Sutterville, and from thence they will find their way to the Sacramento. The lobsters were brought to this city, and deposited in the ocean, on Saturday of last week; while the salt-water eels and a few tautog were deposited in the waters of the bay. Another lot of bass has been sent to Napa creek. The catfish have been put into our waters, notwithstanding the urgent protests of many who feared they would become troublesome. This fish is very destructive to small fry, and has a mouth of wide capacity, to aid in its natural propensity; but it is a most excellent delicacy for the table, and Mr. Stone, the Fish Commissioner, says they can never injure the salmon.

VALUABLE MINERAL CABINET.—A very valuable cabinet of minerals, which has been on exhibition for some time at the office of the Grand Hotel, is now offered for sale. The collection is a very rich and choice one, and contains some specimens which we presume cannot be duplicated on this coast. Any person desirous of obtaining such a cabinet will do well to call upon the owner, Mr. Henry Truella, as above, who has spent some twenty years in collecting the same. It will be sold for much less than its actual value.

WATER from the Iowa Hill canal was introduced into Iowa Hill last week, and the event was the occasion of a grand celebration, by a salute of guns, fire-works, torch-light procession and a ball. The canal, when completed, will be 40 miles long, and will have cost \$500,000. A great mining revival in that section is expected.

THE Metropolitan mill near Hamilton, Nevada, has been leased for a custom mill, and the lessees are making a success of their operations.

HYDRAULIC mining on Cedar hill, north of Virginia City, is being resumed after a suspension of several years.

A WAGON road is at last opened into Yosemite and no more horseback riding is necessary, to get into the valley.

PROF. E. S. MORSE is delivering a course of lectures in this city, on natural history subjects.

NEVADA, with a population of 50,000 souls, boasts of 18 newspapers, seven weeklies and 11 dailies.

THE Live Oak quicksilver mine, situated on Carrie's ranch, was recently sold by its discoverers to I. P. Allen, of San Francisco.

THE coinage at the Carson Mint for May amounted to \$571,352 94.

WORK on the Livermore coal mine is to be immediately resumed.

THE quicksilver mines in the Pine Flat district are doing well.

THE Virginia Consolidated mining company is about putting up a new sixty-stamp mill.

THE Eureka and Palisade Railroad is being vigorously pushed ahead.

CINNABAR is still being discovered in Lake county.

ROCHESTER DISTRICT.—Mr. P. H. Meagher, of Rochester, was in town yesterday. He informs us that there are now sixty men working the quartz mines of the Rochester district. Oaks & Meagher's lode is turning out an abundance of rich ore. They have ten inches of very rich ore. Every lode in the district is looking well, and every body in the camp is contented. This camp had been entirely abandoned; for years not a man had been in it until last summer; but it is now, probably, the best quartz mining camp in the Territory. So much for development.—*Montanian*.

THE town of Murphy's, in Calaveras county, was visited by a disastrous conflagration, Friday, 30th ult. The fire originated in Doyle's fruit store, and destroyed every wooden building on that (south) side of the street, from Sperry & Perry's hotel to Rowland's store.

THERE are eleven woolen mills on the Pacific coast—eight in California and three in Oregon. They have in the aggregate 28,840 spindles and 232 broad looms.

PATENTS & INVENTIONS

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C. June 16th, 1874.

FOR WEEK ENDING JUNE 2, 1874.

STENCH TRAP.—John P. Schmitz, S. F., Cal.
CHOPPING BLOCK.—Henry Anderson, S. F., Cal.

PROCESS IN THE MANUFACTURE OF ARTIFICIAL STONE.—Gilbert S. Dean, S. F., Cal.

PROCESS OF PRODUCING PHOTOGRAPHIC PICTURES.—James M. Pimental, S. F., Cal.

HYDRAULIC LIFTING JACK.—Anthony J. Ojeda, S. F., Cal.

UNLOADING HEADER WAGONS.—Henry Klehn, Crow's Landing, Cal.

HARROW.—William H. Wolfe, Santa Clara, Cal.

SCRAPER.—Edward H. Farmer, Chas. Remington and Joseph Dimmock, S. F., Cal.

STAGE SOENERY AND SHIFTING DEVICES.—Henry F. Parsons, Los Angeles, Cal.

The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. NOTE.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest time possible.

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Started in 1860, is one of the oldest weekly journals now published in San Francisco. It has been conducted by its present proprietors for ten years, during which period it has been repeatedly enlarged and constantly improved. The active and steadfast efforts of its publishers have gained for its conduct an amount of practical experience greater than any other publishers have accumulated on this coast, of a weekly journal.

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Our intimate knowledge of the various inventions of this coast, and long practice in patent business, enable us to abundantly satisfy our patrons; and our success and business are constantly increasing. The shrewdest and most experienced Inventors are found among our most steadfast friends and patrons, who fully appreciate our advantages in bringing valuable inventions to the notice of the public through the columns of our widely circulated, first-class journals—thereby facilitating their introduction, sale and popularity.

Foreign Patents.

In addition to American Patents, we secure with the assistance of co-operative agents, claims in all foreign countries which grant Patents, including Great Britain, France, Belgium, Prussia, Austria, Victoria, Peru, Russia, Spain, British India, Saxony, British Columbia, Canada, Norway, Sweden, Mexico, Victoria, Brazil, Bavaria, Holland, Denmark, Italy, Portugal, Cuba, Roman States, Wurtemberg, New Zealand, New South Wales, Queensland, Tasmania, Brazil, New Grenada, Chile, Argentine Republic, AND EVERY COUNTRY IN THE WORLD where Patents are obtainable.

No models are required in European countries, but the drawings and specifications should be prepared with thoroughness, by able persons who are familiar with the requirements and changes of foreign patent laws—agents who are reliable and permanently established.

Our schedule prices for obtaining foreign patents, in all cases, will always be as low, and in some instances lower, than those of any other responsible agency.

We can and do get foreign patents for inventors in the Pacific States from two to six months (according to the location of the country) sooner than any other agents.

Home Counsel.

Our long experience in obtaining patents for inventors on this Coast has familiarized us with the character of most of the inventions already patented; hence we are frequently able to save our patrons the cost of a fruitless application by pointing them to the same thing already covered by a patent. We are always free to advise applicants of any knowledge we have of previous applications which will interfere with their obtaining a patent.

We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents, or purchasers of patented articles, can often receive advice of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money, but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency. The principal portion of the patent business of this coast has been done, and is still being done, through our agency. We are familiar with, and have full records of, all former cases, and can more directly judge of the value and patentability of inventions discovered here than any other agents.

Situated so remote from the seat of government, delays are even more dangerous to the inventors of the Pacific Coast than to applicants in the Eastern States. Valuable patents may be lost by the extra time consumed in transmitting specifications from Eastern agencies back to this coast for the signature of the inventor.

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Stroke of Piston, in inches.	10	12	14	16	18	20	22	24
Capacity per double Stroke, in gallons.	1-6	1-10	1-14	1-18	2-2	2-6	2-10	2-14
Capacity at ordinary Speed, per minute.	10	16	22	28	34	40	46	52
Weight of Piston, in pounds.	22	40	58	76	94	112	130	148
Weight of Piston Rod, in pounds.	1	1	1	1	1	1	1	1
Weight of Piston and Rod, in pounds.	23	41	59	77	95	113	131	149
Size of Exhaust Pipe, in inches.	1	1	1	1	1	1	1	1
Size of Discharge Pipe, in inches.	1	1	1	1	1	1	1	1
Length of Pump, in feet and inches.	1-0	1-0	1-0	1-0	1-0	1-0	1-0	1-0
Length of Piston Rod, in feet and inches.	1-0	1-0	1-0	1-0	1-0	1-0	1-0	1-0
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6v27-2m

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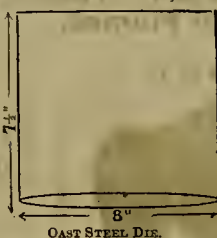


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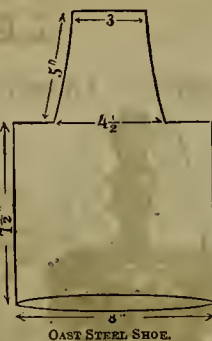
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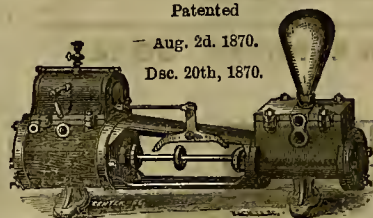
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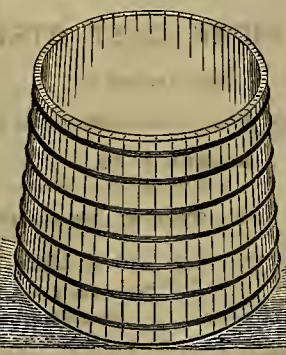
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70	28	85	40	133	50	188	59
73	30	88	41	137	51	193	60
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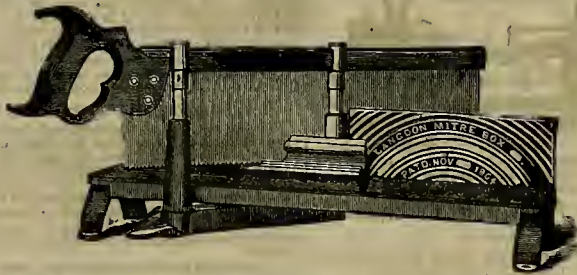
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San Francisco, Cal., June 3d, 1874.
WARREN B. EWER,
GEORGE H. STRONG,
JOHN L. BOONE,
ALFRED T. DEWEY.

STATE OF CALIFORNIA,)
CITY AND COUNTY OF SAN FRANCISCO,)

On this June 3d, 1874, before me, F. O. WEGENER, a Notary Public in and for said City and County, personally appeared Warren B. Ewer, George H. Strong, John L. Boone and Alfred T. Dewey, known to me to be the persons whose names are subscribed to the within instrument, and acknowledged to me that they executed the same.

Filed June 5.
W. HARNEY, County Clerk,
By W. STEVENSON, Deputy.
In witness whereof I have hereunto set my hand and affixed my official seal, the day and year first above written.
jnb-4t F. O. WEGENER, Notary Public.

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CONTAINING SIX SIEVES, END TO END,

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SAN FRANCISCO, SATURDAY, JUNE 27, 1874.

VOLUME XXVIII
Number 26.

Improved Mechanical Movement.

Messrs. E. Duffy and R. Swarbrick, of Oakland, Alameda county, California, have recently patented through the agency connected with this office, an improvement in the mechanical movement which is known as a substitute for crank motion, in which a continuous rotary motion in one direction is obtained from a reciprocating, rectilinear or pedal motion. The improvement consists in the employment of a bow-lathe, similar to the implement which is known as a watchmaker's lathe, for giving alternate rotary motion to the case, and pawl or pawls which move outside of the ratchet wheels, instead of the rack and pinion heretofore used.

In the present instance the invention is represented in the engraving as adapted for driving a sewing machine, but it will be readily seen that it can be applied in all cases where a crank is ordinarily used to produce rotary motion of a shaft. On the shaft (as shown in the engraving) are placed two ratchet wheels. Outside of each ratchet wheel is placed a loosely revolving case or drum, *d*, which carries one or more pawls inside of the case. The pawl or pawls engage with the ratchet wheel when the case is turned in one direction, and carry the ratchet wheels and shaft with it, while the wheel moves freely in the opposite direction without engagement.

To give to the cases, *d*, reciprocating or alternate semi-rotary motion, the inventors employ for each case a metallic box, *g*, which has an arm, *h*, extending from its middle as shown. This arm has a hole through it so that it can be placed upon a journal or shaft, *H*, at a point opposite the shaft which is to be driven. When thus secured, one-half of the bow extends above, and the other half below the case. A flat spring or cord, *i*, is then wrapped once around the case, *d*, and its opposite ends secured to the opposite ends of the bow, then forming what is known as a "watchmaker's lathe;" or, as in the present arrangement, two pieces of spring, *i*, *i*, can be used, one end of each piece being fastened to the case and then carried partially around the case in opposite directions, and thence carried to the ends of the bow to which their opposite ends are secured.

Now by giving the bow a reciprocating or semi-rotary motion about the shaft, *H*, the spring or cord, *i*, will cause the case to make a semi-rotation each way alternately. This alternate rotation of the case will cause the pawl or pawls to act upon the ratchet in one direction and rotate the shaft, while it moves freely in the opposite direction. When, as in the illustration, two ratchet wheels and two cases are employed upon one shaft, the pawls of each case will act upon these ratchets alternately so as to produce a continuous rotary motion of the shaft.

The treadle, *l*, is provided with a short arm, *j*, at one side of the toe, and another, *m*, at one side of the heel. The arm, *j*, is then connected with one of the bows and the other arm, *m*, with the other bow, by means of connecting rods, so that the motion of the treadle will give to the bows an alternate reciprocating motion, such as is required to produce a continuous rotary motion of the shaft.

Each of the pawls which engage with the ratchet wheels is suspended upon a short pin, which projects inside of the case from its side, and the end which is opposite the engaging point passes out through a hole in the rim of the case. This rim is placed loosely upon the case, so that the pull of the bands, as they are alternately drawn upon, will cause the rim to move slightly back and forth, independent of the case, and thus raise and lower the point of the pawl, so that it will draw back noiselessly after each engagement, without raking upon the teeth of the ratchet.

Fig. 2 shows the interior arrangement of the ratchet-wheel, pawl and case, and the manner of applying the band, *l*, and bow, *g*.

By this arrangement the inventors much improve the ordinary mechanical movement which is used as a substitute for the crank, and render it applicable for driving light machinery by treadle power. Having no dead point, it can be started from any position, and when used for driving sewing machines, it possesses the additional advantage of driving the shaft in one direction only, so that a stop or reverse brake is unnecessary.

Congress and the Mining Laws.

Congress has adjourned, and for the present miners may rest easy on the subject of mining laws, since our legislators cannot "tinker" with them again until December. Several of the bills relating to the mining interests failed to finally pass both houses, and, consequently, go over to the next session. The Ward bill, providing for the compulsory patenting of mining claims, was referred to the Senate Committee on Mines and Mining, and that committee hold it yet, never having reported on it one way or

for certain annual expenditures on mining claims. On the 1st of March, 1873, an amendment to the original Act was approved, which extended the time for the first annual expenditure on claims located prior to the Act of May 10th, 1872, to the 10th day of June, 1874. Early in May of this year a bill was introduced in Congress extending this time again to January 1st, 1875. Although the time as first extended—June 10th, 1874—was close at hand, it was not until late in May that it passed the Senate, after being favorably reported on by the Committee on Mines and Mining. About the first of June the bill finally passed the House; but it was not until within a few days of the 10th of June that the bill became a law by re-

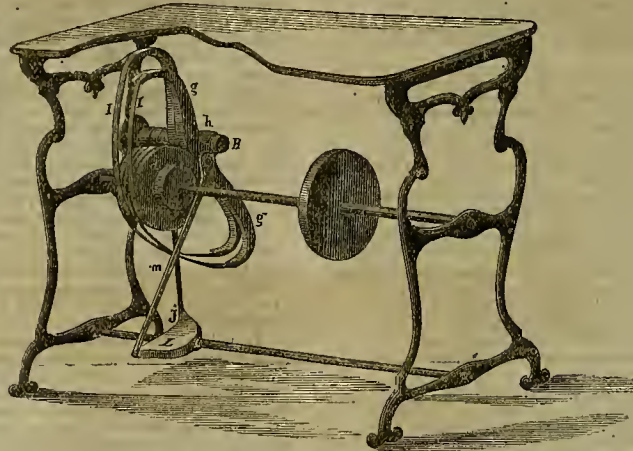


FIG. 1.—IMPROVED TREADLE FOR SEWING MACHINES.

another. The Negley Amendment, which provided that the productive mines on the Comstock lode should take out patents for their ground, was reported on adversely by the Senate Judiciary Committee, to whom it was referred by the Senate Committee on Mines and Mining. Pratt's bill, which provided that all quartz lodes which had produced minerals to the gross value of \$5,000 should file applications for patents within one year, was not acted on by either house.

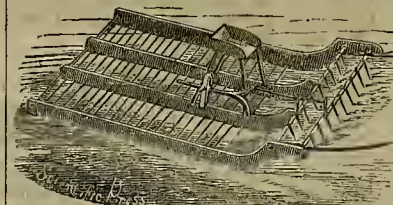
The bill providing for the admission of quicksilver free of duty failed with the Tariff bill, which hangs between the House and Senate on amendments. The bill allowing work done on tunnels to be reckoned as expended on the claims, under the provisions of the Act of May 10th, 1872, passed the House, but did not reach the Senate. This makes little difference, however, as, since this bill was introduced, the Acting Commissioner of the Land Office has reversed a decision of a former Commissioner, and rules that work done on tunnels, intended to develop a claim, is tantamount to expenditure on the claim. The bill abolishing the charge on gold coinage passed the House, but was not acted on by the Senate. Final action will not be taken on any of these bills until Congress convenes again in December.

The action of Congress, with reference to mining laws, this session, has been such as to keep the mining community in a continual state of anxiety. The miners did not know what Congress was going to do any more than Congress did itself; but Congress showed such an astonishing amount of ignorance about mining matters that the miners themselves did not feel very safe. The action taken with reference to the extension of time for the first annual expenditure on claims located prior to the Act of May 10th, 1874, showed such a disregard for the convenience of the miners that they were very much disgusted—not that they were displeased with the final conclusion of Congress, but that that body was so provokingly slow in making up its mind what to do.

The original law of May 10th, 1872, provides

ceiving the signature of the President.

This dilatory action caused great inconvenience to the mining community. A matter of so much importance, involving so much money, should have received immediate attention. Many miners did the required work, being afraid the bill would not pass and they would lose their claims. Others were at the expense of sending men to their locations to be ready in case the bill did not pass; and even after the bill did pass, some men commenced work for fear if the President did not sign it in time, some one would jump their claims and hold them by a technicality of the law. Another feature was, that there was great indecision as to the date of the extension of time. We were dependent entirely on newspaper dispatches



HARROW AND CLOD BREAKER.

for information on this subject, and these dispatches were very contradictory, some setting it at one day and some at another. If the members of Congress could have heard all the "growls" against them by the miners of this coast, they might have hurried up this business a little faster. However, Congress has done with mining, as well as other laws, for a few months, and the mining community can work ahead without any fear of obnoxious mining laws being passed at present.

JAMES THOMAS, of the Golden Gate mine, near Sonora, has invented a simple, yet ingenious, method of splicing wire rope, or attaching the end to any desired place, without tying the same. Splicing by this contrivance can be accomplished by one man in fifteen minutes, which now takes four men about six hours.

The forty-stamp mill for Lincoln mine, Sutter creek, was, on Tuesday, being loaded upon the cars at the Sacramento Valley depot.

Harrow and Clod-Breaker.

We give herewith a representation of a new Clod-Breaker, recently introduced into Oregon where it is said to be giving good satisfaction. This instrument has been devised with the view of meeting an urgent want of the tillers of the soil everywhere, but more especially soils of a heavy character, like the adobe soils of California. Referring to the accompanying cut, it will be seen that the implement is composed of two parallel bars or boards, united at each end so as to form a conveniently shaped frame. The boards or bars are curved upwards, at the forward end like the runners of a sled, so that they will not push the earth before them. Transversely across the frame, is a series of iron bars or stout iron wire stretched parallel with each other, thus forming one or more inclined drops which will so ride upon the clods as to cut or crush them into pieces. To further aid in this work, a double row of teeth, something like harrow teeth, are arranged in front, as shown, and slightly curved near the point, so as to give them a lifting action, by which the clods are brought to the surface, and thus within the action of the parallel bars which subsequently pass over them. A seat may be mounted upon the top, as shown, for the driver, whose weight may be added when needed, for the greater effectiveness of the machine.

This implement, we are informed, has been duly tested by those who are well qualified to judge of its merits; and the claims of the inventor, Addo Borchers, of Salem, Oregon, have been fully endorsed. The invention was patented through the MINING AND SCIENTIFIC PRESS Patent Agency. As Mr. Borchers is about to change his residence to this city, any letters in relation to the above will reach him if forwarded to this office.

Our Great National Anniversary.

Judging from present indications, our nation will celebrate the approaching anniversary of its independence with unusual heartiness and zeal. From all quarters reports are received of active preparations, and unity and harmony seem to prevail generally. In San Francisco arrangements are nearly perfected by means of which a celebration will be secured worthy of the occasion; while in other cities and villages, so far as heard from, similar preparations are being made.

An increased interest in holidays generally, and a disposition to keep and to enjoy them is one of the perceptible changes in the habits and inclinations of the American people. And especially since the war of the rebellion has the nation manifested an increased enthusiasm in celebrating those of a national character. This apparent change in regard to the keeping of holidays is commendable, even in connection with those of a social and festive character; but as manifested in an increased enthusiasm in keeping our national holidays it becomes a hopeful sign of growing patriotism.

THE WEATHER IN SAN FRANCISCO.—Our readers may possibly give a thought to the climate of San Francisco once in a while, and feel disposed to ask the always in-order question—"How's the weather?" In reply to such inquiries we would say that San Francisco is now enjoying delightful weather. The nights are perhaps a little too cold for the growing corn or the corner loafers, even; but San Francisco does not need to grow any of the former while of the latter she grows more than she needs under any and every dispensation of the weather. To the tourist now visiting this city, any splenic complaints against the weather now prevailing appear decidedly unreasonable. They declare that people who are not satisfied with our present standard of weather must be hard to please.

The following is the average yield per acre of the crops of Arizona Territory for 1873: Barley, 1,344½ pounds; wheat, 1,213 pounds; corn, 1,579½ pounds; potatoes, 7,853½ pounds; rye, 1,500 pounds; oats, 1,200 pounds; sugarcane, 24,000 pounds; tobacco, 800 pounds; vegetables, 5,875 pounds; and alfalfa, 20,000 pounds.

The Tuolumne Reunion.

One of the largest re-unions of the former residents of Tuolumne county, ever had in this State, assembled at Badger's Grand Central Park, East Oakland, on Wednesday of last week, June 17th, on the occasion of the seventh anniversary of that association. There were between 2,500 and 3,000 men, women and children present; and at least 1,500 of that number were former residents of "Old Tuolumne." The entire arrangements were complete in every particular, and for which great credit is due the entire management, but especially their retiring President, Mr. L. P. McCarty, who labored ardently for weeks previous to make it a success. It was a financial as well as a social success. Although their expenses were very large, they will net some \$200 from this last gathering.

The music, both instrumental and vocal, would have done credit to our first-class concert—for none but first-class artists participated. Among them were the entire members comprising Walcott's band; and of vocalists, Miss Fannie Marston, soprano; Mrs. Julia A. Cameron, contralto; Prof. Carmini Morley, tenor; Mr. C. Makin, baritone. The programme of dances was elaborately arranged, and the dances themselves sustained with zest.

At 12 o'clock the floor was cleared and the large assemblage was called to order by the President, and the programme carried out in full, with some additions. First a quartette, "Nights Shade no Longer," was sung by Miss Fannie Marston, Mrs. Julia A. Cameron, Prof. Morley and Mr. Makin. The song, "The Sword of Bunker Hill," by Mr. Makin, followed, which, taking into consideration the disadvantages of the Pavilion he had to sing in, was the best rendered we have ever heard it; after which came the poem by Hon. Walter Murray, who was received with immense applause, and proceeded to deliver the following poem, which at frequent intervals was received with enthusiastic demonstrations of approbation:

Hail Tuolumne.

The weary exile, heart sick and distressed,
Who deems of every land his own the best,
Strains at the chords which bind him to that home
From whence in luckless hour he chanced to roam,
And while his body weak and trembling stands,
Alone and friendless, within foreign lands,
Oasts back his soul, on spirit-wings to greet
Affection's smile, a kindred's fond heart beat,
His Nation's flag, and all those ties of earth
Which sanctify to him the country of his birth.

Not these the feelings that we hold for thee,
Our early choice, thou fair Tuolumne.
No Mother thou to us; our baby knees
Ne'er knelt before thee, and our infant teaze
Ne'er brought the flush of anger to thy brow—
Thou wert not Young Men then, as now,
Thou wert our glorious Mistress, in that time
When youth (not yet attained to manhood's prime)
Revels in Nature's hesitancies and adores
Far more the creature than the Great First Cause.
We wandered in thy palaces of pines,
We drank thy mountain air as richest wines,
We loved within thy happy mountain streams,
And, though not poets, shared the poet's dreams.
We delved beneath thy bosom, and drew thence
Thy hounteous treasures, rich in pounds and pence,
But richer still in those ambitions hopes
That soar beyond the poet's rhymes and tropes.
Some toiled to gain the mastery of men,
Some to woo Fickle Fortune's back again;
Some thought of father, mother, loved ones dear,
And planned to brush aside affliction's tear.
Some thought of one behind them, dearer far,
Their life's fond object and its guiding star,
For whom they dared to leave the toil and care
Which dog the wanderer's footsteps everywhere,
And counted all their perils cheaply bought
Could they but live in the lost dear one's thought;
Rich in the hope, oft groundless and frustrate,
To achieve at some long day a heart's home and a mate.

Ah! many a sacred hope was lost of old
In that wild, feverish, toilsome hunt for gold,
And far from home to stamp as sordid those
Who thus went forth to battle with the foes
Of youth, and strength, and high emprise, and health,
Nor hold them to blame, should the poet's vesith,
Perish the cynic who can only see
Mean impulse, where, perchance, divine may be.
Rather do I rejoice to know and see
So many friends of Old Tuolumne—
So many playmates of her younger hours,
So many comrades, dear to us and ours,
Whose life's long struggle whether lost or won,
Deserves the praise of each and every one.
Let us remember with an honest pride
All those who, battling 'gainst the adverse tide
Of Fate and Fortune, have impressed a name
On California's pregnant roll of fame.
And what if no o'er-mastering spirit stands,
A beacon light to this and other lands,
To speak of the high worth of that age,
Thou fairest country, proud Tuolumne!
Yet in the humbler record of brave hearts,
Of honest name, and sound, enduring parts,
Thou wilt mayst challenge all thy sisters fair
To meet with thee in emulous compare.
And you, my friends, who, whether you have part
In the record, or hold it to your heart,
Bear with me while from memory I recall
Some names that from our roll we can't let fall.]

Tis much I expect that those rattle, reckless, times
Could wed a churchman from my ruder rhymes;
And yet the very ground on which we stand
Tells of a Hamilton, whose hold, firm hand,
And free, fair record, speaks of mountain air
Inhaled of old in our Columbia's air.
And Harmon, too, whose useful life bears fruit
In teaching young ideas how to shoot,
Once, in Sonora's bright and early day,
"Pointed to brighter worlds, and lead the way."
Yolo has borrowed in our David Deal
A great deal more than we can from her Steel.

After the Church, the Law comes close behind,
And here a richer record we shall find.
For our Dwinelle, with just an equal way,
Dispenses justice to both side the bay;
Quint, the great champion of the Fair—her foe—
(Take either side you will), is ours, you know;
Martin, McGowery, Cavis, Elkins, Ford,
Each in his turn has wielded Justice's sword,
And Jeremy Letford, last of the old race,
Remains our Justice of the "Pace."
McNeill's bright ermine, brighter still appears
When horn upon our roll of Pioneers.

Congress sends back the names, still unforget,
Of Brave Ned Marshall and of Charles Scott;
Dorsey adorns Sonora, Walcott halls
From Contra Costa's land of pleasant valleys;
And Farrell, today's Orator, whose time
This State employs in prosecuting crime,
With forceful words our heart-beat quickens when
He mounts the rostrum or wields the pen.

And let us not forget the honored dead—
Green springs the turf on Barbour's resting head,
Whose polished speech once warmed the civic strife
And to forensic lore gave newer life.
And poor Ben Moore, the trusty friend of old,
Whose honest voice was never bought or sold,
May he enjoy a peace he never knew—
In the life-fervee he so well passed through.
And Coffroth, too, the eloquent, the sage,
The poet-orator, whose ripper age,
If spared, had brought to him a higher fame,
A greater labor done, a fuller name.

Pass we to living names: From San Joaquin
Hark to the drum that beats the march of King;
Evans, the statesman-warrior—the word
Recalls the flashing of the hero's sword;
List to the rifle-blast, the dismal cry
Of the fierce Indian's death agony—
Such he the messengers of peace we send
To woo the red man to a righteous end.

The clang of war, the thought of duty done,
Recalls the bright and honored name of Gunn,
Whose "mighty weapon," always in the right,
Ne'er faltered in the journalistic fight.
His son, a Douglas, is true son of thee,
And worthy of thy name, and ready hand,
And hold McCarthy, hero of the "Flag,"
The first in combat, and the last to lag,
In San Diego's hopeful land of "rail!"
His war-cry shouts, "There's no such word as fail!"
Washburne, the "Pilgrim" and the Pioneer,
His "otium cum dignitate" passes here,
And half forgets, in his Athenian air,
The time when Lopez had him by the hair.

And while I speak of comrades who have stood
In public service for the public good,
I call to mind our Mandeville, whose fate
Was to survey the Senate and the State;
Our Sedgwick, with his occupation gone—
For Local Option's cry is "Good-by, John!"
Our Chamberlain, whose proper place should be
Dispensing verse to duty, instead of me:
Who, long in office, yet ('tis past belief),
Although Receiver, never was a thief;
And Paul K. Hubbs, the Nestor of our hand,
Him of the silvery tongue and ready hand,
Who shining in the Senate, next was found
Suppressing smugglers in far Puget Sound;
And Charles F. Dodge, and Luckless J. S. Hoff—
And here comes the hearty name of "Thof."

A host of meed parade before my eye:
Radcliff, the high priest of the mystic tie;
Todd and Bertine, the founders of "Expressa";
Street, who brought lightning through the wilderness;
Herr Alexander, with us as I hope to-day,
And Taylor, from the village 'cross the bay;
And Long Tom Murphy, and Alonzo Green,
(Less green than some whom you and I have seen);
And classic Horner, and ready hand,
But one whose inspiration ne'er grows cold;
And last, not least, the Rutherford, whose art
Adorned our cities, acting well their part;
They helped to build the old-time mountain home.
May health attend them where'er they roam.

'Twas a good thought, from time to time, to bring
To social union and sweet communion,
So many comrades scattered far and near
To spend one pleasant day in all the year.
It rightly sprang from a fair lady's heart;
Therefore let Mrs. Sedgwick take part
To our remembrance, and let us remember, too,
Her worthy coadjutor, her true friend,
Their effort, small at first, commenced a tide
Which kindly thought and honest country pride,
Man's hearty impulse, woman's smiling eye,
The general sympathy, have swelled so high
That the huge wave, defying Time and Fate,
Sweeps from Sierra to the Golden Gate.

McCarty, too, deserves his meed of praise—
Our Active President, whose nights and days
Were freely given, and who, hand in hand
With Cunningham, McCusker and a hand
Of kindred spirits from our mountain heights,
Has helped to swell to-day the sum of our delights.

And let us hope that when again we meet
In this fair spot our loving friends to greet,
All those now present may be here to see,
And swell the cry—All hail, Tuolumne!

At this point of the exercises, by request,
Mrs. Julia A. Cameron sang (as a solo) "The
Days of Auld Lang Syne," which by many
was considered the gem of the day, not only
for its appropriateness, but as well the way
it was rendered.

Miss Fanny Marston next sang "Three Cheers
for the Red, White and Blue" with much
patriotic feeling, and was followed by Prof. C.
Morley, who received a shower of applause
(equal to an encore) for so feelingly singing
the simple ballad, "Thou Art so Near, and yet
so Far." Then followed

The Oration.

This, although an extempore effort, was exceedingly appropriate to such an occasion. The allusions to the distinguished dead pioneers of "Tuolumne" were exceedingly affecting. The eulogies of Coffroth, Solomon, Barber and others produced a profound sensation. The orator, Robert Fernal, of San Francisco, was vociferously applauded at the close of his admirable production, which stamps him as one of the rising orators of our State. In closing his remarks, he very happily referred to that day, June 17th, being the 99th anniversary of the "Battle of Bunker Hill," when he fairly aroused his audience to a pitch of frenzy, referring to the scenes enacted following that battle in our country's history.

"The Star Spangled Banner" was then sung by Miss Marston, Mrs. Cameron, Prof. Morley and Mr. C. Makin, and could not well have been rendered better. The solos performed by E. Schlott, on the French horn, and Signor Caspari on the clarinet, were the great features of the day. Prof. Gustave Scott accompanied the soloist on the piano.

The Collation.

The literary exercises concluded with the solo of E. Schlott on the French horn. Immediately thereafter came two hundred ladies and gentlemen, on invitation of the managers, repaired to the long howling alley adjoining, which had been gracefully decorated with flowers and evergreens for the collation. Tables

extending the length of the apartment, beside a shorter table in a side room, were spread with a feast of good things. President McCarty presided, with W. G. Dinmore, Treasner, on the right, and Mrs. Soderer, one of the founders of the association, on the left. There was no formal speech-making at the banquet, but the President proposed "To Our Guests, the Poet, Orator, Music and the Press," which was responded to by the reporter of the *Alto*, in this wise: "To the President of the day," etc.

Election of Officers.

After the inner man had been satisfied, the dancers repaired to the Pavilion, and the members of the association to the grove, where an election of officers for the ensuing year was had. Here several speeches were made, and sentiments proposed by retiring and newly elected officers. Mr. Dinmore especially paid a handsome compliment to the press, for the frequent, timely, and liberal notices made of this festival in their columns.

The following named were duly elected officers of the Tuolumne Re-union Association for the ensuing year: President, Jas. L. Homer; Vice-President, Hon. Stephen Wing; Secretary, Hon. P. B. Bacon; Treasurer, Wm. G. Dinmore; Executive Committee—Z. H. Cunningham, H. Jacobi, H. M. Rosekrantz, A. Sharp.

Smelting Operations at White Pine.

From reliable information received during the week, says the *White Pine News*, we are gratified to learn that smelting operations will soon be commenced in this district. We are also pleased to note the generally expressed desire to aid in forwarding this material interest, and feel confident in the result of the proposed experiment, believing that all engaged in the same will be amply remunerated. Mr. Prescott, a gentleman whom we have known as a practical and successful smelter at Enreka, has been spending some days looking at our mines and talking with our miners, having in view the feasibility of working our ores, preparatory to commencing operations on their reduction, and has decided to make a start as soon as possible. One thousand tons of rock have been engaged from different parties, and the Mattison furnace will be at once repaired sufficiently to allow of running through the lot in order to demonstrate the fact that our base-metal ores are susceptible of successful treatment by the smelting process. We regard this movement as the initial point from which to date our future prosperity and success as a bullion-producing district. A new incentive will be given the miner for the development of his locations, and new and valuable discoveries will result from the encouragement held out in the shape of certainty of profit to be derived from their labor.

It will indeed be a happy awakening from the lethargy which has been a characteristic of White Pine for the last few years, and all should be thankful that our deliverance seems so near at hand. Once made manifest that we possess the means of producing untold wealth in the shape of precious metals, and no other indolent need be held out to men of means to invest capital in our country. With the now certain fact that good, merchantable coal exists in large quantities, within a distance of fifteen miles, from which a superior article of coke can be made, the introduction of which will materially lessen the cost of smelting, united with the advantages to be derived from the experience of our neighbors at Enreka, no doubt can exist that an additional profit will accrue. We confidently believe that before another winter makes its unwelcome appearance among us we shall have occasion to welcome many former residents of Hamilton back again to their old home. Our faith in White Pine is, as ever, unbounded, and we say to all unbelievers—wait a little longer and see if our earnest predictions are not more than verified. It shall be henceforth, as it has always been, our constant aim to advocate every and all measures having a tendency to advance the interests of our country, without fear or favor, and to this end we earnestly request all to supply us with whatever information may be in their possession. In conclusion, we urge upon our people the imperative necessity that exists of doing all in their power to make the trial about to be commenced by Mr. Prescott a perfect success, as on this attempt rests much of our future prosperity.

THE WAGON-ROAD IN YOSEMITE VALLEY COMPLETE.—After years of promise and years of delay, we are at length in a position to announce that a wagon-road has been completed into the Yosemite Valley, and that it is, therefore, no longer necessary to use the saddle in making the trip to it. The road was built by private enterprise, without State aid, the privilege of collecting toll being the only remuneration. The new road is available by two of the four routes to the valley, viz: that by Coulterville, and that by the Calaveras Big Tree Grove and Chinese Camp. The time of starting from the city has been changed and the time consumed in reaching the valley greatly shortened. Tourists now leave at 7 A. M. instead of 4 P. M. They reach Merced at 4.30 and take dinner there; thence to Snelling's on odd days of the month only; stop overnight at Snelling's and leave at 5 A. M. next day, and arrive in the valley the same night at 7 P. M. Returning, leave the valley hotels at 5 A. M. and arrive at Merced the same night and stay over there; leave the next morning at 5.20 A. M. and reach the city at 12.40 P. M. the same day. Those who have heretofore been deterred from visiting Yosemite, because of the necessity of using the saddle-horse, have now that prohibition removed.

Mining Development.

Notwithstanding the decline of the mining interests in Tuolumne and Calaveras counties, caused by the exhaustion of the shallow placer diggings, there is good reason to believe that the mineral wealth of those regions is but partially developed, and that rich strikes will be there made for many years to come. There are immense deposits of gold-bearing gravel which will be eventually worked by the hydraulic process, and the return will be equal to that received from the famous hill digging in Placer and Nevada counties. The quartz mines have not yet been thoroughly tested, and although many have been successfully worked for a time and have yielded large sums of bullion, yet at present there are few claims that have been opened to the depth that mines of a similar nature in other portions of the State were worked before their value was fully demonstrated. The Gwin mine, in Calaveras, is now probably one of the best in the State, yet its enterprising proprietors have several times met with discouragements that would have caused less persevering men to have abandoned the claim. The mine is now worked to a depth of over seven hundred feet, and the prospect for the future is better than ever before. It is not reasonable to suppose that this is the only mine in that portion of the State, and without doubt, other claims if worked as systematically and intelligently as that has been, might be shown to be equally valuable.

The great difficulty thus far has been that persons were more willing to invest their capital to develop mines in Nevada, or at some distant point, rather than in our own vicinity, although the prospect of securing a paying mine has been generally better in California than elsewhere. There is, however, apparently a change in sentiment in this respect, and mining experts and prospectors are now giving more attention to the mines of Tuolumne and Calaveras. Among the encouraging signs of development may be mentioned the late discovery of several promising quartz lodes, and the construction of the necessary machinery to thoroughly test their value. Several companies have also been formed to work gravel deposits. A company of this kind, which has lately been organized to test the richness of the well known Table Mountain gravel range, east of Murphy's, in Calaveras county, is deserving of success, for the reason that it has commenced operations on a scale that shows confidence in the undertaking. This company uses 400 inches of water, which is forced through a six-inch nozzle under a pressure of 250 feet. The appointments for working are complete, and the immense quantities of gravel that can thus be worked will undoubtedly render the enterprise a profitable one. Similar enterprises are about to be inaugurated in other portions of these mining districts, and should they be successful (and there is great reason to believe that they will be) the gold yield from these two counties will be greatly increased and a new era of prosperity will be commenced.—*Stockton Independent*.

Colusa Quicksilver Mines.

We took a little run out to the mines the first of the week, but as our trip was one strictly on business, and as we had to return in a short time, we did not have an opportunity to examine all the mines. We went out to the Abbott mine to assist in locating a furnace and in surveying the necessary roads to and from the mine and the furnace location. Both the Abbott and Buckeye have contracted for brick, and have ordered the castings for a furnace each. They each expect to have their furnace in operation by the middle of September. In the meanwhile they are taking out rich ore. The Abbott has out now about one hundred and thirty tons of ore that will run on a low estimate three per cent., and another hundred tons of low grade ore. The Buckeye has out none of their richest ore, from the fact that they have been assorting and retorting as they have taken it out; but they have out over two thousand tons of low grade ore. What they have out is worth at least fifty thousand dollars, besides the expense of running it through a furnace. The Abbott has two tunnels about two thousand feet apart, and out of each they are taking rich ore, and on the ledge five or six "prospect holes" have been made, in each of which the cincharr is found, so it is a tolerably certain proposition that they have a ledge the entire length of their claim. It is situated on the top of a high and steep hill, and they can, when necessary, see a tunnel fully five hundred feet below the present workings. The Buckeye has one tunnel five hundred feet long, out of which they have taken and worked up a great deal of very rich ore, but they have simply taken it out of the tunnel and have not worked on the ledge above and below it. They are now running a branch of the same tunnel in another direction. These are the two best developed mines in that region, but there are others without doubt equally as good when better developed. We were very sorry that we did not have an opportunity of visiting the Elgin, the Colusa and Etna, but after finishing work at the Abbott, we had only time to make a short visit to the Buckeye, which was immediately on our road home. We intend, however, to make another trip very soon and will then take a look at several others. From all we could gather, we are satisfied that the Elgin has prospects enough to warrant putting up a furnace, and it is more than probable that one will be put up before the rainy season.—*Sun*.

SCIENTIFIC PROGRESS.

Heat.

From the reports of a lecture by Prof. F. Guthrie, we learn that heat is now generally supposed not to be a distinct thing, hot an agitation of the particles of matter. According to this notion, particles of matter are moving amongst one another like gulls in a swarm, or like the heavenly bodies.

The intensity of heat of a body or its temperature, is the rate of motion of its particles amongst one another, and this is independent of their number, that is, the size of the body, and also of the weight of each individual particle. Whatever be the mass or weight of a moving particle, it can never, by one or more impacts, give a greater velocity than its own to another particle. So the temperature of one body can never be raised above the temperature of the body whence it gets its heat. And hence, also, any two bodies of unlike temperature acquire the same temperature when in contact.

The quantity of heat in a body, on the other hand, depends upon the size of this body, and both upon the velocity and mass of its particles (that is, on their momentum). Heat quantity, apart from size of matter, is molecular momentum. A blow with a hammer may drive a nail farther into a board than the impact of a pistol ball. So there may be as much or more heat in a heavy particle moving slowly (cold) than in a lighter particle moving more rapidly (hotter). Capacity for heat is molecular inertia. Specific heat is the ratio of molecular inertia.

When a body receives heat, its particles are thrown into more violent motion. Most frequently this is followed by an increase in the orbits of the particles, which results in an increase in the general size of the body. Such is expansion by heat. Sometimes, however, as with water below four degrees C., the body shrinks as it gets heat, showing that the increased rate of vibration is not accompanied by increased orbit size. Conduction of heat is the spreading of molecular motion like agitation in a crowd. When heat is produced by burning, the particles of oxygen unite with those of carbon, and form compound particles; the greater the attraction between the two, the closer they get together, and the more rapid is their motion, just as those planets move fastest around the sun which are nearest to it. On rubbing two pieces of solid matter together, the particles of both are set in vibration, and heat is produced. Such is heat of friction. The same amount of work spent in overcoming friction always produces the same amount of heat. Accordingly we can measure the quantity of heat which corresponds to a given quantity of work exhausted.

If a force of a kilogram acts upon a kilogram weight for one second of time; in other words, if a kilogram weight be let fall for a second, it is found to fall through 16 feet, and then to have a velocity of 32 feet per second. If the weight be then stopped, the labor of stopping it is just equal to the labor required to lift it 16 feet. If the weight fall upon a hard body, so as to be quickly stopped, it becomes hot (witness the heating of bullets, against a target). The work which was accumulated in it (called kinetic energy) is suddenly transformed into molecular motion. The collection of particles, stopped in their onward motion as a whole, begin to move individually amongst one another with a greater velocity; in other words, the temperature is raised.

Whether we raise a mass of matter quickly or slowly, whether we raise it as a whole or piece by piece, we do the same amount of work, provided that at last the same weight is lifted to the same height. This work is stored up (potential) in the raised mass, and is given out as work done when the mass falls and overcomes obstacles. Whether the mass falls quickly or slowly, the amount of work due to its descent through the same space is always the same.

It is found that when 430 kilograms fall slowly through one meter, and in doing so overcome friction, the heat produced by the friction is sufficient to raise one gramme of water one degree centigrade. This is the mechanical equivalent of heat.

THE SUN.—According to Kirchhoff, the sun consists of a solid or partially liquid nucleus in the highest state of incandescence, which emits, like all solids or liquids raised to a white heat, every possible kind of light, and therefore would of itself give a continuous spectrum without any dark lines. The incandescent central nucleus is surrounded by an atmosphere of lower temperature, containing on account of the extreme heat of the nucleus, the vapors of many of the substances of which this body is composed. The rays of light therefore emitted by the nucleus must pass through this atmosphere before reaching the earth, and each vapor extinguishes from the white light those rays which it would itself emit in a glowing state.

PROFESSOR EYERSMAN has had occasion to examine at Kasan haillstones containing crystallized iron pyrites. The cause of this rare phenomenon, no doubt, was that small crystals of pyrites proceeding from the disintegration of a rock had been transported by a tempest into the clouds, where they were iced and converted into haillstones.

Spirit Photographs.

The mental effect which we term light is supposed to be produced by the beating of waves of ether against the retina of the eye. These waves enter the eye with an average velocity of about 186,000 miles in a second, the length of the waves being variable, from the one twenty-seven thousandth part of an inch to one seventy-five thousandth part of an inch. The retina therefore receives many billions of impressions in a second, and it is supposed that it is the difference in the number and velocity of these impressions that produces in the mind the sensations of the colors. If the waves which enter the eye have a much greater or a much less velocity than the limits above stated, they do not, it is supposed, produce the sensation of light; and the objects from which such rays come, although they may really stand before the eye, are, as we say, invisible. But although they do not effect the eye, they may impress the photographic plate, which has no such constitution as the eye.

One of the most successful methods of producing "spirit" photographs is to place, in front of the sensitive plate, within the plate shield, a clear sheet of glass, having nothing upon it except a thin positive of the "spirit" that is to be produced on the negative. The portrait of the sitter is taken in the usual manner. The light which enters the camera lens prints the sitter and also the "spirit" which is on the thin positive upon the negative. This is a very convenient method, as it requires no manipulations likely to be detected; and, as we think, the favorite plan practiced by the best "spirit" photographers. Prints made in this manner pass current among the believers for genuine ghosts of the departed, directly descended from heaven.

But a more new, interesting and scientific method of producing "spirit" photographs is as follows: The plain background screen, before which the sitter is placed in order to have his portrait taken, is to be painted beforehand with the form of the desired "spirit," the paint being composed of some fluorescent substance, such as a solution of sulphate of quinine. When this painting dries on the screen, it is invisible to the eye; but it sends out rays that have power to impress the photographic plate; and thus the image of the person together with the quinine ghost are simultaneously developed upon the negative. This is a very beautiful and remarkable method.—*Scientific American*.

TELEGRAPHIC PROGRESS.—When Franklin so arranged his wire across the Schuylkill river, near Philadelphia, that he ignited combustibles on one side of the stream by a charge sent from the other, he transmitted the first telegraphic message, and that too, in characters of fire. When Wheatstone so arranged his wires that he caused a magnetic needle in a distant city to point, at his will, to certain letters painted on a board, and thus to spell out the words of the message he transmitted, he first rendered the telegraph practically available for the purposes of business. When Morse caused a style attached to the armature of an electro-magnet to puncture, at will, an unruled hand of paper, and invented his system of short-hand, by which dots and lines were converted into words and phrases, he gave the telegraph to the people as a cheap means of rapidly communicating thought at distances however long. When House made the keys of his instrument the representatives of the articulate sounds, known to all languages, and when by touching the keys he printed at the other end of the line the letters expressing those sounds, he gave that precision to the process which seemed alone necessary to render telegraphy complete and perfect. And now, according to *Engineering*, M. Mayer, of the administration of telegraph lines, Paris, has an instrument by which he can send a message in his own chirography, and certify to its authenticity by appealing to it a fac simile of his autograph. We have already alluded to the telegraphing of sound, as explained at the last meeting of the California Academy of Sciences.

An alloy, to be used as a substitute in many cases for gold, is described in the French journals, and has already been successfully introduced. It is said to be capable of being cast, rolled, drawn, stamped, chased, beaten into a powder or leaves, and to be absolutely indistinguishable from gold, except by practiced experts. The article consists of one hundred parts pure copper, seventeen parts zinc or tin, six parts magnesia, nine parts tartar of commerce, one half part sal-ammoniac, and one-eighth part quicklime. The copper is first melted, then the magnesia, sal-ammoniac, lime in powder, are added little by little, and thoroughly mixed by a brisk stirring for half an hour, after which zinc is thrown on the surface in small grains, stirring it until entirely fused. The crucible is then covered, and the fusion maintained about half an hour, when the dross is skimmed off, and the beautiful material is ready for use.

ARTIFICIAL MANURE.—A new invention consists in obtaining soluble fertilizers from phosphates by treating them with the fumes of burning pyrites, or othersulphurous ores.

White crystal barrels have been introduced for various purposes in Europe.

MECHANICAL PROGRESS.

Manufacture of Gold Leaf.

The process of gold-beating is exceedingly interesting in its various details, and is one which requires the exercise of much judgment, physical force, and mechanical skill. The coin is first reduced in thickness by being rolled through what is known as a "mill," a machine consisting of iron rollers operated by steam-power. It is then annealed by being subjected to intense heat, which softens the metal. It is next cut up and placed in jars containing nitromuriatic acid, which dissolves the gold, and reduces it to a mass resembling Indian pudding, both in color and form. This solution is next placed in a jar with copperas, which separates the gold from the other components of the mass.

The next process is to properly alloy the now pure gold, after which it is placed in crucibles and melted, from which it is poured into iron molds called ingots, which measure ten inches in length by one inch in breadth and thickness. When cooled it is taken out in the shape of bars. These bars are then rolled into what are called "ribbons," usually measuring about eight yards in length, of the thickness of ordinary paper, and retaining their original width. These ribbons are then cut into pieces $1\frac{1}{4}$ inches square, and placed into what is called a "cutch," which consists of a pack of French paper leaves resembling parchment, each leaf $\frac{3}{4}$ inches square, and the pack measuring from $\frac{3}{4}$ of an inch to 1 inch in thickness. They are then beaten for half an hour upon a granite block, with hammers weighing from twelve to fifteen pounds, after which they are taken out and placed in another pack of leaves called a "shoder." These leaves are four and a half inches square, and the gold in the "shoder" is beaten for four hours with hammers weighing about nine pounds. After being beaten in this manner, the gold leaves are taken out of the "shoders" and placed in what are called "molds." These "molds" consist of packs of leaves similar to the other packs, and made of the stomach of an ox. After being made ready in the "molds" the gold is beaten for four hours more with hammers weighing six or seven pounds each.

The thinner the leaf becomes, the lighter are the hammers used, and it is also necessary in beating the gold, especially in striking the "mold," that the blow should be given with the full flat of the hammer and directly in the center of the "mold." The leaf, after being taken out of the "mold," is cut into squares of three and three-eighths inches, and placed in "books" of common paper. Each "book" consists of twenty-five leaves, and there are twenty "books" in what is known as a "pack."—*Iron Age*.

NEW GAS-ENGINE.—Messrs. Otto & Langen's machine consists of an upright cylinder, open at the top, in which plays vertically a piston having a ratcheted rod, so arranged as in the down stroke to engage a cog-wheel, attached to the axle of the fly-wheel of the machine. The piston, during a small portion of its upward course, takes in the rightly-proportioned mixture of gas and air, which is exploded at the point of the piston's course, where the mixture is shut off. Explosion of the mixture carries the piston upward until the pressure of the external atmosphere stops it. The explosion, depending on expansion of gases by heat at the instant of combination, is immediately followed by a condensation and partial vacuum in the cylinder. The pressure of the atmosphere upon the piston forces it downward, and the ratcheted rod, engaging the cog-wheel, imparts this force to the fly-wheel. It is claimed for this machine that it is much more economical of gas than M. Lenoir's. The complications incident to the ratchet and cog-wheel arrangement are objectionable; but it is spoken of as having quite an extended use. The consumption of gas is about a cubic meter (39.31 cubic feet) per horse-power per hour. With gas at \$3.50 per thousand, this would give ninety-six cents per day for horse-power.—*American Artisan*.

IMPROVED HEATING STOVE.—Thomas H. Salmon, Brooklyn, New York, patents an invention relating to stoves which have a draught through the fuel, consisting in the arrangement of a plate to form that side of the hanging grate which is opposite the smoke-pipe. Through a hollow standard a pipe passes upwardly into the combustion chamber. In the latter is hung the basket grate that is provided with a removable cover, through whose holes the air is drawn to produce the down-draught. One side of the basket grate is a broad plate, which comes directly between the smoke-pipe and the other part of the grate. By this construction, when there is sufficient heat to create a vacuum in the chimney, a current of air rushes into holes through fuel in the grate, under the plate, and into the chimney. In order to moderate the strong draught which is thus produced, slides in the ash-pan are moved so as to admit air.

A patent has been issued in France for surfacing and polishing mill rolls, by means of vulcanized emery wheel or mill with automatic rotation and to-and-fro motion, and which, placed in face of the roll to be surfaced or polished, performs the operation in a few minutes.

Gas Burning Locomotive.

The greatly increased cost of coal in England has called scientific attention to the economizing of fuel, and as an outcome of all the discussion and agitation, we have the numerous inventions for making and using gas that we have already noticed in this column. The latest invention brought out is designed to combine both gas making and using in one engine and at the same time. The locomotive is of the ordinary clumsy and awkward type used in England, except that there is no fire-box and that the tubes are quite large. Inside each tube is a gas pipe, with numerous jets on its upper side, and from these the gas escapes and burns in the tubes. Air is supplied at the rear end, and the product of combustion escapes into the stack in front. The gas is made by forcing atmospheric air into naphtha, petroleum or any other hydrocarbon, and collecting it in a reservoir or tank from which it may be pressed into the pipes precisely as pressure is given to ordinary street gas. The gas machine, oil tanks, reservoir, etc., are placed on the tender, and the air pump that supplies the air is connected with the cylinder at the front of the engine. The engine thus makes its own gas while running, and supplies its own fuel till the hydrocarbons are exhausted in the tanks. To get up steam and start the engine, manual power must be given to the air pumps till enough gas has been made to fill the reservoir. Another way, would be to supply the reservoir with gas from a stationary reservoir beside the track till steam was up. We have no data concerning the speed or hauling power of Mr. Walker's engine. We doubt if the experiment has gone beyond the wood-cut stage, but it is highly spoken of by the best English authorities, and very great things are expected of the invention. It can be also applied to all other kinds of engines, both marine and stationary, at a very great saving of expense and a great gain in storage capacity. Whatever the final results of this gas problem, Mr. Walker's patents will give the matter a great impetus in a new and unexpected direction.—*Boston Journal*.

IRON DAMS.—The Elmira, N. Y., *Gazette* urges a new departure in the method of constructing dams, saying: Masonry is but a little better than earthwork when opposed by rushing water. What is needed, it seems to us, is material which will not crumble or break up when attacked by rushing water. A dam might be constructed with a frame work of iron held by subterranean guys anchored beyond the reach of the water. The foundation could be planted in a rock bed, or in the absence of rock, against a system of piling, so as to be absolutely immovable. Thus strength would be attained. By planking the iron frame and covering the latter with earth or cement, tightness would be secured. This system would achieve one end at least. In case of a break in the dam, no disaster could follow to the region below, because only a small portion would give way and the water would escape comparatively slowly. The anchor could be so disposed as to render a complete giving way impossible, or at least improbable. The matter of cost and the process of rendering the iron durable as against rust, are matters for engineers and iron makers to consider. We believe that for dams as well as bridges, iron is destined to come into use.

FURNACES.—A new invention consists in making the furnace frame, a plate attached thereto, or the mouthpiece of the furnace dip down into the water contained in the evaporating or ash-pan, whereby access of air to the furnace in the ordinary direction is cut off. The air necessary to support combustion is admitted and regulated on each side of the furnace-door through openings which extend partially through the cheeks of the furnace and are carried down just below the fire-bars. The ordinary air way being closed, the cold air is compelled to enter the openings or air flues before mentioned, and in its passage abstracts the heat from the sides or cheeks of the furnace, thereby keeping them comparatively cool and increasing their durability.

WHAT is called the traveler's bed is an ingenious and useful article, manufactured in Germany. The article can be conveniently rolled up like a shawl, in a cylindrical form, twenty-three to twenty-seven and a half inches long, and from seven to nine and a half inches in diameter, the prices ranging according to size and quality. The bed consists of a light hair mattress, including single or double air pillows, a fine woolen coverlet, a camp stool, attachment and cords for adapting the mattress as a hammock, and apparatus for filling the pillows with air.

IMPROVED HOG TRAP.—This invention has for its object to furnish an improved device for catching hogs and holding them securely while being ringed, marked, etc. The hog, in seeking to escape through a gap in the trap, steps upon a tilted board, the tilting of which pitches him forward so that his neck may be between levers. The levers, by suitable mechanism, then close and clasp the hog around his neck, and around his body in the rear of his fore legs, where he may be held securely by hooking the straps upon pins.

EXPERIMENTS with a single track elevated railway have been made in Philadelphia, and pronounced successful by a number of railroad officials present.

Weekly Variations in Stocks.

(Based on Regular Sales of the most important Stocks on the San Francisco Stock and Exchange Board.)
For 6 days ending Wednesday, June 24, 1874.

NAME OF COMPANY.	FEET IN MIN.	SHARES IN MIN.	HIGHEST.	LOWEST.	ADVANCE.	DECLINE.
WASHOE.						
Alamo	300	6000	17.50	14.00	3.50	
Alpha Con.	3600	30000	8.00	7.50	.50	
Alta	3000	30000	8.00	7.50	.50	
American Flat	600	10000	8.00	7.50	.50	
Bacon M. & M.	1040	54000	8.25	8.00	.25	
Baltimore Con.	224	22400	25.00	27.50	2.50	
Belcher	1800	18000	8.00	7.50	.50	
Best & Belcher	224	22400	25.00	27.50	2.50	
Bowers	1800	18000	8.00	7.50	.50	
Buckeye	2500	25000	11.00	10.50	.50	
Bullion	2500	25000	11.00	10.50	.50	
Caledonia	5000	50000	10.00	9.50	.50	
California	2800	28000	9.00	8.50	.50	
Chollas-Potosi	130	24000	13.00	11.00	2.00	
Confidence	1160	11600	8.40	7.90	.50	
Con. Gold Hill Quartz	1600	16000	8.50	8.20	.30	
Con. Virginia	1200	12000	8.00	7.50	.50	
Cook & Geyer	1600	16000	8.50	8.20	.30	
Crown Point	2000	20000	10.00	9.50	.50	
Dardanelles	1200	12000	8.00	7.50	.50	
Danby	1200	12000	8.00	7.50	.50	
Dayton	2000	20000	10.00	9.50	.50	
Eclipse	2000	20000	10.00	9.50	.50	
Empire M. & M.	400	8000	8.00	7.50	.50	
Eschscholtz	400	8000	8.00	7.50	.50	
Farmon	3000	30000	12.00	11.50	.50	
Flowers	3000	30000	12.00	11.50	.50	
Franklin	3000	30000	12.00	11.50	.50	
Globe	1200	12000	8.00	7.50	.50	
Gould & Curry	1200	12000	8.00	7.50	.50	
Hale & Norcross	184	18400	9.50	9.20	.30	
Imperial	2000	20000	10.00	9.50	.50	
Indus	2000	20000	10.00	9.50	.50	
Insurance	2000	20000	10.00	9.50	.50	
Jacob Little	3000	30000	12.00	11.50	.50	
Julia	3000	30000	12.00	11.50	.50	
Justice	3000	30000	12.00	11.50	.50	
Kentuck	3000	30000	12.00	11.50	.50	
Knickerbocker	1200	12000	8.00	7.50	.50	
Knox	1200	12000	8.00	7.50	.50	
Lady Bryan	3000	30000	12.00	11.50	.50	
McMeans	3000	30000	12.00	11.50	.50	
Mint	3000	30000	12.00	11.50	.50	
Nevada	3000	30000	12.00	11.50	.50	
New York Con.	3000	30000	12.00	11.50	.50	
Occidental	3000	30000	12.00	11.50	.50	
Ophir	1200	12000	8.00	7.50	.50	
Overman	1200	12000	8.00	7.50	.50	
Phil. Sheridan	1200	12000	8.00	7.50	.50	
Pictou	2000	20000	10.00	9.50	.50	
Rock Island	3000	30000	12.00	11.50	.50	
Sage	3000	30000	12.00	11.50	.50	
Seg. Belcher	160	16000	9.50	9.20	.30	
Seg. Caledonia	160	16000	9.50	9.20	.30	
Seg. Rock Island	2100	21000	11.00	10.50	.50	
Senator	2100	21000	11.00	10.50	.50	
Sierra Nevada	2000	20000	10.00	9.50	.50	
Silver Hill	5100	51000	9.00	8.50	.50	
South Comstock	2100	21000	11.00	10.50	.50	
South Overman	2100	21000	11.00	10.50	.50	
Succor M. & M.	1600	16000	8.50	8.20	.30	
Sutro	2100	21000	11.00	10.50	.50	
Trench	2100	21000	11.00	10.50	.50	
Tyler	2200	22000	11.00	10.50	.50	
Union Con.	803	20000	14.00	13.00	1.00	
Utah	2000	20000	10.00	9.50	.50	
Woodville	1160	11600	8.40	7.90	.50	
Yellow Jacket	1200	12000	8.00	7.50	.50	
NEVADA.						
Adams Hill	300	3000	3.00	2.50	.50	
Alpa	300	3000	3.00	2.50	.50	
Amador Tunnel	300	3000	3.00	2.50	.50	
American Flag M. & M.	300	3000	3.00	2.50	.50	
Arkansas	300	3000	3.00	2.50	.50	
Baltimore	300	3000	3.00	2.50	.50	
Bowers	3000	30000	12.00	11.50	.50	
Chapman M. & M.	1000	10000	10.00	9.50	.50	
Chatter Oak	1000	10000	10.00	9.50	.50	
Chief of the Hill	1000	10000	10.00	9.50	.50	
Chief East Extension	1000	10000	10.00	9.50	.50	
Columbus M. & M.	1000	10000	10.00	9.50	.50	
Con. Belmont	1000	10000	10.00	9.50	.50	
Enreka Con.	1000	10000	10.00	9.50	.50	
Excelsior	1000	10000	10.00	9.50	.50	
Harper	1000	10000	10.00	9.50	.50	
Hayes	1000	10000	10.00	9.50	.50	
Hermes	1000	10000	10.00	9.50	.50	
Home Ticket	1000	10000	10.00	9.50	.50	
Kahn & Hunt	1000	10000	10.00	9.50	.50	
Ingomar	1000	10000	10.00	9.50	.50	
Ivanhoe	1000	10000	10.00	9.50	.50	
Jackson	1000	10000	10.00	9.50	.50	
Josephine	1000	10000	10.00	9.50	.50	
Junius Con.	1000	10000	10.00	9.50	.50	
K. K. Con.	1000	10000	10.00	9.50	.50	
Kentucky	1000	10000	10.00	9.50	.50	
Kinston	1000	10000	10.00	9.50	.50	
Lehigh	1000	10000	10.00	9.50	.50	
Lillian Hall	1000	10000	10.00	9.50	.50	
Louisa	1000	10000	10.00	9.50	.50	
McMahon	1000	10000	10.00	9.50	.50	
Marion	1000	10000	10.00	9.50	.50	
Meadow Valley	2400	24000	10.00	9.50	.50	
Mocking Bird	1200	12000	8.00	7.50	.50	
Monitor-Belmont	1200	12000	8.00	7.50	.50	
Murphy	2000	20000	10.00	9.50	.50	
Newark	800	32000	25.00	27.50	2.50	
Pacific Tunnel	2400	24000	10.00	9.50	.50	
Page & Panosa	2400	24000	10.00	9.50	.50	
Peavine	2400	24000	10.00	9.50	.50	
Phoenix	1000	10000	10.00	9.50	.50	
Pioche	1000	10000	10.00	9.50	.50	
Pioche West Ex.	1000	10000	10.00	9.50	.50	
Pioche-Phoenix	1000	10000	10.00	9.50	.50	
Portland	1000	10000	10.00	9.50	.50	
Raymond & Ely	5000	50000	10.00	9.50	.50	
Rye Patch	1000	10000	10.00	9.50	.50	
Silver Peak	1000	10000	10.00	9.50	.50	
Silver West Con.	1000	10000	10.00	9.50	.50	
Standard M. & M.	1000	10000	10.00	9.50	.50	
Star Con.	1800	18000	8.00	7.50	.50	
Starlight	6000	25000	20.00	22.50	2.50	
Sterling	3000	30000	12.00	11.50	.50	
Spring Mount	2000	20000	10.00	9.50	.50	
Spring Mt. Tunnel	2000	20000	10.00	9.50	.50	
Ward Beecher	200	20000	20.00	22.50	2.50	
Washington & Ely	200	20000	20.00	22.50	2.50	
Watson	200	20000	20.00	22.50	2.50	
Yellowstone	200	20000	20.00	22.50	2.50	
CALIFORNIA.						
Alpa	1200	12000	8.00	7.50	.50	
Bellevue	8000	20000	20.00	22.50	2.50	
Calaveras	3200	20000	20.00	22.50	2.50	
Cederberg	2400	20000	20.00	22.50	2.50	
Chatter Oak	1000	10000	10.00	9.50	.50	
Con. Belmont	1000	10000	10.00	9.50	.50	
Enreka Con.	1000	10000	10.00	9.50	.50	
Excelsior	1000	10000	10.00	9.50	.50	
Harper	1000	10000	10.00	9.50	.50	
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Hermes	1000	10000	10.00	9.50	.50	
Home Ticket	1000	10000	10.00	9.50	.50	
Kahn & Hunt	1000	10000	10.00	9.50	.50	
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Pacific Tunnel	2400	24000	10.00	9.50	.50	
Page & Panosa	2400	24000	10.00	9.50	.50	
Peavine	2400	24000	10.00	9.50	.50	
Phoenix	1000	10000	10.00	9.50	.50	
Pioche	1000	10000	10.00	9.50	.50	
Pioche West Ex.	1000	10000	10.00	9.50	.50	
Pioche-Phoenix	1000	10000	10.00	9.50	.50	
Portland	1000	10000	10.00	9.50	.50	
Raymond & Ely	5000	50000	10.00	9.50	.50	
Rye Patch	1000	10000	10.00	9.50	.50	
Silver Peak	1000	10000	10.00	9.50	.50	
Silver West Con.	1000	10000	10.00	9.50	.50	
Standard M. & M.	1000	10000	10.00	9.50	.50	
Star Con.	1800	18000	8.00	7.50	.50	
Starlight	6000	25000	20.00	22.50	2.50	
Sterling	3000	30000	12.00	11.50	.50	
Spring Mount	2000	20000	10.00	9.50	.50	
Spring Mt. Tunnel	2000	20000	10.00	9.50	.50	
Ward Beecher	200	20000	20.00	22.50	2.50	
Washington & Ely	200	20000	20.00	22.50	2.50	
Watson	200	20000	20.00	22.50	2.50	
Yellowstone	200	20000	20.00	22.50	2.50	
IDAHO.						
Empire	2500	25000	11.00	10.50	.50	
Golden Chariot	2500	25000	11.00	10.50	.50	
Ida Elmore	1300	13000	13.00	11.00	2.00	
Managary	720	10000	10.00	9.50	.50	
Red Jacket	1000	10000	10.00	9.50	.50	
South Chariot	650	20000	12.00	11.50	.50	
War Eagle	1000	10000	10.00	9.50	.50	
WHITE PINE.						
General Lee	1000	10000	10.00	9.50		

ing finely, and the recent strike in the Original Amador gives promise of permanency, and the rock is of excellent quality. The Keystone, under the formanship of Mr. Parks, is looking as well as usual and is one of the best mines in the State.

CALAVERAS COUNTY.

QUARTZ LOSE LOCATED.—*Chronicle*, June 20: Messrs Peek and Cook of this place have recently located a claim on the celebrated Lefoy quartz lead, in the Jesus Maria district. The surface rock shows rich in free gold, and there is every indication that the ledge is a permanent one. The Lefoy mine is developing splendidly. Three shafts are being sunk, a depth of 40 ft. having already been reached. Good judges estimate that the rock will yield an average of \$25 per ton. Work is being pushed forward with unremitting energy.

EL DORADO COUNTY.

NEW MINING DISTRICT.—*Republican*, June 18: A new mining district, with C. M. Johnson as Recorder, has been formed in Kelsey township, this county, to be known as Onion Valley Mining district, and is bounded as follows: Commencing at the Reservoir and Pilot creek, thence running in a southerly direction to Saddle mountain, thence in an easterly direction along Silver creek to Onion valley road, thence in a northerly direction to the head of Pilot creek, thence in a westerly direction to the place of beginning.

INYO COUNTY.

BARTON.—*Cor. Independent*, June 13: Albert Mack's mill is running as regular as clock work. The completion of A. B. Williams' mill is fast drawing nigh. Mr. J. Wickland, foreman of the construction, informed me that "the mill in all probability will be ready to commence crushing a week from next Monday." Although there is no very elaborate work about the mill, it is substantial.

PROSPECTING.—An unusual number of persons are engaged in the Inyo and White mountain ranges east and north of this place, and we are told, with very encouraging results.

ARASTAS.—Dr. Griswold and others are erecting an arastra at Pinte district, the material for construction being procured at Bishop. The prospects of this district are very fair, and we hope this arastra may soon develop into a mill.

NAPA COUNTY.

THE MINES.—*Reporter*, June 20: W. C. Watson, on his late trip to the Geysers, passed through the mining region in which are located the Annie Belcher, Geyser, Kentucky, Georgia, Missouri, Flagstaff, and other mines. He brought with him specimens of ore from the above named mines, which afford abundant proof of their richness.

NEW MILL.—The Oalistoga Gold and Silver mining company are erecting a 10-stamp mill on their mine on Mount St. Helena. The site chosen for the mill is about 100 yards below the Lawly toll road, on the left hand side at the first water trough, about half way up the mountain. They have 25 men at work and expect to have the mill in running order by the first of August.

NEVADA COUNTY.

BUCKEYE MINE.—*Grass Valley Union*, June 21: The Buckeye mine, at Sweetland, is under the superintendency of George D. McLean. They are washing through the lower end of their tunnel, with 1,500 inches of water, while the upper part is being driven ahead. They are working three faces, one from the front and two from a shaft, and have had such favorable rock of late that they have made 60 ft. a week from all of them. But they have now struck a very hard slate rock in which it will be difficult to make more than six or seven feet a week in each face. After they run about 340 feet more they will raise a shaft to the surface, which will be reached in about 30 ft. The ground in front of this "raise" be all washed into the flume, thus forming an open cut. From the mouth of the tunnel to the Middle Yuba there is an ample fall, allowing them to have two falls of 100 ft. each, besides several smaller ones. These falls have an effect to break up the clods of clay, so that the water can wash it. Quite a large force is now employed, which will be increased when the tunnel is in.

MAGENTA.—*Tidings*, June 20: The run of the Larimer mill on Magenta rock for the month or so past has been a very satisfactory one, judging from reports, which say the rock is paying on an average about \$23 per ton, sulphurets yet to be worked. They are said to have a strong ledge of good ore in the third level, lately entered upon, and altogether the prospects are very encouraging.

THE Occidental mine on Brnsh creek promises well. The shaft is now down about 120 ft. and at this point the ledge is three feet thick and shows free gold with galena and sulphurets. Hundreds of mines are lying idle around here that only require work to bring them out to paying properties.

\$500 a week is being taken out of the California mine near Nevada, working a small force. This mine is proving a good one and under good management.

PLACER COUNTY.

OUR MINES.—*Placer Argus*, June 20: A good deal of activity is shown in working the mines around Auburn and we are glad to be able to state that the prospects for all of them may be considered good. One day last week we made a brief visit to Ophir and inspected the mines in that vicinity. Work on Bellevue is being prosecuted vigorously. Thirty-five men are at work now, and the connection between shaft numbers 1 and 2 has just been made.

About the 25th, stoping will begin, and the mill of the St. Patrick Co., which crushes the rock, will be constantly supplied with a good grade of ore. Fifteen men are employed on the St. Patrick mine, and though they are now in low grade ore, a prospect for a better quality is good. The stamps of the St. Patrick mill are rattling away at a lively rate, night and day, and several weighty bars of bullion showed that they had not been working in vain.

THE Orleans mine is $1\frac{1}{2}$ miles from Auburn. The ledge averages 4 ft. in width. The developments consist of 2 shafts, one 85 ft. deep and the other 75, and 104 ft. apart. The shafts are connected by a drift at 75 ft. The drift is now in 153 ft. The pay rock commenced at \$25 to the ton and constantly increased to \$100 per ton at the east shaft, since which it has steadily continued at that figure. Five hundred and eighty tons of the ore first extracted have been milled, paying an average of \$25 to the ton. There are now 200 tons of rock on the dumps that will mill \$100 to the ton of free gold, besides the sulphurets, which after being extracted assay \$1,000 to the ton. As the rock can be mined at a cost of \$2.50 per ton, it only requires a mill to make this one of the best paying mines in the State.

FOREST HILL DISTRICT.—Owing to the scarcity of water, a very small proportion of the richest claims in the district have been worked by the hydraulic process. The Dardanelles & Oro, owned by James, Dougherty and others, having the advantage of a full ditch of water belonging to this claims, have been enabled to keep three pipes running, working from 15 to 20 men, getting good pay. Young America, belonging to W. A. Freeman, is worked by hydraulic, the bed of the gravel which lies above the cement, and which will run from 20 to 40 ft. in depth. This claim is working eight men and is paying well. Washington claim, on Smith's Point, owned by Bernhard & Adams, is being worked both by hydraulic and drifting. It is working from six to eight men, and is paying well. Dardanelles cañon, owned by Cahill & Farrell, takes up the tailings from Dardanelles & Oro, by bed-rock flumes. Dardanelles bed-rock is being worked by a large company of Chinamen, supposed to be making good pay. Uncle Sam belongs to Fox, Fallon and others, who are getting good pay, drifting and crushing cement gravel.

The Jersey, owned by Reamer & Brown, continues to sustain its reputation as one of the best paying claims in the district.

BIG SPRING, owned by Newman, Pecht and others, is working from 6 to 8 men, regular pay and good prospects.

THE Emily, owned by Langstaff, Harper, Wilson and Lawler. During the past fall and winter they have run a bed-rock tunnel about 500 ft. in order to get fall, and are now taking good pay. Dr. Smith's claim, situated about half a mile southeast of Forest Hill, known as Seam or Vein diggings, which has not been worked on account of the scarcity of water, has recently been leased to Shorkey and Lathrop, who will work it on the shares. This claim prospects well.

LEWIS CASS COMPANY.—This company has recently commenced work on their quartz lode, situated about two miles west of Yankee Jim's. They have sunk a shaft 7 by 9 feet in depth, and have a ledge $6\frac{1}{2}$ feet wide, which carries a very large amount of sulphurets, and shows considerable free gold.

THE Pioneer Flume Company, of San Francisco, will put up two flumes of a mile in length during the present season. One of the flumes will be 8 feet wide, and the other half that size.

BEAR RIVER TUNNEL.—*Placer Herald*, June 20: We have read the following notice in not less than three papers this last week:

The enterprise originated by S. N. Stranahan and others, about a year since, to tunnel through from American to Bear river, Placer county, and thereby open up a section of mining country, to develop which would otherwise be impossible, has been incorporated under the name of the Bear River Tunnel, Fluming and Mining Company. Capital stock, \$10,000,000.

This may be true, and then again—there was much talk of this gigantic undertaking some time ago, but of late it seems to have died out. The above is the first sign of resurrection. We hope the company has been incorporated on a sure footing, and that it will prove successful, for there is nothing more certain, and we speak the opinions of men who ought to know, that the completion of such a tunnel would open up one of the richest and most extensive gold fields ever known to the world.

THE Crater No. 1 shaft has reached a depth, on the inclination of the lode, of 422 feet. Vein is found about fifteen inches thick, well defined and mineralized. At a depth of 372 feet, the vein made regular, and prospects well, the barren zone having been passed, and pay ore came in again, giving assurance of increased riches as depth is attained. The best gold mines in the State have had the same disturbance. What our mines require is deep working, of which we have notable instances in Amador and Grass Valley. Ore, of good quality, is being extracted from the topes above the 312-ft. level. The mill has just cleaned up and returned from 165 tons of ore \$4,100, about \$25 per ton.

THE BELLEVUE.—Connection has been made with shaft No. 2, 240-ft. level. Vein strong and ore rich. This portion of the mine will, within ten days, be ready for the extraction of high grade ore, at No. 4 and 5 shafts on the 100-ft. level. The stopers are at work extracting ore which speaks for itself.

PLUMAS COUNTY.

12-MILE BAR.—*Plumas National*, June 20: Capt. Corser, of Rich Gulch, is piping, and will have water until the last of July. His ground prospects for "big money" and Cap. Fred. Lewis, in the old McNeely claims, has discovered a new channel, or body of gravel, under a thick layer of serpentine, which is very rich and extensive. He will drift it during the summer. C. W. Hyde is working on the old bar, having brought a new ditch from Sebastopol creek. He is working a large lot of ground, has already made a good clean-up, and will have water for some time to come yet. The Rush Creek Flat claims have worked considerable ground, and the gravel is looking first-rate. They use a large-sized giant, have more water than they can use, and will have plenty all summer. The Halstead Bros., whose claim is directly back of Kingsbury's Ferry, have had a short run of water, with good pay for the work. They have a very deep and extensive bank of gravel, and when the water from Soda creek, now owned by the company, is brought to it, it will be one of the best gravel mining claims in the State. A number of small mining operations are running successfully, and the season in that section bids fair to be a very prosperous one.

SAN LUIS OBISPO COUNTY.

THE SANTA CRUZ.—*Tribune*, June 20: Mr. W. J. Lockhart, superintendent of the Santa Cruz quicksilver mine, broke ground this week, with a view of erecting a furnace at the mine.

SAN BERNARDINO COUNTY.

QUICKSILVER.—*Press*, June 20: A notice of the location of 1,500 linear ft. of cinnabar-bearing rock, in the Santa Ynez mining district, was filed in the County Clerk's office, Monday, by O. L. Abbott, also a similar notice by V. Cutter. These newly discovered mines have awakened a great interest here.

THE PIRU MINES.—*Index*, June 18: Mr. James H. Swift has returned from the Piru mines, where he has valuable interests in ledges of gold-bearing quartz. He reports active operations on the Piru. Messrs. Dyer & Wheeler, of Los Angeles, have about 30 Chinamen at work in their placer mines in the west branch of the Piru. Besides their usual work in the washings, they are putting in the flume, and otherwise preparing to carry on extensive placer mining operations. Treadwell & Co., on another branch of the Piru, are working their gold-bearing quartz vein at a profit of over \$20 per ton.

SIERRA COUNTY.

OAK RANCH.—*Mountain Messenger*, June 20: The company at Oak Ranch are working 8 men, in 4 shifts, and pushing their tunnel ahead as fast as it can be done. Less than 1,000 ft. will bring them to gravel, the richness of which they demonstrated by shafts.

HYDRAULICING.—McNaughton & Co. are slashing away at their bank in their claim at the City of Six. During the past year they purchased of Thos. Redman all the mining ground at that place, procured a "monitor," and fixed the diggings up in good shape, and now have 8 or 10 men at work.

MAGNOLIA MINE.—Work has again been commenced on the Magnolia mine. It always, when worked, paid about \$2.50 to the man.

The Smith Bros. are taking out about an ounce a day to the pick, at their diggings in Hog cañon.

WILBOURN & BURTON'S diggings at Woodchuck, near Gold lake, are paying better than ever this year.

INCORPORATION.—The old Mt. Vernon claim (the new name we forget), between Downieville and Forest City, is to be incorporated immediately, when its owners will proceed to develop it more extensively.

ST. CHARLES HILL.—Work has been recommenced at St. Charles Hill, in the claim from which some Frenchmen took a large nugget a few years ago.

PROSPECTS.—Good prospects have been obtained in the old "Higgins Claims," below Goodyear bar. A tunnel is in about 130 ft., where it taps a bed of gravel which prospects well.

NUGGET.—The Bald Mountain Co. took out a 30-ounce piece one day last week. This claim has yielded since it was opened about \$350,000, and has been in working order less than two years. It is pretty hard to beat.

Nevada.

WASHOE DISTRICT.

CONSOLIDATED VIRGINIA.—*Gold Hill News*, June 18: Daily yield, 300 tons of ore. The ore breasts on the 1,300-ft. level continue to yield splendidly, and promise a rich return for the future. The ore breasts on the 1,400-ft. level have been opened out 45 ft. in width in splendid ore. This does not comprise the width of the ore body, the vein on the east of this opening is still ore of a rich quality. At a distance of 65 ft. from the station, the south drift on the 1,500-ft. level has reached the ledge, showing the ore to be of rich quality. Arrangements are being rapidly completed.

ORPHE.—The extraction of ore from the 1,300-ft. level is still continued, the ore breasts opening out better than has heretofore been expected. The face of the south drift from the winze in cross-cut No. 1, on 1,300-ft. level is still in ore of a fine quality. It is expected that everything will be in complete readiness for the extraction of ore from 1,465-ft. level in a very few days. The dumps are all kept full, with a large reserve of ore on hand.

GOULD & CURRY.—Much better progress is being made with the north drift of the 1,700-ft.

level. This is caused by the use of the Burleigh drills, 28 ft. per week being now made where not more than half that distance could be accomplished in the same time by hand drills. The east cross-cut at the fourth station has penetrated a large body of quartz and low grade ore, but has not yet developed anything that will pay for the extraction.

SIERRA NEVADA.—The frame of the new hoisting works building is up and is being inclosed and the roof put on. The hoisting engine is being placed in position. The pumping engine will also be ready to place in position in a day or two more. The hydraulic is just fairly getting to work, and will soon begin to do some telling work. It is working with the utmost perfection. The ore breast throughout the upper portions of the mine are all looking and yielding well. The mill is kept steadily running on ore from the mine. Daily yield, 60 tons of ore.

GLONE CONSOLIDATED.—The ore at the north drift at the head of the incline is 1 ft. in width and of good quality. About 25 tons of ore per day is being extracted, which is being sent to the Excelsior mill for reduction. There is a large amount of ore in sight, and the future prospects are looking quite flattering. The machinery for a 20-stamp quartz mill is being manufactured to order in San Francisco. This mill will be erected at the mine and will save all cost of the transportation of ores. It is intended to run the mill with a compound engine.

HALE & NONCROSS.—The ledge on the 1,900-ft. level has been cross-cut and prospected for 200 ft. in width near the south line without yet finding the west wall. Some considerable streaks and seams of excellent ore have been encountered, all of which are wider and better at the bottom than they are at the top, seeming to indicate a fair prospect of widening out as they go downward.

BELECHER.—Daily yield, 550 tons of ore. The ore breasts throughout the entire mine are looking well and yielding splendidly as usual. The south drift from the Crown Point, on the 1,300-ft. level, is in 475 ft., the face in west country rock. The ore track from the ore body, on the 1,400-ft. level, is completed to the incline, enabling the hoisting of the ore through the company's shaft from that level, instead of through the Yellow Jacket, as heretofore.

CROWN POINT.—Daily yield, 550 tons of ore, which is being extracted from the 900, 1,200, 1,300 and 1,400-ft. levels. The ore breasts throughout the mine are yielding splendidly. The middle winze, from the 1,400-ft. level, is down 70 ft. vertically, the bottom in rich ore. The entire face of the north cross-cut on the 1,500-ft. level is in rich ore and improving almost every day. The main south drift on the 1,500-ft. level is being driven vigorously ahead to connect with the middle winze and the north drift on the same level from the Belcher. The main incline is down 82 ft. below the 1,500-ft. level in hard blasting ground.

JULIA.—The pits for the pump-bob, and the foundation for the new hoisting engine is about completed. The engine is calculated to be of 200-horse power, and the pumps, five in number, are to have 8-inch plungers, with a 6-ft. stroke each. Raising upon the third compartment of the shaft is making good progress.

DATON.—Day before yesterday a perfect flood of water was encountered in the south drift at the second station, driving the men out of the mine and stopping all work on the lower levels for the present. This flow of water is supposed to come from a portion of the ledge that is yet unprospected, and cannot certainly be of any very great duration. Fortunately the large supply of ore in the dumps will enable the mills to continue crushing until the water can in all probability be drained.

CHOLLAR-POTOSI.—Daily yield, 100 tons of ore, the assay value of which is \$30 per ton. This ore is mostly being extracted from the ore breasts in the old upper workings. On the fifth station level cross-cuts have been run both east and west on the ore body cut by the main south drift, in both of which the ore has almost entirely pinched out. An up-raise has also been made on the ore with no better success, showing thus far that the whole is nothing more than a bunch.

UTAH.—Sinking the shaft is making excellent progress. The south drift, on the 400-ft. level, is still pushed vigorously ahead, the face in quartz giving low assays, but the general appearance of the ground looking much more favorable for an ore development than at any time in the past.

OVERMAN.—The main west drift on the 1,200-ft. level is making $3\frac{1}{2}$ feet per day without change of interest to report. Sinking the winze from the 1,000-ft. level is progressing at the rate of three feet per day.

Occidental.—A new engine is being erected at the mouth of the north winze, nearly 2,000 ft. from the mouth of the old adit tunnel. The erection of the new machinery will now enable the draining of the water and a thorough development of the ore prospects.

BALTIMORE CONSOLIDATED.—The machinery has been repaired and started into full operation this morning. The erection of the new hoisting and pumping machinery is making good progress.

KNICKERBOCKER.—A heavy flow of water was struck a few days ago in the main west drift on the 450-ft. level, creating some delay, but which is again nearly drained, and the work in the face resumed.

CALIFORNIA.—The drifts are being run, one from the 1,400 and the other from the 1,500-ft. level stations of the Consolidated Virginia, to open and prospect those levels.

The Local Option Law.

In view of the large interest which has recently attached to the question of Local Option, and the importance that it should be carefully considered and fully understood, we give the law in full. Thus far, we believe, somewhere between forty and fifty elections have been held under the law, about thirty of which have resulted in favor of Local Option. By reference to another column it will be seen that the preliminary steps are being taken to call an election for this city. The law reads as follows:

SECTION 1. From and after the passage of this Act, whenever one-fourth of the legal voters of any township, incorporated city, or town, shall petition the Board of Supervisors of such county, or the county wherein such township, incorporated city, or town is situated, to call a special election, to vote upon the question of "Liquor License," or "No Liquor License," the Board of Supervisors of the county receiving said petition, shall within one month after said petition is filed with the clerk of said Board, make proclamation for the holding of said election in the township, incorporated city, or town, as may be asked for in such petition.

SEC. 2. The Board of Supervisors shall, by such proclamation, require an election to be held within each township, incorporated city, or town, as the case may be, on a day to be designated by such Board, and within thirty days from and after the day of issuance of said proclamation. Such proclamation shall be published in a newspaper printed in the township, city, or town in which said election is to be held, if there be one published therein, otherwise in a newspaper to be designated by such Board of Supervisors. Such a proclamation shall be published once a week for at least three weeks previous to said election.

SEC. 3. Said election shall be conducted and governed by the General Election Law of this State, so far as the same are applicable thereto, provided that copies of the Great Register need not be used, and section 1,056 of the Political Code shall not apply to or affect such elections. [Concerning proclamation by the Supervisors.]

SEC. 4. The tickets to be voted at such election shall contain the words "For License," or "Against License." If a majority of the votes cast at such election "For License" or "Against License," shall contain the words "Against License," then it shall not be lawful for any Court, Board or officer to issue any license for the sale of any spirituous, vinous, malt or intoxicating liquors in said township, city or town, wherein said election may have been held, at any time after the determination of the result of said election, provided that nothing contained in the provisions of this Act shall prevent the issuing of license to druggists for the sale of liquors for medicinal and manufacturing purposes.

SEC. 5. The Board of Supervisors shall meet as a Board within ten days after such election, for the purpose of canvassing the returns and determining the results.

SEC. 6. If at any such elections the majority of the votes cast "For License" and "Against License" shall be "Against License," then from and after the result of said election shall have been determined by the Board of Supervisors, it shall be unlawful for any person to sell or dispose of any spirituous, vinous, malt, or other intoxicating liquors in such township, incorporated city, or town at any time thereafter, until at any election, as above provided, a majority vote in favor of such license.

SEC. 7. No election shall be held under this Act oftener than once in two years.

SEC. 8. Any person who shall sell or give, or offer to sell or give, any spirituous, vinous, malt, or intoxicating liquors, in quantities less than five gallons, within any township, incorporated city, or town, contrary to the provisions of this Act, shall be guilty of misdemeanor, and for every such offense shall pay a fine not exceeding twenty-five dollars for the first offense, and not less than fifty or more than one hundred dollars for each subsequent offense, and be imprisoned in the county jail until such fine shall be paid at the rate of one day's imprisonment for each dollar fine.

SEC. 9. All fines collected under this Act shall be paid into the County School Fund of the county wherein collected.

SEC. 10. It shall be the duty of the County Judge to call the attention of every Grand Jury to the provisions of this Act.

SEC. 11. This Act shall take effect immediately.

TANNING OF TIMBER.—A communication on the important subject of timber preservation was made to the Academy of Sciences of Paris at its last sitting. The methods employed generally for railway sleepers in France are injection of sulphate of copper, or carbonization, the former probably to the larger extent; the quantity of sulphate employed for an ordinary sleeper of about 150 pounds weight, is from one to one and half pounds. The correspondent of the Academy proposes to substitute acid tannate of protoxide of iron, which impregnates the wood perfectly, and forms a true ink which preserves the timber admirably. The idea is not new, but we are not aware whether the process of tanning timber has ever been put in practice; perhaps the tanners might add it to their ordinary business.

APPLICATIONS are pouring in the Patent Office at a rate of over 600 a week.

Cheese as an Article of Food.

The claims of cheese as a wholesome, nutritious and economical article of food, have been ably and persistently urged upon the American people for a period of several years. Dairymen's associations have awarded ample prizes for the best essays on this subject, with a view to increase the home consumption of cheese; and physicians and writers on hygiene have rendered assistance that was at the time unopposed to be valuable. But the American people, to the evident disgust of the dairymen and their zealous champions, did not take to the cheese which was set before them, or rather to the cheese which was not set before them. There was a reason, however, at the bottom of the subject, or at the bottom of the pockets of the expected cheese-eating public, which the dairymen and essayist did not fathom—the public could not afford to eat cheese.

The cheese had been scientifically analyzed, and its component parts exhibited in due order; but the would-be consumers were more interested in the analysis of the contents of their purses. There were good reasons presented by the dairymen, showing that the people ought to buy more cheese; but the latter presented a counter reason which there was no getting around—they had nothing to buy with. These prize essayists will find no difficulty in convincing the masses that cheese is both wholesome

and nutritious; but they will earn their prizes before they convince the working people of this country that 25 cents paid for a pound of cheese is as economically expended as in bread, beef or bacon.

It was our good fortune, a few years since, to be present at the annual meeting of the American Dairymen's Association, before which a one-hundred dollar prize essay, on the subject—"Cheese as a wholesome, nutritive and economical article of food," was read by Prof. L. B. Arnold, of Ithaca, N. Y.; and an able essay it was too. This was followed by an address, by H. A. Willard, of Herkimer county, on the commercial aspects of the dairy. His great point was to induce the dairymen to use every effort to keep up the high price of cheese. He took the position that the higher the prices the greater would be the consumption; declaring that a "higher price for cheese would whet the public appetite for cheese." This "brought down the house;" but these same orators, and their applauding friends, would retire and meditate on the unaccountable backwardness of the people in adopting cheese as an article of food.

If a convention of manufacturers of dairy implements should offer a good paying prize for the best essay on the value of their wares, and have another party hired to get up at the



THE CALIFORNIA WATER THRUSH.

close of this advertisement and urge upon the assembled manufacturers the propriety of keeping up the prices of their wares, assuring them that the higher the prices the greater would be the demand for cheese-vats, cans, etc., how would the dairymen take it?

It is not expected that dairymen are going to make any material sacrifice for the sake of placing cheese, as a standard article of food, on the tables of the masses; nor should they expect that these masses will endure pecuniary martyrdom for the glory of American cheese. Their appetite for cheese does not need any whetting; it is already sufficiently sharp; but they are otherwise too sharp to pay as much for one pound of cheese as they pay for two pounds of choice beef, for ten pounds of flour, or for twenty pounds of potatoes.

This deprivation in regard to cheese extends through all portions of the country. Even the cheese-makers themselves, in the most prosperous dairying districts, use it only as a luxury. We may possibly be accused of going to the opposite extreme of the analytical and statistical champions of cheese alluded to above; nevertheless we venture the declaration that ten times the amount of cheese now consumed would find ready and regular purchasers if it could be brought down to the level of economical articles of food.

This is a matter worthy of serious consideration. In regard to some of our productions the question is continually arising—how shall we dispose of them? but with butter and cheese it is—how shall we multiply their production and diminish their cost?

During the year 1873 there were exported from Boston nearly \$200,000 worth of sewing machines, \$350,000 worth of agricultural implements, \$106,000 worth of carriages and parts, and \$1,274,800 worth of metal manufactures, machinery, hardware, etc., making a total of nearly two million dollars.

EXPERIMENTS are being made by an English railroad company to ascertain whether steel tubes can profitably replace those of copper and brass in locomotives.

The whole production of the precious metals throughout the world during 1873 is estimated to have been worth nearly \$220,000,000.

The Human Frame.

The Heart.

In this article we propose to take up the human organization and learn something of it; leaving comparative anatomy and physiology to future papers. First, then, let us get a correct idea of the position and functions of some of the more important organs of our bodies. The heart lies partly behind and to the left of the sternum, or "breast bone;" extending from the level of the third rib downward to a point an inch to the right of, and an inch below the left nipple; and never, under any circumstances, "coming up in the throat," or wandering around anywhere else. It is almost, if not entirely, destitute of nerve of ordinary sensation; its movements being regulated by means of motor nerves and the great sympathetic system, and so can not be felt under ordinary conditions at all. It can suffer violent inflammation without the possessor being aware of it, or feeling any sensation of pain; the increased frequency and power of the palpitations against the parietes of the chest first calling attention to it by means of the nerves in those parts. In rare diseases it becomes the actual seat of pain; but most of the sensations referred to it come from other parts—usually the stomach. "Heart-burn," a fair case in point, being a burning sensation at the pyloric orifice of the stomach, caused by a species of dyspepsia. It is diseased much less frequently than is generally supposed, being guarded by every means of protection it was possible for Nature to throw around it. Being a muscular organ, it of course must be subject to the general laws of muscular nutrition; hence in feeble or wasted conditions of the body it partakes of the general weakness and struggles violently or palpitates under muscular efforts which require increased action of it, but such palpitations are no evidence of disease. Dyspepsia is peculiarly subject to palpitations and heart-burns, and imagine they are suffering under some disease of the heart, when properly restored nutrition is all that is required to remove their unpleasant symptoms. Still the heart is not invulnerable to disease, and we should avoid any unnecessary taxation of its powers. All extremely violent or long continued exertion taxes its powers very much, and ought never to be indulged in unnecessarily. It is said that the Cornwall miners, who are accustomed to climb long series of ladders after a fatiguing day's work, are very subject to an insufficiency, or "leaking," as they term it, of the valves of the heart. And inflammatory rheumatism, if treated harshly, may fly to the heart, causing quick death, or leaving inflammatory deposits which ever after obstruct the proper working of the valves. Remember in rheumatism as in all other diseases, the nearer the surface you keep your trouble, the more easily handled and harmless it is. Wounds of the heart of any magnitude are necessarily fatal.

California Birds.

Water Thrush or American Dipper—(Cinclus Americanus.)

This California bird is remarkable for its partiality to brooks, rivers, shores, ponds and streams of water; wading in the shallows in search of aquatic insects, wagging the tail almost continually, chattering as it flies; and in short, possesses many strong traits of the Water Wagtail. It is also exceedingly shy, darting away on the least attempt to approach it, and uttering a sharp chirp repeatedly, as if greatly alarmed. It breeds in the higher mountainous districts, as do many of our spring visitants that regularly pass a week or two with us in the lower parts, and then retire to the mountains and inland forests to breed.

The voice of this little bird appears so exquisitely sweet and expressive, that one is never tired of listening to it.

The Water Thrush is six inches long and nine and a half in extent; the whole upper parts are of a uniform and very dark olive; the lower parts are white, tinged with yellow ochre; the whole breast and sides are marked with pointed spots, or streaks of black or deep brown; bill, dusky brown; legs, flesh-colored; tail, nearly even; formed almost like the golden-crowned thrush, except in frequenting the water, much resembling it in manners. Male and female nearly alike.

OLD MINING CLAIMS.—Captain Clark, with Mr. Higbie, Dr. Hays and several others, making up a surveying party, have returned to Los Angeles from a trip to the El Paso mining district. The object of the expedition was to survey some old silver mining claims which were worked a number of years ago, and abandoned on account of the Indians becoming troublesome. The El Paso regions lie south of Cerro Gordo and on the proposed line of the Los Angeles and Independence railroad. With the increased facilities for working, and the good indications, there is little doubt but there is wealth in the El Paso mines. Captain Clark has been instructed by the company, of which he is a member, to let contracts at once for working the claims, and operations will doubtless be commenced upon them before long.

The original patent for metallic tips for shoes was sold for \$100, and the company which bought it became wealthy. Now, upon its expiration, the inventor has obtained its renewal, and compels the company to pay him \$60,000.

USEFUL INFORMATION.

How Thermometers are Made.

The *Polytechnic Bulletin* thus describes the manufacture of thermometers at the Tower Manufacturing company's establishment, Chester, Pa.: The glass tubes, as received, are about a yard long. A boy nicks them with a hard steel knife, and breaks them into the lengths required. The bores, which are flat, are compared, by means of a lens, with those of ten standard sizes, and the tubes assorted accordingly. They are then passed to the blow-pipe table. Each glass blower has a foot bellows, and uses an oil lamp. Melting the glass at one end of a tube, he blows it into a bulb by pressing the sides of a hollow India rubber ball attached at the other, proportioning the size of his bulb to the bore of the tube, and ascertaining the size by using a pair of callipers. While the bulb is yet hot, the tube is inverted in mercury, which as the bulb cools, rises and partially fills it. The tube is then withdrawn and a short India rubber tube attached at its open end. Into this mercury is poured; that in the bulb is boiled to expel the air, which rises up through the mercury in the India rubber tube, and an atmosphere of the vapor of mercury now fills the glass tube and bulb. As this condenses, the mercury in the India rubber tube takes its place, when this tube, with any mercury remaining in it, is removed. The bulb is now warmed, and the open end of the glass tube hermetically sealed.

The bulb and a portion of the tube are immersed in melting ice, and the height of the mercury marked; they are then transferred to a bath at 62° Fahr., and the height marked; next to a bath at 92° Fahr., and the height again marked. The lengths of the three spaces of 30 degrees each are now carefully measured. If they are exactly equal, the bore of the tube is assumed to be uniform, and the degrees laid off on the brass scale of the thermometer are all made of the same length. If the spaces of 30 degrees each are not found to be exactly equal, then, by means of a highly ingenious dividing engine, the degrees on the scale are made to increase in length as the calibre of the tube diminishes. When the plate has been divided, and the figures and letters punched, it is passed, laterally, between rollers, to remove the burr left by the tools. Were it rolled lengthwise, the accuracy of the dividing would be impaired. The plate is then silvered and lacquered, the glass tube attached, and the whole slid into the well-known japanned tin case. The establishment turns out two hundred dozen thermometers a week.

WINE AND FERMENTED FRUIT JUICES.—The detection of malic acid is not sufficient to prove a sample of wine to be adulterated. The most certain procedure is to filter and add ammonia in excess. The fruit wines, when this has been done, deposit crystals, which adhere to the sides of the test glass. Genuine grape wine, on the other hand, deposits a powder, much less in quantity, not adhering to the sides of the glass; and, to the naked eye, devoid of crystalline structure. Dissolved in dilute acetic acid, the deposit from cider and perry contains lime and phosphoric acid. In grape wine lime is also present, but in smaller quantity. In this case, if the precipitate given by oxalate of ammonia is filtered off a fresh addition of ammonia gives a further precipitate. This is not the case with cider and perry. If perry and wine are mixed in equal proportions, a deposit of crystal is found on the sides of the test glass on adding ammonia. In cider and perry the phosphoric acid is present in combination with lime, while in wine it is combined with magnesia. The most characteristic reaction is that with ammonia.—*Mechanics' Magazine*.

GRAINING.—In describing the methods of imitating the grain of wood, we will mention only the simplest, that the miniated in the art may readily execute a fair specimen, without the array of tools employed by the professional grainer. The colors used in graining may be mixed in oil or distemper, the latter being preferable, for if not satisfied with the first attempt, it is easily washed off with water, and the work done over again. Surfaces to be grained should be painted with at least two coats of paint, tinted as follows: For light-colored oak, tint the white paint with yellow ochre, to a nice cream color. For medium shade oak, add a little number to the cream color. For dark shade oak, add umber and a little Venetian red to the cream color. The last coat, or ground color, should be made to dry with an "egg-shell gloss," not flat, that the graining mixture will not be absorbed, and thereby make the graining appear dirty.—*Am. Homestead*.

WINOWS FOR DARK ROOMS.—To light a dark room looking out on a narrow yard or street, let the glass be roughly ground on the outside, and set flush with the outer wall. The light from the whole of the visible sky, and from the remotest parts of the opposite wall, will be introduced into the apartment, reflected from the innumerable faces or facets, which the rough grinding has produced. The whole window will appear as if the sky were behind it, and from every point of this luminous surface light will radiate the room. The common window let into the wall takes only the reflection from opposite buildings.

Danger of Using Shot for Cleaning Bottles.

Fordos has recently directed attention to the dangers of lead poisoning where shot are used for cleaning bottles that are to be used for wine and other beverages. When shot are placed in a glass with water, carbonates of lead are at once formed, a portion of it being noticed as a precipitate in the water, while another portion of it attaches itself as a thin film to the sides of the vessel. This film adheres so firmly to the glass that it cannot be removed by rinsing with water alone, an acid being required to move it. When shot are used for cleaning bottles which are afterwards well rinsed out, the carbonate of lead suspended in the water will be removed, but that portion which is attached to the sides of the bottle remains, and is afterwards dissolved by the liquid placed in the bottle, if it possesses a sufficient solvent power. If the shot are only shaken up with water for a short time, it is scarcely possible for the carbonate of lead to become attached to the sides of the bottle, but oftentimes the shot are left in the bottle with the water for some time. Besides, the rinsing is not always done so carefully as it should be, and the carbonate of lead suspended in the water is not all removed. Fordos took four half-pint medicine glasses that had been cleaned with shot, and in one he placed white wine, in another red wine, in the third quinine wine, and in the fourth vinegar. After standing two days each was found to contain a considerable quantity of lead.

Another danger might also arise from shot getting lodged in the narrow creases at the bottom of certain bottles, when the action of an acid upon it would dissolve not only the lead but the arsenic which is always present in shot in sufficient quantity to render the liquids poisonous.—*Journal of Applied Chemistry*.

COAL.—An average Atlantic steamer consumes fifty tons of coal in twenty-four hours. Therefore, if five tons of coal are sufficient to feed an ordinary grate in our dwellings during the entire year, the coal consumed on board a steamer in one day will last a small family burning a good fire, ten years. If a load of coal be left out doors, exposed to the weather, until it is burned up in one grate, say a month, it loses one-third of its heating quality. If a ton of coal is placed on the ground, and left there, and another is placed under a shed, the latter loses about twenty per cent. of its heating power and the former about forty-seven per cent. The softer the coal the more it loses, because the most volatile and valuable constituents undergo a slow combustion.—*Iron*.

A CAR-LOAD.—Below we give a statement of what is in nearly all localities regarded as a car-load of transportation. As a general rule, 20,000 pounds or 70 barrels of salt, 70 of lime, 70 of flour, 60 of whisky, 200 sacks of flour, six cords of hard wood, seven of soft wood, 18 to 20 head of cattle, 50 to 60 head of hogs, 80 to 100 head of sheep, 9,000 feet of solid boards, 17,000 feet of siding, 13,000 feet of flooring, 40,000 shingles, one-half less of hard lumber, one-fourth less of green lumber, one-tenth less of joists, scantling, and all other large timber, 340 bushels of wheat, 360 of corn, 680 of oats, 400 of barley, 360 of flax seed, 360 of apples, 430 of Irish potatoes, 356 of sweet potatoes, 1,000 bushels of bran.

THE WASTE OF COTTON SEED.—Mr. Aikin, of South Carolina, says that the loss by neglecting to save cotton seed is immense; piles of seed are allowed to decompose and waste at nearly every gin house, and yet the seed is a valuable manure. For cultivating crops, 30 bushels of cotton seed in the drill, or 50 bushels broadcast, to the acre, will increase the crop considerably. Seed can be rotted by composting it in alternate layers of leaves, straw, and stable manure; 100 bushels of green cotton seed, mixed in bulk with a ton of soluble phosphate and allowed to remain a fortnight, will make a capital compost for 10 acres of any cultivated crop.

LITHOFRACURE appears to have been occasionally used by the German military engineers during the war in 1870, and its employment during the siege of Paris was specially referred to by the military correspondent of the *Times*. The composition of these several substances is now so universally known that it is perhaps unnecessary to give it. Lithofracure is, practically, dynamite under another name. It generally consists of nitro-glycerine, sandy earth, powdered coal, sulphur, sawdust, and nitrate of soda or nitrate of baryta.

PAINT FOR WOOD.—Wash the wood first with a solution of 1 lb. blue vitrol in 4 quarts water, then with $\frac{1}{2}$ lb. of yellow prussiate of potash in 4 quarts water. The resulting brown ferrocyanide of copper withstands the weather, and is not attacked by insects. It may be covered, if desired, with a coat of linseed oil varnish.

The following is commended as the best process of bronzing articles made of iron wire: Clean the wire perfectly and then immerse it in a solution of sulphate of copper until covered with a coating of metallic copper. Immerse the article in the following solution: Verdigris, 2 oz.; ea-ammoniac, 1 oz.; vinegar, 1 pint, diluted with water until it tastes only slightly metallic, then boiled for a few minutes and filtered. The articles are steeped in this liquor at the boiling point, until the desired effect is produced. Wash carefully in hot water and dry.

GOOD HEALTH.

Liebig's Extract.

In a letter to Joseph Bennet, Dr. Pettenkofer enters into an elaborate exposition, or rather vindication, of Liebig's extract. Like all alimentary novelties, that renowned preparation has had to fight its way into popular acceptance through at least two initial prejudices: first, a suspicion as to its wholesomeness, to use no stronger phrase; next, a scepticism as to its possessing any specific virtue whatever. Both these barriers the extractum carnis has at length surmounted, though three-and-twenty years have elapsed since its discoverer first produced it in the Royal Laboratory at Munich. How little its assailants understood the object of their attack may be inferred from the charges they brought against it. "The extract," said they, "containing as it does neither albuminoids, nor fat, nor hydrates of carbon, is not an alimentary substance." Of course it is not. It was precisely on the principle of eliminating from the extract every particle of albumen, of fat, even of gelatine, that Liebig proceeded. And with what result? To produce, not an alimentary substance strictly so called, but a condiment which has a distinct and unique place in dietetics. The role of condiments in the complex action of nutrition is but partially appreciated, and the most natural condiments are usually neglected for others much coarser, more stimulating, but really less efficacious. Voit, the most recent experimenter in dietetics, confirmed the popular impression that the flow of gastric juice to the walls of the stomach may be accelerated even by the sight of meat, as when he witnessed in a fasting dog, in which he had established a stomacic fistula, the immediate rise of the juice when he offered, without giving, the animal a bit of meat. Bouillon, he further maintained—warm and well-boiled bouillon—is the simplest and best digestive, and it is from this premise that Pettenkofer vindicates for the extract its paramount claims as a condiment. These it owes to the mixture of salts, different, indeed, but combined in definite proportions in a ratio which the organism imperatively demands, and the slightest deviation from which would constitute a veritable impurity. No amount of the best meat can take the role of the extract, any more than milk can play the part of cheese or butter. The product of Liebig is neither a nutrient nor an alimentary substance capable of economizing the albumen, the fat, or the carbo-hydrates; it is simply a condiment, but one of such efficacy that Pettenkofer does not hesitate to anticipate for it the chief place among such aids to digestion, not only in the sick-room, but in common every-day life. It has served him as a text for a very instructive essay on nutrition in general, and though much that he says is recapitulation, it is recapitulation of a kind that has a novelty of its own, from the clear and discriminating eye he passes along the series of discoveries bearing on the physiology and application of food.—*London Lancet*.

Food.

No more important questions can occupy the attention of the student of social science than those relating to human food. The advancement and development of the race depend primarily upon its aliment. And as man is the ultimate of all created earthly beings, so his food should be combined of the most progressed elements in earthly production. Vegetables contain all the elements composing the bodies of animals, but in a lower state of organization.

The muscles, nerves and brain power of man must be supported by nitrogenous food, and the more progressed and highly organized this food is, the more perfect will be the muscular power, the more delicate the nervous sensations, the keener and more profound the mental penetration.

Our ideas of digestion and nutrition become much simplified as we progress in chemical knowledge. It was once thought that the animal stomach possessed the power of metamorphosing its food into such elements as the system required, and therefore it was not material of what elements the food was composed, so that it be eaten with relish. But later science has demonstrated that the animal has no power of changing one element into another, and can merely use what it finds ready formed in its food. The vegetable elaborates—the animal appropriates. It then becomes of the highest moment that one should understand the elements of the food we use, and learn so to combine these as to produce the highest development of health, strength and personal beauty; thus attaining mental and moral culture.—*Ec.*

GYMNASTICS, while increasing the power and activity of the muscles, are of little advantage in warding off phthisis. Many erstwhile gymnasts have been victims to consumption. The swinging of heavy clubs about the head cannot be recommended. Less exercise than that with the arms causes hemorrhage in those consumptively inclined. Boxing puts almost too much strain on the heart and lungs, and it is questionable whether severe blows on the chest are ever of use. Bowling should be avoided by consumptives. Rowing tends to expand the chest, and, if no racing be undertaken, may prove of great value. Swimming should be used with great caution, as too long a stop in the water is apt by itself to bring on consumption.

Ozone.

Doctors differ widely as to the physiological effects of ozone upon the human body. That it acts upon the blood in some way is probable, but what special disease it causes, or what special disease it heals, is not yet ascertained. Some say that in an air which lacks ozone rheumatism may be expected; and it is asserted, and with great confidence, that the cholera is likely to come where ozone is wanting. There is reason for that assertion, which we shall presently mention, but it has not been fully proved by observation. Others say, on the contrary, that the irritation of this pungent gas will show itself in skin disorders, will send out blotches, eruptions and fire on the cheek and forehead; that ozone poisons the blood while it stimulates, and is to be classed with gin and whisky. Not enough is yet known of its medicinal effects to bring it fairly into the pharmacopoeia; and happily it cannot be kept on hand by the druggist, cannot be rolled into pills, or bottled for future use. Sunshine may be stored away in coal beds, but ozone is slippery, and disappears mysteriously, like the ice of carbonic acid. Only general assertion can be made concerning ozone in pathology, that on the whole, other things being equal, a lack of this influence in the air weakens the constitution, takes force out of nerve and muscle, and so predisposes the system to take on disease, and makes contagion more dangerous. More certain is the effect of ozone as a purifier in the air. No fluid acts more positively in decomposing and dispersing offensive substances. If its own smell is positive, it speedily drowns other more disgusting odors, and substitutes what is comparatively sweet and clean. It puts ammonia and sulphureted hydrogen, the odor of the stable and pit, out of the way more effectually than the chlorides. No disinfecting substance works so swiftly and so thoroughly as this attenuated shade of a substance. Dr. Fox quotes Schoenlein as saying that "air containing one three million two hundred and forty thousandths of ozone is capable of disinfecting its own volume of air filled with the effluvia evolved in one minute from four ounces of highly putrid flesh!" Surely no marvel of homeopathic theory or practice can match this statement. It goes beyond the fiftieth or the one-hundredth dilution.—*Herald of Health*.

Poisonous Wall-Papers.

The poisonous effects upon the air of rooms of arsenical pigments on wall-paper have been generally ascribed to the inhalation of the dust, which was found to contain arsenic and copper; but cases of arsenical poisoning of this kind have occurred in which, on account of the moisture still present in the wall and the effectual fixing of the colors, this explanation will not answer. Upon these a recent series of experiments by Fleck throws some light. Air in glass receivers was subjected to the action of Schweinfurth green and arsenious acid by simply placing these substances beneath some bodies in a moist condition, and by applying them as a coating to others, with and without paper, potato and wheat starch being employed as pastes. After from eight days to three weeks, in different cases, the presence of arseniureted hydrogen in the air was unmistakably revealed by tests; and left no doubt that cases of chronic arsenical poisoning must be attributed not only to the mechanical mixture of arsenical compounds with the air of rooms in the form of dust, but also to the presence of this gas, resulting from the decomposition of free arsenious acid in Schweinfurth green. It was also found that the development of the gas is favored by moisture in the air and the presence of organic matter, especially that in the paste. Mold appeared on the paper in some cases, showing that arsenic is not a preventative of its formation, as often stated.—*Technologist*.

The symptoms of asphyxia by illuminating gas are discomfort, inclination to vomit, convulsive movements of the muscles, especially those of the breast, the skin is cold, the breathing and pulse irregular. The remedies recommended are exposure to free air, even if cold, irritation of the skin by vinegar, and the palms of the hands, soles of the feet, and the spine with a stiff hair brush, blowing air into the lungs. When consciousness returns, place the patient in a heated bed in a room with the windows open, and administer a few spoonfuls of Malaga, Madeira or cherry wine. A mixture of tartar emetic and Hoffman's liquor, flavored with honey-water and orange-flower syrup, is spoken of as an efficacious after the return of consciousness.

VENTILATION AND WARMING.—In a lecture on ventilation, lately delivered before the Franklin Institute, Mr. L. W. Leede gives the following practical directions concerning provisions for ventilation and warming in the construction of buildings: First, never have long underground fresh-air ducts. Second, never allow a sewer, soil-pipe, foul-air flue or smoke flue to come near the fresh-air supply-flue, for fear of some connection being made between them by carelessness or accident. Third, never heat a building exclusively by currents of warm air. Fourth, always put the heating-flues on the outside walls instead of on the inside walls. Fifth, endeavor strenuously to avoid the fresh-air chambers becoming a common receptacle for all the rubbish of a filthy cellar.

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Removal.

July 6th, 1874, the business office of this Journal will be removed just one block east of our present location, to No. 224 Sansome Street, southeast corner of California, over the Bank of British Columbia, where we have secured large and elegant quarters. This removal is made in consequence of the sale of the building in which we are now located, to parties who will proceed immediately to demolish the present structure, and erect a new and magnificent block in its place.

OURSELVES.—With this issue, the MINING AND SCIENTIFIC PRESS completes its sixteenth year, and this number closes volume XXVIII. The copious Index in the last page in itself speaks of what we have accomplished for the past half year.

OUR ROOT CROPS.—We hear no more of the potato blight, but this, with other root crops, is reported to be suffering severely in some quarters from the ravages of the grasshoppers. In Santa Maria valley this pest has been particularly active; potatoes, turnips, and even some fields of corn and beans that were very promising, have been seriously damaged.

The legislature of Massachusetts has lately passed a law making it necessary that a dozen eggs weigh one and one-half pounds. This is a move in the right direction, and we hope all the other States may speedily follow the good example set by Massachusetts.

WON'T PATRONIZE LIQUOR SELLERS.—Marshall Grange, of Michigan, numbering 200 members, has resolved not to trade with or patronize in any way persons engaged in liquor selling.

L. LANDECKER, of Placerville, has a contract to supply 20,000 pounds of soap-root this season, and has put a large force of Chinamen at work digging it.

WILLIE CASWELL, of Los Angeles, has been appointed a cadet at West Point.

The Los Angeles honey crop is expected to amount to 200,000 pounds.

Our Gravel Mines.

Ever since the shallow placers of California began to fail, our people have been running after big things at a distance. The stampede to Nevada began in 1859, after the discovery of the Comstock lode. That and the succeeding few years drained our State of thousands of its hardy and enterprising population. Virginia grew into a flourishing city in a few months. The tide across Washoe overflowed Southern and Eastern Nevada; Aurora and Austin sprang into being; Utah, Arizona, Idaho, Montana, and every other accessible place on the Pacific Slope, was overrun by the eager searchers for that mythical mountain of solid silver, always nearly within grasp, but somehow never reached. Hundreds of lives were sacrificed, and many millions more of money spent than has been realized in those wild hunts after wealth. A few, a very few, were benefited, while the masses suffered the loss. All this while right at home, at their very doors, lay heaps of treasure inviting labor and capital to uncover it; which, if that capital and labor had been expended in opening our deep gravel beds and supplying them with water, would today have vastly exceeded the present gold product.

The remnant of this great army of prospectors come straggling back to their deserted claims, poor in pocket, with shattered constitutions and wrecked hopes, wondering why they ever should have been so foolish as to have left them to pursue a distant shadow. But the wonderful changes that have taken place in many localities strike them with astonishment. Where the surface ground was being washed when they left, by the two or three inch nozzle of the rude and imperfect machines, and the fifty inches of water, the Little Giant is hurling its four or six hundred inches under a heavy pressure against a bank that is crumbling away before it, and disappearing through the broad sluice-way and long tail flume, tumbling down the drops, and gliding over the undercurrents to the wonder and admiration of those gold miners of long ago. A new class of men have taken their places, and are using those great improvements with startling effect. Long and costly tunnels have been run into the channel, new ditches have been constructed on a higher level, and old ones improved and enlarged. Capital and labor is everywhere throughout our mines engaged conjointly in bringing about these wonderful results.

The writer has lately visited some of these locations, after some years' absence, and noted the changes. Plumas and Sierra counties seem to be in the van of improvements. Here the "Great Blue Lead" has been opened at numerous points, and activity prevails all along this section of this wonderful deposit. Near Scales' Digging, in the western portion of Sierra county, are several prominent hydraulic mines; among them is the Cleveland & Sierra Hydraulic Mining Company's mines, a corporate company, and managed by R. N. Williams, Esq., and yielding well. The company own a large body of gravel, and a fine water system; and it is believed that when the channel is fully reached it will pay the shareholders large returns. One mile south is situated the Fairplay Consolidated, which five years ago was broken up into a dozen or more segregated claims, and worked separately in the rude manner then prevalent, but is now one of the most completely arranged and promising hydraulic mines in the State. Up to June 1st, by partial clean-ups, it had yielded about \$20,000, and the owners are confident that this result would be doubled at the end of the season. They have adopted all the modern improvements, have spared no expense in opening and developing their mine, and supplying it with water; but evidently have made one mistake, in adhering to an old custom of running it during the daytime only. At night the washings cease, and water for ten or twelve hours is allowed to run to waste, when it ought to be kept employed, thereby proportionally increasing the yield; and by the expenditure of some \$30,000, two additional outlets could be made, and a ditch constructed from Canon creek that would supply double their present volume of water, which would render it one of the most productive properties of its class in the State. We understand this valuable property is being negotiated for by some parties in London; who, it is presumed, if the sale is consummated, will carry out those suggested improvements, and run the mine to its fullest capacity.

Going south from the Fairplay mine, along this great gravel range, we pass Council Hill, Brandy City, Camptonville, etc., to Park's Bar, on the main Yuba river. Here on the north bank of that stream is situated the Union Hydraulic Mining Company's mine. It is incorporated with \$3,000,000 capital, and is now being vigorously worked. Their possessions comprise over two miles of the dead river channel, and distant some four miles from Timbuctoo, Smartsville and Sucker Flat, so famous for their valuable hydraulic mines. The mine is opened by two outlets, which dump into the river; the length of the tail flumes is one-half and one mile in length, both of which are constructed in the most substantial manner, through which is flowing fifteen hundred inches of water, day and night, from four of Craig's Little Giants, under a pressure of 130 and 160 feet. The gravel bed at the point where the present washing is progressing is perhaps 100 feet in depth, which gradually increases

towards the center of the ridge, and is composed of a very fine looking "river wash," remarkably free from pipe clay and large boulders. The property owns two ditches, one of seven and the other of ten miles in length, with an aggregate capacity of 1,500 inches of water, which they draw from Dry creek. This water runs about six months of the year; but an additional supply is obtained from the Forbestown Ditch Company, who discharge their waste water into Dry creek above the head of the company's ditches, and sell it to the Union company at a very low figure. By this means the Union mine is enabled to continue washing with a full head, usually up to the first of September, or for nine or ten months of the twelve. Estimating from partial clean-ups to April 15th, the net yield of the mine for the year will be at least \$40,000. This mine, like the Fairplay, however, is susceptible of extended improvements, whereby its annual yield could be largely increased.

The mines in and around Timbuctoo and Smartsville are all running to their fullest capacity, and turning out more gold dust than ever before. So also with the mines at San Juan and Sweetland. At the latter place, Mr. G. D. McLean is driving ahead the Sweetland creek hydraulic mine with renewed vigor, and sending the English shareholders the wherewith to pay dividends. This was one of the first hydraulic mines purchased by an English company, and it has paid regular and satisfactory dividends for a number of years, and promises to continue this for a long time to come. This mine and the Birdseye creek, at Von Bet, Nevada county, and the Cedar creek, near Dutch Flat, have created a good feeling with English investors, for they have all been remunerative, which induced some of the shareholders to purchase the Blue Tent mine, Nevada City. This is the first season it has been worked under the new management, and so far has exceeded their expectations, and presents as fine a prospect for future profits as can be desired. The Little York mine, in Nevada, and the North America in Sierra are also owned in London, but as yet have not made a very good record; nevertheless strong hopes are entertained of their beginning to make good returns this season. If so, there will be a demand for good gravel mines in the English market next winter.

But these men have learned a sad lesson from the numerous American transactions, not of the most praiseworthy character, perpetrated in London within the last few years, and will be exceedingly cautious in their selections and negotiations with us; and it should be the sincere desire of every honest man in California, that our State does not fall into the same disgraceful category as Nevada and Utah. It is our best policy, if no higher feeling actuates us, to deal honestly with the representatives of foreign capital who seek an investment in our mines, for it is capital properly applied that we most need to develop and work the deep gravel beds which are now lying idle, and to extend, enlarge and improve those that are already being worked.

YAKIMA MINES.—F. M. Thorp, of Kittitas valley, arrived in Seattle last week, having made the trip via the Snoqualmie in three days. Mr. Thorp reports little doing in the Swauk mines—the Discovery company's claims and one other being the only ones worked. On the bare of the Yakima, prospects of a cent to the bucket have been obtained; and it is thought that profitable employment for a limited number of men may be had, during the summer months, on the stream.

The people of Dacotah have an abiding faith in the reported stories about the fabulous wealth of the Black hill region, and each year the desire to unveil the mysteries surrounding that enchanted spot grows stronger. An expedition is now fitting out to explore this region and ascertain whether this reputed El Dorado is a myth or not.

BRITISH COLUMBIA MINES.—A private letter from Kootenay states that what are supposed to be rich diggings have been discovered in a locality about eighty miles from French creek, in the Big Bend country. A crowd has started out from Victoria to prospect.

A GENTLEMAN of long experience in mining camps, who has been spending several days in Bingham, Utah, expressed it as his belief that the mines of that district will turn out from \$4,000,000 to \$6,000,000 worth of ore this season.

The California Pioneer Societies will celebrate the 25th Pioneer anniversary on the 9th of September. It is proposed to make an excursion around the harbor on the old pioneer steamer, "Senator."

The Santa Barbara Index reports active operations in the Piru placer and quartz mines. Treadwell & Co. are working their gold-bearing quartz vein at a profit of over \$20 per ton.

The Tenino (Washington Territory) Coal Company are pushing their mining operations vigorously. They have some 37 men in their employ.

The Chollar mine shipped \$13,000 last week; over 600 tons of ore were hoisted last week, assaying \$29 per ton.

It is reported that Charles Crocker will shortly supersede Governor Stanford as President of the Central Pacific Railroad company.

Personal Notice Must be Sent to Every Shareholder!

An amendment to the California Code imposes extra expense and labor upon corporations levying and collecting assessments, which, in nine cases out of ten, is useless. It takes effect July 1st, 1874, and provides that, in addition to the regular publication of the assessment and sale notices as heretofore, personal notice must also be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sent through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where the principal office of the Corporation is situated."

In addition to this; the assessment and sale notices must be published in some (daily or weekly) newspaper devoted to general news.

No matter for whose interest this change was intended, it certainly will not tend to the business welfare of the publishers of daily papers.

After being put to the trouble and expense of sending a personal notice to every stockholder, we opine that judicious managers of mining and other corporations will choose a less expensive publication than that of a daily paper, to comply merely with the form of the law.

That the patrons of the MINING AND SCIENTIFIC PRESS may be perfectly assured that our paper is absolutely a legal journal for the publication of all corporation notices under the provisions of the amended law, we have consulted with some of the sonndest lawyers of the State who have invariably and unhesitatingly declared the Press to be entirely a legal sheet for such publications, as it is most certainly the most appropriate journal for publishing all mining assessments. A glance at the heading and contents of the Press will show that it is devoted to general news in part, while no paper on the coast is devoted exclusively to that subject.

We expect from this date to receive an increased amount of corporation advertising, as our charges for the same are less than one-half the prices charged by daily publications. We ask shareholders and officers of all corporations to canvass this matter, and order their advertising in a journal which circulates widely over our whole Coast, and extensively among miners and shareholders.

The other sections of the law remain as before; including the following wise and important provisions:

"No action must be sustained to recover stock sold for delinquent assessments, upon the ground of irregularity in the assessment, irregularity or defect of the notice of sale, or defect or irregularity in the sale, unless the party seeking to maintain such action first pays or tenders to the corporation or the party holding the stock sold, the sum for which the same was sold, together with all subsequent assessments which may have been paid thereon and interest on such sums from the time they were paid; and no such action must be sustained unless the same is commenced by the filing of a complaint and the issuing of a summons thereon within six months after such sale was made."

Free copies of the Amended Assessment Law will be furnished at our office. Legal information regarding the publication of notices will be freely given at our office, or our agent will call on secretaries if requested.

Blank notices will be furnished free for serving personal notices to shareholders. Printed notices will be issued on short notice, at a low price.

The Consolidated Virginia company are completing their arrangements for the erection of a large, powerful mill at the mine, which will save the great expense of transportation of ores, and be a vast benefit to the shareholders. The mills are all kept steadily running, and the future prospects of the mine are evidently growing more favorable.

CHARITABLE FUNDS.—The Louisiana relief fund now amounts to \$40,273.11; the Young Men's Christian Association Building fund to \$131,000; the Agassiz Museum fund to \$154,000; the Mill river relief fund to \$14,473; the Sumner Memorial fund to \$15,000, and more is wanted all round.

The Currency Bill has been signed by the President. This bill fixes the greenback circulation at \$382,000,000—adding to the present circulation \$26,000,000.

The Diegneno mine, southeast of Julian City, between the Carlot and Stonewall mines, cleaned up a crushing of 17 tons of rock last week, realizing \$575.

It is reported that a disease is prevalent in the vicinity of Antioch which is destroying cattle. The animal becomes dizzy, staggers about, and drops dead.

W. B. Ogden, of Sutter, brought into Marysville, on Tuesday, the first load of new barley of the season.

The Globe Consolidated mine, on the Comstock, is going to use a compound engine in the new mill to be built at the mine.

Several old copper mines at Oopper City, Shasta county, have been relocated and will be immediately reworked.

ANTIMONY reduction works have been established in this city.

A SARDINE packing establishment has been started in this city.

Ore Concentration.

We have frequently stated that the salvation of many of the mining districts of this coast, where low grade ores were this rule, would depend on cheap methods of concentration. In all localities remote from railroad facilities and where labor and fuel are high, and the ores of low grade, the miners can do better by concentrating their ores before reduction. Thus they get rid of the gangue, and by reducing 100 tons into ten, save materially in transportation and reduction. Of course the concentration must be done at a rate that will leave a good margin for profit. They have turned more attention to this subject in Utah, probably, than anywhere else, but in Colorado also it is attracting considerable notice.

We see by the *Rocky Mountain News* that a company has been formed in Denver, Colorado, for the purpose of concentrating ores. They propose to erect works at which the hitherto valueless low grade ore may be concentrated to a point where it may be smelted to the profit of the mine owner. The circumstance that heretofore low grade ores could not be worked profitably, has in various ways operated as a disadvantage to the prosecution of the mining interests in Colorado. Low grade ore mines have remained a dead capital, and the working of high grade ore mines has been impeded and often prevented by the accumulation of the poorer class of ores, resulting from hand-dressing of first-class ore, so that to-day many dumps are capable of furnishing thousands of tons of mineral, which present facilities afford no means to work to any advantage. This company claims by a method, which is no longer an experiment, having been demonstrated a success in European and eastern establishments of a similar character to work ore, assaying no more than \$15 a ton, so as to derive a profit from its concentration themselves, give a large margin to the smelter on its reduction, and leave a profit to the mine owner to an extent to render the mining of the ore profitable to him.

In Colorado the ores running under forty ounces of silver in most of the mining districts are nearly worthless, there being no market for them. Ores containing forty ounces are salable at about forty cents per ounce, but ores containing two hundred ounces per ton are bought by the smelters at about \$1.10 per ounce. Concentrating only five tons of ore will enhance the value of every ounce of silver in the crude ore from 40 to 110 cents, and thus make every crude ton worth \$25 more; or what is even more important, provide a market for low grade ores entirely worthless up to the time that concentration works are erected. The \$28 mentioned will be of course reduced by the cost of concentration. The charge for concentration by the company to which we refer will be about \$5 to \$8 a ton, and the miner can well afford to pay that charge, because there will remain a margin of \$20 under this operation in advance of the usual rates paid now.

The company, as stated in the *News*, has some peculiar features. The capital stock is \$100,000, divided into 1,000 shares. The stock is divided into "cash stock" and "premium stock." The "cash stock" is subscribed and paid for in cash; the "premium stock" is subscribed and paid for in low grade ore, assaying not less than \$15 per ton, and may be subscribed for only by mine owners of the district where the works are located. By a provision in the articles, no works are to be erected until the premium stock is subscribed for; then the cash subscribers are to pay their money. When the works are completed the subscribed ore is taken to the works, concentrated, and sold on account of the company, and the proceeds, as soon as possible, divided among the cash subscribers until they are reimbursed in their subscription. Until then no dividend can be declared. So that at the end of a short period the cash subscribers own their stock without any cost, and the ore subscribers have invested only their cheap ore; after which time both share in the profits of the works.

The Trustees of this company are E. P. Jacobson, President; J. Marshall Paul, President of the Miners' Association of Colorado; J. F. L. Sobirner, Superintendent of U. S. Mint, Denver; F. D. Hager (banker), Treasurer; F. M. F. Cazin, M. E. Secretary. Cazin's system of concentration is to be adopted in the company's works.

Early Method of Crushing Quartz.

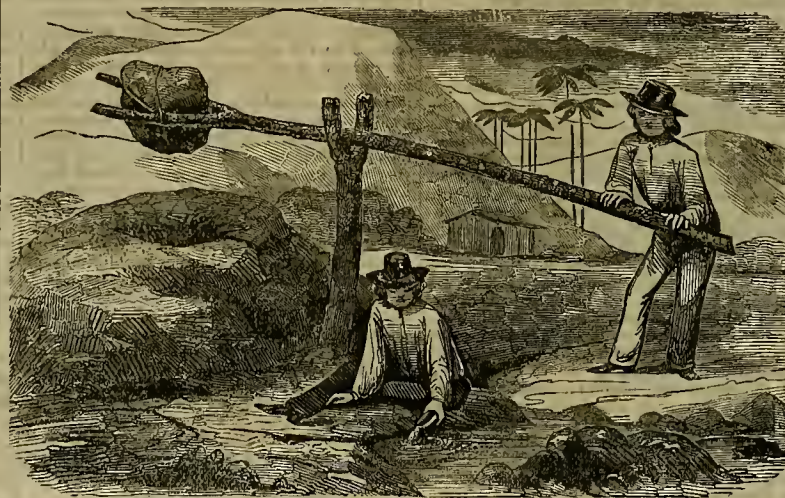
For crushing ore, perhaps the first step above breaking it with hammers was that method shown in the accompanying engraving. This rude machine was used in Spanish countries before *arastras* came in vogue. It is used occasionally now as a temporary affair to test rock, but is laborious and slow. Usually the rock was burned and plunged in cold water so that it would crumble, before submitting it to this machine; but a spring-pole and mortar makes a much more efficient machine to test ore with than this old rude Mexican arrangement. No doubt the man who invented this apparatus thought he had made a long step in advance; and probably the *arastra* would have surprised him as much as a modern quartz mill would surprise the inventor of the *arastra*. The method of working by this rude machine is easily seen by referring to the cut.

Coke, for smelting purposes, is being imported largely into Eureka.

Placer Mining in Mexico.

In our issue of June 6th we made mention of the fact that the placers of La Cienega and Los Llanos, in Altar district, State of Sonora, Mexico, were about to be worked in accordance with the method employed in this State. The company who have become possessed of the large tracts of land in which these placers are situated, will, however, make practical working tests before taking steps toward bringing in a plentiful supply of water. This week, Capt. Samuel Tyler, Charles Tyler and Mr. Sewell left this city for these mines, with a suitable outfit, to test the value of the ground. They took with them a large-sized Knowles pump, a mile and a half of wrought-iron pipe, and all the materials necessary to thoroughly test the ground. The undertaking is a bold one, for the water they are to use, being lower than the placers, will have to be pumped up so as to get fall for sluicing.

They propose to raise the water by means of the steam pump, and then wash the dirt in sluices. The water is to be forced from an adjacent lake, but it is only necessary to raise it a short distance to get the required fall. These placers have yielded fabulous sums by "dry washing," but have never been worked with water. If the ground produces half the amount it promises, the owners will proceed to bring in water and hydraulic the banks, which are from 10 to 50 feet high. The mines are about 55 miles inland from the Gulf of California, but at an elevation of only a few hundred feet, and it will be practicable to bring the water from the gulf. The gentlemen owning these mines have put none of the stock on the



CRUSHING ORE BY THE OLD MEXICAN PROCESS.

market; and will thoroughly test the ground practically before procuring extensive machinery. The placers of La Cienega are to be tried first, as it is easier to let water upon that part of the ground. If successful, the owners will then test the placers of Los Llanos. Capt. Tyler, who recently returned from an extended trip to that section of country, tells us that there are many large tracts of rich placer ground thereabouts, but the scarcity of water prevents their being worked. It would take large capital to bring water upon them, and without it they are of no value. If the company now testing the placers of La Cienega should be successful in their undertaking, it will probably be the means of inducing others to take hold of these mines. Capt. Tyler does not entertain the slightest doubt that the ground will pay magnificently with water upon it, and expects to pay all the expenses already incurred, in a few days after he commences operations. Labor there is very cheap, and it will not be long before the pipe will be laid and washing begun.

MINERAL KING DISTRICT.—A dispatch from Visalia, dated June 22d, says: "Intense excitement prevails here to-day, owing to the recent discovery of reported fabulous wealth in the Mineral King district, sixty miles east of here. Returns received this morning of an assay of the croppings made for John J. Valentine, Superintendent of Wells, Fargo & Co., show \$135 per ton in silver and gold. The ledge is plainly in sight for six or seven miles and forty or fifty feet in width. An immense quantity of the rock from which the assay was made is above ground. The discoverers calculate millions of tons. There is an abundance of wood and water on the ground. A large party leave here to-morrow for the scene." This sounds like the reports made of the famous Barro mines in New Mexico, where there were millions of tons with thousands of dollars above ground, and instead of hoisting from below, the ledges cropped out so high that the ore would have to be thrown down into the quartz wagons. These mines never made any extra work for the miners, however. Mineral King miners had better be a little more modest in their reports at first, or the great public will scent "Arizona diamonds," or schemes of like character, and refuse to have anything to do with the district.

The Consolidated Virginia mine sent down \$90,300 on Saturday last.

Recent Patents.

Among the patents recently obtained through Dewey & Co.'s, MINING AND SCIENTIFIC PRESS, American and Foreign Patent Agency, the following are worthy of mention:

MACHINE FOR RIVING SHINGLES.—Daniel Shankland, Watsonville, Cal. This invention relates to a machine for splitting or riving shingles or shingles. The block of wood is secured in a carriage which feeds it uniformly to the saw or splitting knife. An arrangement for giving the knife a twist when it has entered the block splits the shingle off, and throws it clear of the machine.

ORE CONCENTRATOR AND WASHER.—Jonas B. Wilder, Sonora, Cal. Relates to a sluice section which is mounted on springs and given a peculiar motion and jar. The section has inclined diagonal grooves or channels passing across it which extend through the sides of the sluice. The tailings from the main sluice must pass through this mounted section. The peculiar motion and jar which are given to the section cause the sulphurets and heavy particles to travel up the inclined channels and through the sides of the sluice, where they are discharged.

PRUNING IMPLEMENT.—Rufus E. Farriington, Anaheim, Cal. This patent covers an improved handle for pruning instruments by which they can be more easily handled and operated while trimming the higher branches of a tree. It also covers improvements in the construction of the pruning instrument.

AIR COMPRESSOR.—Wm. H. Fanninley,



Eureka, Cal. Mr. Fanninley proposes to compress air by hydraulic pressure so as to produce either light, heat or force, and describes a system of connections with proper reservoirs by which the air may be transmitted from one point to another for the purpose of providing power or force for various purposes.

STAGE SHIP FOR THEATERS.—Samuel H. Chapman, Sacramento, Cal. This invention relates to an extension ship for spectacular effects upon the stage of a theater. The ship is so constructed that when first seen by the audience it is quite small and seemingly in the distance; gradually the hull of the vessel extends in length; gradually the masts rise; nearer and nearer the ship seems to approach, until, finally, it stands before the audience a full rigged ship, filling the entire space upon the stage. All this is done by men in the hull of the ship, who by turning a crank operate slides which lengthen the ship.

PACKAGE FOR AXLE GREASE.—J. G. Hucks, S. F., Cal. This invention relates to an open top metal can, which Mr. Hucks provides with a wooden cover, the edge of which is bevelled. This cover is crowded into the upper open end of the can so as to fit tightly. When the cover is removed the entire top of the can is open, so that its contents can be easily removed.

MECHANISM FOR MOVING LUMBER.—Tothammer & Osborne, S. F., Cal. This patent relates to a machine for moving lumber from one place to another; but its principal use is for unloading lumber from ships and depositing it upon the wharf or in the lumber yard, as desired. It consists of a series of jointed sections, having rollers mounted transversely across them. The rollers are rotated by a belt or gearing, and are provided with spurs or projections, so that the lumber is moved along from one to the other until it arrives at its destination.

BOTTOM HOLE SEWING MACHINE.—J. J. Graff, S. F., Cal. An improvement upon the Humphrey Bottom Hole Sewing Machine, by which the button hole is finished without taking the cloth from the machine, thus saving the trouble of finishing them by hand, as heretofore. The improvement is very simple, and accomplishes the finishing neatly and perfectly.

General News.

BILLS WHICH HAVE FAILED TO PASS.—The following are among the bills which failed to pass both houses of Congress at the late session: Hager's bill, granting right of way to the Sierra Iron company's railroad, and Joues' bill, for the cointage of 20 cent pieces.

The various measures for imposing an extra duty on imitation champagnes; the bill providing for the free admission of jute cloth, and returned grain bags and quicksilver, all failed with the tariff bill.

Tha bill abolishing the government charge for gold coinage.

The admission of New Mexico and Colorado as States.

Repealing the Pre-emption, and amendatory of the Homestead laws.

For the construction and repair of the Mississippi river levees.

McCrory's bill for the regulation of charges for railroad transportation.

All the land grant bills, and many hundred bills for the relief of individuals.

PACIFIC COAST APPROPRIATIONS.—The Civil Appropriation Bill, as passed, contains the following among other appropriations for the Pacific Coast: For life-saving stations, \$342,304; for statistics in relation to mines and mining, \$10,000; survey of public lands in Arizona, \$20,000; California, \$30,000; Utah, \$20,000; Nevada, \$40,000; Oregon, \$60,000; survey of Indian reservations, \$150,000; work at the Navy Yard, Mare Island, \$250,000; machinery and fitting up the new Mint, \$18,000; refinery in the new Mint, \$35,000; for fitting up the old Mint for a sub-treasury, etc., \$35,000.

The River and Harbor bill contains the following appropriations: For removing rocks and wrecks off the harbor of San Francisco, \$25,000; improvement of Oakland harbor, \$100,000. The Secretary of War is directed to have surveys made of the Sacramento river below Tehama, Feather river below Marysville, estuary in Santa Barbara channel, about two miles north of Point Muger, and the San Joaquin below Stockton.

TERRIBLE ACCIDENT.—A terrible accident occurred at the Central Baptist Church, in Syracuse, New York, a few days since. The floor of a room in the church gave way and fell into another room below, which was also crowded, killing some 14 persons, and more or less seriously wounding about 150 others. Cause, defective construction. A church festival was in progress at the time. The excitement in the community is very great.

THE GENEVA AWARD BILL has finally passed Congress, and a Commission has been appointed to distribute the awards. The Commission consists of Hezekiah Wells, of Michigan; Martin Ryerson, of New Jersey; Kenneth Rayner, of Mississippi; William A. Porter, of Pennsylvania, and Caleb Baldwin, of Ohio, at salaries of \$6,000 each—to continue for one year only, unless extended by order of the President.

A NATIONAL GRANGE FIRE INSURANCE CO.—An act to incorporate the National Grange Fire Insurance Co. has been introduced into Congress, which provides for the incorporation of a company with a capital of \$1,000,000. One of the provisions of the bill is that the company shall make full annual reports of its affairs to the officers of the National Grange of the Patrons of Husbandry.

PROHIBITION IN MASSACHUSETTS.—According to the telegraph, Massachusetts appears to be going back on prohibition. The Senate of that State has passed a License Bill, by a vote of 27 to 14. This vote is said to have been brought out on account of the damaging report with regard to the working of the Prohibition Law, made to the Legislature by the Police Court Commissioners of Boston.

THE POPE AND THE UNITED STATES.—The Pope is said to have remarked recently: "The United States is the only country where I am really Pope in the eyes of the Government. I am always afraid lest European governments shall oppose my acts; whereas I can freely send Pontifical documents to the United States without fear of opposition on the part of its government."

THE VALLEJO ELEVATOR.—The stockholders of the Elevator Company held a meeting in this city the past week, and directed the Secretary to take steps for legally dissolving the company, and distributing \$2,500 now in the hands of the Treasurer. The company sank about \$150,000 in the enterprise.

THE LOCAL OPTION WAR has fairly opened in Nevada county. Public meetings are being held in Grass Valley, Nevada, Forest Springs, etc. Mrs. Wm. K. Spencer, of Grass Valley, delivered an address on the question, which was a model of its kind—temperate and well conceived. It has been printed.

LOCAL OPTION ELECTIONS have been held in 69 townships, 49 of which have decided against license and 20 for license.

ROBERT WATT has had a patent issued for 10,000 acres of land in the Big Meadows, Plumas county.

THE RAILROAD is in running condition for a distance of five miles from Saucelito.

Mrs. WOODHULL spoke her piece at Stockton, on Wednesday evening last.

The Comstock.

In the introduction to the last weekly mining review of the *Virginia Enterprise* that paper says: The gradual increase of ore in the lower levels of our paying mines and the constant development in mines wherein prospecting is in progress of more and more favorable indications, must at some time arrive at a point and assume proportions to produce effects. Therefore, it is probable that it may be considered that the general outlook is at the present time sufficiently favorable to warrant some advance in the price of stocks. We have had no sensation in the way of a big strike in many months, yet there has been that which is better; we have had in the ore-producing mines such a widening and expanding in all directions of the ore-bodies, as they are followed downward, as has astonished all mining men. Of the Consolidated Virginia this is particularly true. The developments made in the lower levels of that mine are astonishing, and almost beyond belief. In the lower levels of the Belcher and Crown Point it seems that the more explorations are made the more ore is found; and in all these mines the ore is of wonderful richness. In other mines not now producing ore, the developments made are such as to induce the belief in the minds of not a few persons who are closely observing the mining situation, that ore might be found at almost any time at very short notice.

Our people would not be surprised any day to hear it announced that rich ore had been encountered in any one of half a dozen or so of our mines where we now hear only of what seems aimless and endless drifting—drifting on lower levels, on upper levels, and on all kinds of levels, but always along some wall. They cannot thus drift on forever; there must be some cross-cutting done one of these days. We are therefore safe in saying that at least half a dozen important mines along the Comstock are just now in such a situation that none of our people who keep any kind of track of mining matters would be astonished to hear to-day or to-morrow that rich ore had been developed in this one or that one of the number—for they are all in an "interesting situation." When drifts that are run along walls keep dipping into ore, it is a very good sign that there is something out of the main "stream" of the lead. Machinery of all kinds continues to arrive almost daily, and in all directions we hear of new works being erected. In the early days of Washoe, when a mining company had erected hoisting works, the starting them up for the first time was made the occasion of a grand jubilee. A grand collation was provided and spread in the new works, from half a dozen to a dozen baskets of champagne were furnished, and whisky and brandy were there by the gallon; half the people of the town—merchants, lawyers, physicians, preachers of the gospel, as well as mining men—were present. Now, new works are erected and are in operation a week before half a dozen persons outside of those directly interested know anything of the matter, and not even so much as the corks of a soda-bottle pops when the huge engines make their first stroke. The starting up of new works is now becoming a sort of every-day matter.

Quicksilver in Santa Barbara County.

The Santa Barbara Press says: One thing seems to be definitely settled. Our "back country" is rich in very valuable and available mineral products. A paying spot has been struck in the great "cinnabar channel," which is more or less quick with precious ore through a long extent of our coast range. The fact that in the rear of Santa Barbara a vein of unusual richness exists, has recently been confirmed by the testimony of the most accomplished mining experts, and by actual tests of the ore. These mines are not, in one sense, a new discovery; but the present state of the quicksilver market renders their development quite inevitable. Unless through the results of some monopoly in mercury these mines are subsidized, their ores will, before very long, be in process of reduction. The question of title may, as in some other places in California, embarrass the speedy occupation of this mining region by the most effective workers. A certain grant, not unknown to fame in this locality, is asserting its elastic claim to these cinnabar ledges. D. E. Jones holds, as we understand, a 10 years' lease from the owners of this grant, and is removing ore having from 10 to 50 per cent. of quicksilver. A San Francisco company has claims yielding from two and a half to 10 per cent. The latter percentage is considered a good paying one.

These mines are situated from 18 to 20 miles in the mountains at the rear of Santa Barbara. The region has a sufficient supply of wood and water to render a reduction of the ores feasible. A road from this city can be made at a moderate expense. There is reason to believe that the product of these mines may, at no distant date, rival those of the New Almaden and New Idria district.

Wm. D. Brown, Esq., who has recently explored this cinnabar region, finds confirmation of the most favorable reports heretofore circulated in regard to the probable wealth that will be unfolded. Mr. Brown's opinion is based upon thorough geological knowledge and an extensive acquaintance with mining matters which has made him a reliable expert.

A New York Central special train, carrying several officials of the road, ran the 81 miles between Syracuse and Rochester in 90 minutes.

Smelting at White Pine.

The White Pine News says: We have promised ourselves the pleasure of recording an apparently impracticable enterprise for several weeks, but have refrained from so doing through fear that a premature description might be a detriment to parties interested. However, now that no doubt can exist of a complete and perfect success, we are permitted to make the matter public. Some weeks ago a company of practical men, composed of miners, mill-men and engineers, thought they could make a success where others had failed, and accordingly lessened the Metropolitan mill, near this city, and commenced operations. Their capital was limited, composed principally of honest endeavors and practical knowledge, coin being an article sadly deficient, but they went manfully to work, with firm faith in the future of their enterprise. The institution on which their efforts have been directed was in a most dilapidated condition, and looked as though no amount of ingenuity could ever bring order out of the chaos that reigned, but, at this writing, a complete quartz mill is running and turning out bullion in quantities sufficient to ensure a rich return for their labor. The company is now prepared to purchase ore and give the market value for the same, or work rock for those desiring to live by rates, as announced in another column.

What a commentary is this upon the unsuccessful efforts of would-be manipulators of the precious metals! Four men, without capital, take an old, abandoned mill, and with nothing but practical knowledge and indomitable energy make a complete and paying success where scientists, even those from the classic shades of Freiberg, have ignominiously failed! So will it always be; so may our country, rich in minerals, be brought to a perfect and lasting prominence among the bullion producing sections of Nevada, and to such men as compose the company in question, and to such only, must we look for the future prosperity of our district. We earnestly trust our people may see in this enterprise a lesson which will teach them to forward by every and all means, the desires of those willing and competent to bring our country out from the "slough of despond" wherein she seems now to be laboring. Another company, composed of similar material, is soon to be formed for the purpose of smelting our base ores, and it is to be hoped that no obstacle coming from "a penny-wise and pound-foolish" policy will interfere with its success. Remember that the matter has come down to a question of necessity, and that we must do something to aid in the development of the district before another tedious winter shall be at our door, and that we need expect no aid from wealthy outsiders to assist us in our regeneration. Demonstrate, as we have often said, the simple fact, beyond a doubt, that our ore-bearing mines are extensive and that the ores can be worked as readily as those of our flourishing neighbor—Eureka—and no other efforts need be made to induce capital to come to us, as moneyed men will surely want to invest where a certainty of profit exists. We are in dead earnest about this thing, and shall do all in our power to arouse the people to a realizing sense of the situation. Let us not mope and mourn over the present dullness of matters generally, but be up and doing, remembering always that "God helps those who help themselves."

The K K Mine.

The Eureka Sentinel of the 14th has the following to say of the strike in the northwest drift of the 3d level of the K K mine:

This strike is one of the most valuable and important which has ever been made on Ruby Hill. It demonstrates to a certainty the brilliant future now opening before the K K, which, henceforth, must take rank among the leading mines of the district. We have heretofore remarked of the K K that, if ore was ever struck in sufficient quantities on the third level, the future of the mine would then become too assured a fact to be reasonably doubted. The ore body has already been penetrated several feet from the point where first uncovered, without exhibiting the least signs of giving out. The whole face of the drift is in it. The ore is also much richer than that which is found on the other levels—a fact which is worthy of notice as being in keeping with the data obtained from the deep in the Eureka Consolidated and Richmond mines. It has assayed as high as \$115 per ton, of 2,000 pounds. We will visit the mine again next week, when we hope to be able to throw additional light upon this magnificent development. The character of the ore bodies in the other quarters of the mine noted last Sunday has not undergone any other change since, than the most agreeable one of expansion.

Particularly is this the case with the stupendous body which has been recently opened up on the northeastern workings of the second level. We say stupendous, because its vast proportions are such as to entitle it to all the praise and wonder which the word carries with it. Considerable ground has been stoped and breasted out in this quarter during the past ten or eleven days, without any apparent diminution of the ore having taken place. The ore bodies in the neighborhood of the shaft are all doing finely, for the product maintains the same uniformity in measure. The teams haul to the furnaces the usual amount of 35 to 45 tons per diem. From the vicinity of the Cunningham shaft, Marcelina West, there are very

flattering accounts, indeed, the ore having become richer and more extensive than it has been found to be at any preceding period since its discovery. That the ore bodies are both descending and expanding in the K K, are facts now too well proven to admit of assertions doubt on the part of those who have each week seen and examined them so closely as we are certain we have.

Lead Refining.

[By the processes usually employed for refining lead, a considerable waste occurs, and the separation of the lead from other metals and impurities is rarely perfect. A new system, devised by MM. Payen & Renx, of Marseilles, France, is said to admit of refining lead without the formation of oxides, and has, according to the *Chronique de l'Industrie*, the particular advantage of permitting the collection of all foreign metals of which the value may be worth considering. The process is founded on the property which a bath of caustic hydrated melted alkali possesses in dissolving, or, at least, oxidizing successfully all the metals except three, by drawing them into a soluble scoria, in a state of igneous fusion. The three exceptions are lead, silver and gold. The metals united with the lead are, one after the other, removed by melted soda, the action of the bath being maintained first by a jet of steam, designed to restore constantly the water of the hydrate from which the metals gain oxygen, and urged, according as the metals are in a less degree oxidizable, either by blast of air, or, finally, by carefully measured additions of nitrate of soda. The theory of the reaction is as follows: By simple solution in water, soda abandons all the oxides which it holds in solution or suspension, and is evaporated and dried for use in the operation, almost without loss. The metals oxidize in the melted alkaline bath in the order of their affinity for oxygen, an order modified, however—1, by their particular affinity for soda; 2, by the action of affinity exercised by the largest mass present. Thus tin and the metals of platinum, although much less oxidizable than lead or copper, are attacked very rapidly, and before the latter in the soda bath, by reason of their propensity to act as electro-negative elements. Hence, also, in an alloy very rich in lead, the copper oxidizes first. Another phenomenon of not less importance is that the solutions of the oxides in the soda bath act chemically in presence of the reagents exactly as do the metallic salts dissolved in water. It is thus in this igneous solution—all the metals are precipitated, one after the other, in the inverse order of their solubility; and in the direct order they preserve each other from oxidation. In this respect, even insoluble reducing agents, such as charcoal, may be employed in the bath. The principal applications in the process are its adaptations, not only to the refining of lead and the extraction of silver by the zinc process from lead and argentiferous scoria, but the purification of argentiferous copper and old complex alloys; the treatment of ores of platinum, gold, silver, etc., of ores of chromium, etc.

The Industrial Exhibition.

J. H. Gilmore, special agent of the Ninth Industrial Exhibition of the Mechanics' Institute, expects to obtain a fine collection of California minerals belonging to Henry G. Hanks, for exhibition; also a number of well-arranged specimens of wood, native to the State, the property of Mr. Voy, at present in the State University Museum. A large collection of building stones has also been promised.

The Board of Managers have appointed the following Committees:

Building—A. R. Wells, J. P. Cartie and J. McDonald.

Antiquity—W. P. Stout, P. B. Cornwall and George Spaulding.

Power and Machine—C. Elliott, J. Speir, R. Snvage.

Printing and Advertising—G. Spaulding, R. Savage, W. P. Stout.

Rules, Regulations and Tickets—J. C. Patrick, P. B. Cornwall, A. R. Wells.

Music and Decoration—H. L. Davis, R. B. Woodward, C. Elliott.

Privileges—R. B. Woodward, P. B. Cornwall, G. Spaulding.

Police—P. B. Cornwall, H. L. Davis, R. Savage.

Circulars and Classifications—J. H. McDonald, J. B. Curtis, R. Savage.

Location—J. Speir, W. P. Stout, G. Spaulding.

The premium list of the Bay District Horticultural Society has been decided upon. The Board has ordered it to be printed for general distribution. The subscription up to date amounts to \$45,525.

LANTERNS of horn were used by both Greeks and Romans; they put lamps into them for the purpose of lighting themselves home on moonless nights. In England Alfred the Great made lanterns to guard his graduated candle for the wind. Guy Faux's lantern still exists in the Bodleian Library. At Oxford, also, we believe there is still to be seen a highly ornamented specimen of a lantern of brass, about ten inches high and five inches in diameter. It has a small door on one side. Light was emitted through five rows of holes, in each of which is set a piece of fine crystal. On the top is a large piece or knob of crystal, through which a handle, now broken off, was fixed to the cone.—*The Engineer*.

Coos Bay Coal.

A correspondent of the *Chronicle* writes as follows from Empire, Coos Bay, Oregon: The bay is reached easily in about 50 hours by well-appointed steamers plying between San Francisco and this place, the county seat of Coos county. Empire is a thriving town of some 600 inhabitants, possessing excellent hotel accommodation, fine stores, large saw and planing mill, shipbuilding yard, court-house, school-house, churches, etc., situated about six miles on the bay from the mouth of the harbor.

The next town of importance on the bay is Marshfield, some nine miles distant from Empire. This is also a live place, having one sawmill capable of turning out 40,000 feet of lumber daily; also an extensive shipbuilding concern, where the Messrs. Mattson are at present building a large ship for the coasting trade. Between the town of Empire and Marshfield the Messrs. Simpson of San Francisco have a sawmill and the most extensive shipbuilding establishment on the bay; it is called North Bend. The Messrs. Simpson have built here some nine or ten ships, and are, at present writing, completing the largest ship ever built on this coast. She will have a carrying capacity of 2,000 tons.

Of the coal mines already developed, I may mention the Eastport, owned by a company in San Francisco. The mine is located on the coalbank slough, about two miles from Marshfield, and but a short distance from the mine owned and worked by Messrs. Flanagan & Mann, called the Newport. Both of these mines are well developed and are under excellent management. The yield of the two mines is about 10,000 tons a month. The Eastport mine has paid regular dividends of two per cent. on the capital invested, and the Newport mine, still held in original owners' hands, has made them all rich.

Some nine miles from Marshfield, on the Isthmus slough, is located the property recently purchased by Jasper McDonald of San Francisco, upon which the Coos Bay (Oregon) Coal Company is formed. I have just learned that work is about to be commenced by this company, and regular shipments of coal may be looked for in about three months. Adjacent to this property I was shown a remarkably fine coal development on a tract of land claimed by a Mr. Darby, a lawyer of San Francisco, who has been here in the interests of capitalists. Whether he intends to commence operations soon I was not informed, but he has secured a property good enough to keep, and then be sure of enough to provide for all the rainy days he may ever experience in Oregon.

How to KILL TOBACCO WORMS.—A late issue of the *New York Tobacco Leaf* publishes a long article, from which this is condensed, on the use of cobalt and jimson (or Jamestown) weed as a certain exterminator of the tobacco fly, and earnestly recommends tobacco growers to use the remedy. The mode of using it is as follows:

Plant the jimson in spots through and around the field, three or four plants in a clump, about the time the tobacco plants are set out. When the jimson blooms, put two or three drops of cobalt solution in each bloom every evening; the fly will suck the poison, which is certain death. Cobalt can be procured from almost any drug store; dissolve one ounce in something more than a pint of water, put into a corked bottle, with a quill inserted in the cork. Every morning after using the solution, the bloomer charged the evening before should be pinched off, or the poison will reach the stalk and kill the weed. The *Tobacco Leaf* recommends that in every neighborhood, farmers club together and agree to use the remedy. The result will be, in a very few seasons, if faithfully used, that every such neighborhood will be comparatively free from the pest known as the tobacco worm. Tobacco planters in Kentucky, and the West generally, would do well to act on the suggestion. The idea is not new, having been earnestly recommended in 1869 by the Agricultural Bureau.

THE ELASTO AIR HAMMER.—The experiments of the past two weeks, by Wm. Manson, with his power hammer, have demonstrated that it can do all, and, in fact, a great deal more than was ever expected of it. As a quartz mill it is found to supersede the old style in time, from the fact that two stamps of this will crush as much, and probably more, than five of the old style. He has tried it as a drilling machine, through several hundred feet of small pipe, and finds that it loses less by friction than he expected. A patent for the principles involved has just been granted through Dewey & Co., of the MINING PRESS, covering the United States; and patents are granted or pending in the most of the civilized foreign countries. With the mill now on trial, Manson has succeeded in breaking in pieces several mortar bottoms; the last one tried, five inches thick, was broken in a short time into more than a dozen pieces. Work will be immediately commenced on a 200 pound hammer, for use in the blacksmith shop, connected with the machine department. The hammer will have a drop of 2½ to 3 feet, and will strike with a force of 1,000 pounds. It is to be used for heavy forging and working up scrap iron.—*Mountain Messenger*.

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NOTICE.

We certify that the partnership of Dewey & Co., doing business in San Francisco, California, is composed of Warren B. Ewer, George H. Strong and John L. Boone, all of whom reside in the city and County of San Francisco, and Alfred T. Dewey, who resides in Oakland, Alameda County, Cal.
San Francisco, Cal., June 3d, 1874.

WARREN B. EWER,
GEORGE H. STRONG,
JOHN L. BOONE,
ALFRED T. DEWEY.

STATE OF CALIFORNIA,
CITY AND COUNTY OF SAN FRANCISCO,

On this June 3d, 1874, before me, F. O. Wegener, a Notary Public in and for said City and County, personally appeared Warren B. Ewer, George H. Strong, John L. Boone and Alfred T. Dewey, known to me to be the persons whose names are subscribed to the within instrument, and acknowledged to me that they executed the same.

Filed June 5. W. HARNEY, County Clerk,
By W. STEVENSON, Deputy.
In witness whereof I have hereunto set my hand and affixed my official seal, the day and year first above written.
june 4t F. O. WEGENER, Notary Public.

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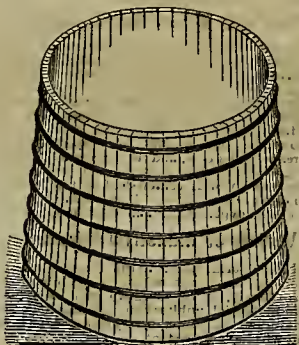
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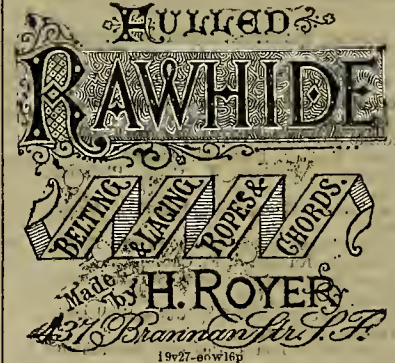
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A LECTURE TO GENTLEMEN

—BY—

BARLOW J. SMITH, M. D.,

Of the Allo-Hygenopathic Institute, 635 and 637
California street, San Francisco, California.
On the "Causes of Nervous Debility and Prema-
ture Decline." Also, "Twenty Years' Experience
in Reform Medication," treating upon disease in its
various forms, the Causes, Prevention and Cure, home
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Brittan, Holbrook & Co., Importers of
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cisco, and 113 J St., Sacramento. m8-ly

Ground or Unground.

A question has arisen, and is even now assuming considerable importance, as to whether our export wheat shall not be shipped in the form of flour. The proposition seems to have had its origin on this side of the water; and as there is supposed to be two sides to this, as to most other bargains, perhaps it would be well to learn how our foreign customers prefer to receive our wheat; whether ground or unground.

Those who are most strenuous in urging the shipment of flour instead of wheat, do not propose to so far anticipate the desires of our customers as to send them a different article from that ordered; they consider, first, which would be the best for us to send, then, if they are satisfied with it, why of course we will ship it to them. But we fear that they will not be as well satisfied with the flour as with the wheat. Flour is far more susceptible to injury than wheat. Every mishap that could befall wheat would be at least equally injurious to flour; while much that would be harmless to the former would be ruinous to the latter. The shell of the unground wheat protects it from odors; while these are readily absorbed by flour. The most delicate taints are extremely damaging to flour; and the exposure to dampness and various offensive odors during its transportation is, in the estimation of many, a greater risk than we can afford to run. Flour, it is true, has been shipped to Liverpool from California in moderate quantities within the past two years, the results being moderately satisfactory; but however favorable the reports from a few cargoes may be, it must, we think, be admitted that the risks involved in shipping flour are greater than in shipping wheat.

From our present knowledge of the wants of our English customers, we are justified in supposing that they would prefer to grind the wheat for themselves. We might, it is true, vary the manufacture of our flour so as to satisfy their peculiar demands, so far as our wheat alone will admit; but we are assured that California wheat is not of itself sufficient to satisfy the demands of the bread-eaters of Great Britain. They can buy no wheat that produces a finer looking flour; but in gluten it is declared to be inferior to that imported from some other countries. The system of mixing wheat is largely practiced in England; and in compounding a flour that comes up to their standard they use the California wheat to secure a good, attractive color to their bread; but for strength they rely principally upon that of other countries—the Australian in particular. English bread is undoubtedly of a more uniform character than our own. "Family flour," which forms the great standard in this country, is comparatively unknown in England, even by name; for families there do not make their own bread. It is the baker to whom they look for bread, as they do to the dairyman for the cheese to eat with it; and we must bear in mind that it is the baker who is to decide as to what is wanted there—he, of course, speaking for his customers, whose wants he is better acquainted with than we can possibly be.

One of the advantages expected from this proposed change from wheat to flour exportation, is the bran, which would undoubtedly be of great value, if we could retain it and get as much for our wheat without the bran as with it, as some evidently suppose. But this is an unreasonable expectation; for the bran is quite as valuable to those who are expected to buy our wheat as to us; probably more so, as they do far more "stall-feeding" than ourselves.

If our flour would be as acceptable to England as our wheat, and the risks in transportation were equal, it would be to our advantage, most certainly, to ship our wheat ground—especially if we could retain the bran.

Even the erection and fitting up of mills capable of reducing this enormous amount of wheat, would of itself give a great impetus to our manufacturing interests, while milling, as a permanent business, would furnish employment for a vast amount of capital and labor. In the matter of sacks also the advantage would be decidedly in our favor. Flour would be shipped in cotton sacks. This material we can grow ourselves, and we can manufacture it into cloth; and from the cloth we can make it into sacks.

A contemporary of a neighboring city, in urging a radical change from wheat to flour shipment, manifests its impatience by already casting about for sites for the mills that are to be erected. The paper alluded to having located in a neighboring city, it was to be expected that San Francisco would be cut off from all the anticipated advantages growing out of this change. It accordingly declares that San Francisco is in no way capable of becoming the center of this great milling enterprise. Those, however, who are better informed as to what our city is doing, and capable of forming a more correct estimate of its further capacity, declare that San Francisco is peculiarly fitted, both by natural and acquired advantages, for reducing California wheat to California flour. As large as is the amount of flour which we have produced within the past year, even her present milling power has not been employed to more than two-thirds of its capacity.

The shipping of flour instead of wheat is certainly a consummation devoutly to be wished, and it may possibly be brought about in time; but we do not anticipate more than a gradual change. California flour has the difficult task

before it of achieving a reputation in Europe. This task may be made less difficult by furnishing them with a good article to begin with. By neglecting this, the exporters of American cheese suffered material loss in the early days of cheese exportation; and some of our particular, but not fastidious customers, doubted our ability to supply their wants; while others questioned our integrity. Probably the latter charge was most applicable to the case. Let us not be led into the same error in shipping flour.

Oregon Pig Iron in the Market.

It is with sincere pleasure that we note the appearance in our markets again of Pig Iron manufactured on the Pacific Coast. While we had to bring the raw material seventeen thousand miles over the ocean we could have little hope of doing anything beyond satisfying our own wants in the way of Machinery, etc. Now, however, Oregon steps in with iron of superior quality and that sells for a higher price in the market than any English or American that we know of. The last importation of one hundred tons sold for \$45, \$4 higher than the average quality of Eastern or English, and \$9 higher than some qualities of the latter. This is not the first time that Oregon has entered the market as a producer of Pig Iron, but owing to adverse circumstances the industry had for a while to be abandoned. It is now resumed again, and there is a company represented in this city by General Allen, and will be able to produce about one-third of the quantity that is needed to supply the San Francisco market yearly. No doubt, in due course of time, other companies both in Oregon and California, will enter the market, the cost of production will be decreased, and our iron founders will be able to beat all other competitors in the Machinery and Agricultural Implement trade on the shores of the Pacific. An opportunity will also be afforded for the manufacture of hardware, and in fact the impetus given by it to the manufacturing industries of the coast can at this moment be hardly realized. When we can command iron and coal of good quality, and in abundance, we shall start in the race of progress as highly favored by nature as Pennsylvania, or Great Britain, and much more so than New York or New England.

ONE of Cochran's automatic ore feeders has been put in operation at the Sierra Nevada mill.

The last weekly clean-up of the Eureka (Grass Valley) mine, was 425 ounces of gold amalgam.

A TOTAL of 110,000 pounds of hullion was shipped from Eureka on June 17th.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., June 23d, 1874.

FOR WEEK ENDING JUNE 9, 1874.

FURNACE FOR REDUCING LEAD ORES.—Ebenzer Bassett, Hamilton, Nevada.

ELECTRIC SIGNAL APPARATUS FOR FIRE HOSE.—Joseph Buchtel, Portland, Oregon.

HARVESTER.—Melzar W. Coon, Plainfield, Cal.

NECK YOKE.—George C. McMullen, Suisun, Cal.

PROCESS FOR THE PRODUCTION OF LEAD PAINTS.—Charles C. Rueger, S. F., Cal.

MACHINE FOR PULLING COTTON STALKS.—James Sampson, S. F., Cal.

OIL-CAN FAUCET.—Frank Spinning, Steilacoom, Washington Territory.

CAR WHEEL.—James Pearson, Sacramento, Cal.

APPARATUS FOR PRESERVING FOOD.—John P. Schmitz, S. F., Cal.

TRADE-MARK.

MEDICINE.—John M. Connell, S. F., Cal.

"The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue. Note.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest time possible.

A COMPLIMENT.

PLAINSBURG, MERCED CO., CAL., June 22, 1874.

DEWEY & CO.—Gentlemen: I herewith tender my grateful acknowledgments for the energy, promptness and efficiency which you have displayed in procuring my patent.

Although you were entire strangers to me when I first communicated with you, I soon felt satisfied you were gentlemen of integrity, and shall always be happy to represent you as such. Very truly yours,

H. W. RUCKER, M. D.

A Good Binder for \$1.50.

Subscribers for this journal can obtain our Patent Elastic Newspaper File Holder and Binder for \$1.50—containing full title of the paper on the cover. It preserves the papers completely and in such shape that they may be quickly fastened and retained in book form at the end of the volume, and the binder (which is very durable) used continuously for subsequent volumes. Paid, 25 cts. extra. It can be used for Harper's Weekly and other papers of similar size. If not entered, please, purchasers may return them within 30 days. Just the thing for libraries and reading rooms, and all who wish to file the Press.

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Information for Practical Miners,

Treating on the Opening of Mines; Mining of Ores; Milling of Ores; Smelting of Ores; Separation and Roasting of Ores; Amalgamation; Saving of Gold and all precious Metals; New Processes of Metallurgy; New Discoveries of Mines; Mining Engineering and Hydraulics.

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American Pig Iron, #10 ton	40 00
Scotch Pig Iron, #10 ton	40 00
White Pig Iron, #10 ton	40 00
Refined Bar, good assortment, #10	40 00
Refined Bar, #10 to 12	40 00
Plate, No. 10 to 12	40 00
Sheet, No. 10 to 12	40 00
Sheet, No. 14 to 16	40 00
Sheet, No. 18 to 20	40 00
Sheet, No. 22 to 24	40 00
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Sheet, No. 998 to 1000	40 00

LEATHER.

WEDNESDAY M., June 24, 1874.

City Tanned Leather, #10 doz	25 00
Santa Cruz Leather, #10 doz	25 00
Country Leather, #10 doz	25 00
Stockton Leather, #10 doz	25 00
Jodot, 8 Kil, per doz	25 00
Jodot, 11 to 15 Kil, per doz	25 00
Jodot, second choice, 11 to 15 Kil, per doz	25 00
Cornellian, 12 to 16 Kil, per doz	25 00
Cornellian Females, 12 to 16 Kil, per doz	25 00
Cornellian Males, 12 to 16 Kil, per doz	25 00
Beaumont, 15 Kil, per doz	25 00
Simon, 15 Kil, per doz	25 00
Simon, 20 Kil, per doz	25 00
Simon, 24 Kil, per doz	25 00
Robert, 17 and 18 Kil, per doz	25 00
French Kip, #10 doz	25 00
California Kip, #10 doz	25 00
French Sheep, all colors, #10 doz	25 00
Eastern Calf for Books, #10 doz	25 00
Shamp Roans for Topping, all colors, #10 doz	25 00
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J. W. ANDERSON—Orange and Santa Ana, In Los Angeles County, Cal.
HOB. ALSTON—San Luis Obispo, San Bernardino and San Diego Counties.

To Mining Secretaries.

An amendment to Section 336 of the California Code, taking effect July 1st, 1874, provides that in addition to the regular publication of the assessment and sale notices as heretofore,

PERSONAL NOTICE

Must be served as provided in the following quotation from the law:

"The notice must be personally served upon each stockholder, or in lieu of personal service, must be sent through the mail, addressed to each stockholder at his place of residence, if known, and if not known, at the place where the principal office of the Corporation is situated."

The above refers to the ASSESSMENT NOTICE only. Advertisers in the MINING AND SCIENTIFIC PRESS will be furnished with copies of assessment notices printed on slips suitable for serving personal notice under this law at short notice.

DEWEY & CO., Publishers.

June, 1874.

Mining and Other Companies.

Order to the time necessary to mail the present latest edition of the M. & S. Press, we are obliged to go to press on the Friday evening which is the very latest hour we can receive advertisements.

Calaveras Gold Mining Company—Location of principal place of business, San Francisco, State of California.

NOTICE.—There are delinquent upon the following described stock on account of assessment levied on the thirteenth day of May, 1874, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
John Brooks, Trustee	145	300	\$150 00
J Brown, Trustee	150	50	25 00
George Congdon	15	300	150 00
George Congdon	63	400	200 00
George Congdon	111	250	125 00
J S Newander	2	1000	500 00
J S Newander	20	1000	500 00
J S Newander	28	500	250 00
J S Newander	39	500	250 00
J S Newander	40	100	50 00
J S Newander	41	83 1/2	41 67 1/2
J S Newander	66	200	100 00
J S Newander	87	17	8 50
George Congdon, Trustee	144	50	25 00
George Congdon, Trustee	52	50	25 00
John G Congdon	11	300	150 00
John W Coleman	122	50	25 00
J W Osborn	127	400	200 00
George E Webber	46	1000	500 00
Frances A Edwards	45	200	100 00
E A Richardson, Trustee	55	50	25 00
E A Richardson, Trustee	147	100	50 00
E A Richardson, Trustee	60	100	50 00
E A Richardson, Trustee	61	100	50 00
E A Richardson, Trustee	152	600	300 00

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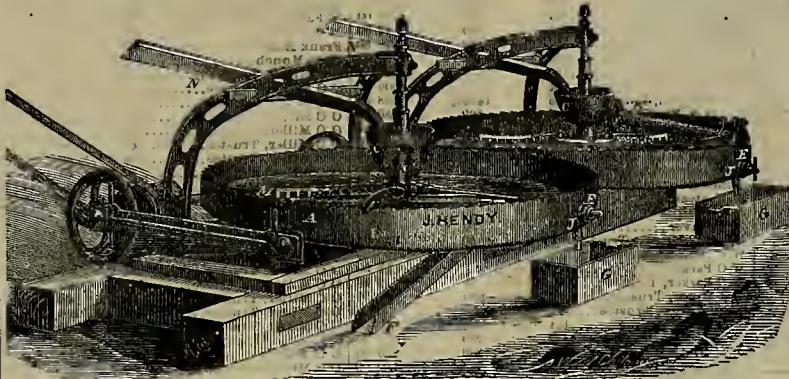
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2d. The best Concentrator I have ever known—(the concentrated stuff only containing 5 per cent. of sand).
3d. They are good amalgamators, light (feathery) particles of amalgam and particles of coated gold, by attraction are brightened, and from their specific gravity and the action of the pan, fall to the bottom and adhere.

4th. They require but little power and attention to run them, and with ordinary care will last for years. I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oaks and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,

Yours respectfully,

JAS. H. CROSSMAN, M. E.

409 California street, or Cosmopolitan Hotel.

SAN FRANCISCO, April 27, 1872.

OFFICE SUPERINTENDENT OF KEYSTONE CON. M. CO., AMADOR COUNTY.

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